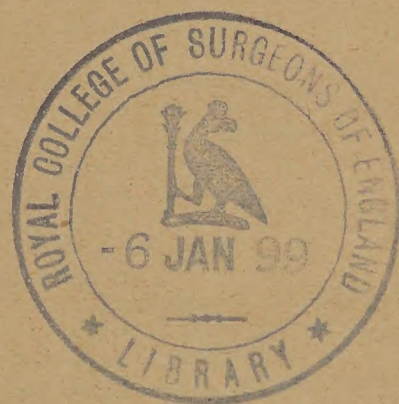
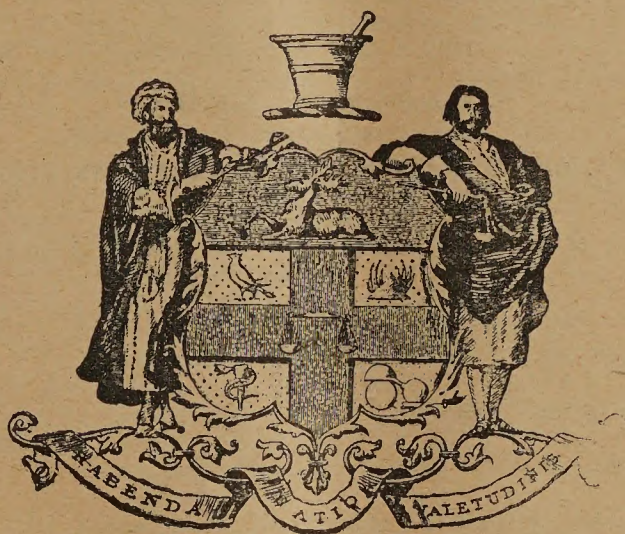




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CONTRACTIONS OF TITLES.

The following is a list of the contractions and the corresponding full titles of Journals from which abstracts are most frequently prepared for the "Pharmaceutical Journal." The titles prefixed by an asterisk (*) are those of official Journals.

- Amer. Journ. Pharm.* = American Journal of Pharmacy. Philadelphia. Monthly.
- Annalen* = Justus Liebig's Annalen der Chemie. Leipzig. Monthly.
- * *Apot.-Zeit.* = Apotheker-Zeitung. Organ of the Deutsche Apotheker-Verein. Berlin. Twice a week.
- * *Apot. Zeit. Rep.* = Repertorium der Pharmacie. Supplement to the Apotheker-Zeitung.
- * *Archiv* - Archiv der Pharmacie. Berlin: J. Greiss. Monthly.
- * *Berichte* = Berichte der deutschen chemischen Gesellschaft. Berlin. Once or twice a month.
- * *Brit. Med. Journ.* = British Medical Journal, London. Weekly.
- Bull. com.* = Bulletin commercial. Supplement to L'union pharmaceutique. Paris: Pharmacie centrale de France. Monthly.
- * *Can. Pharm. Journ.* = Canadian Pharmaceutical Journal. Toronto. Monthly.
- Chem. News* = Chemical News. London. Weekly.
- Chem. Zeit.* = Chemiker Zeitung. Cöthen. Twice a week.
- Chem. Zeit., Rep.* = Chemisches Repertorium. Supplement to the Chemiker Zeitung.
- * *Comp. rend.* = Comptes rendus des séances de l'Académie des Sciences. Paris: Gauthier-Villars. Weekly.
- Deuts. Am. Apot. Zeit.* = Deutsch Americanische Apotheker Zeitung. New York.
- Int. Photo. Monats.* = Internationale Photographische Monatschrift für Medizin. Düsseldorf. Monthly.
- * *Journ. Chem. Ind.* = Journal of the Society of Chemical Industry Monthly.
- * *Journ. de pharm.* = Journal de pharmacie et de chimie. Paris: G. Masson. Twice a month.
- Journ. Pharm. Elsass-Loth.* = Journal der Pharmacie von Elsass Lothringen. Strassburg. Monthly.
- Journ. Zahnheil.* = Journal für Zahnheilkunde. Berlin.
- Med. Press* = Medical Press and Circular. London: A. A. Tindall Weekly.
- Mod. Med.* = Modern Medicine and Bacteriological Review. Battle Creek, Mich., U.S.A. Monthly.
- Mon. scient.* = Moniteur scientifique. Paris. Monthly.
- Münch. med. Woch.* = Münchener medicinische Wochenschrift. Munich. Weekly.
- Nouv. rem.* = Les nouveaux remèdes. Paris. Twice a month.
- Pediat.* = Pediatrics. London and New York. Weekly.
- Petit Mon. Pharm.* - Petit Moniteur de la Pharmacie. Paris. Fortnightly.
- Pharm. Centralh.* = Pharmaceutische Centralhalle. Dresden. Weekly.
- Pharm. Post* = Pharmaceutische Post. Vienna. Weekly.
- Pharm. Woch.* = Pharmaceutische Wochenschrift. Berlin. Weekly.
- Pharm. Zeit.* = Pharmaceutische Zeitung. Berlin: J. Springer. Twice a week.
- Pharm. Zeits. für Russ.* = Pharmaceutische Zeitschrift für Russland. St. Petersburg. Weekly.
- Photo. Arch.* = Photographisches Archiv. Düsseldorf. Monthly.
- * *Proc. Chem. Soc.* = Proceedings of the Chemical Society. London. About twice a month.
- Répertoire* = Répertoire de pharmacie, archives de pharmacie et journal de chimie médicale réunis. Paris. Monthly.
- Scient. Amer.* = Scientific American. New York. Weekly.
- Schweiz. Woch.* = Schweizerische Wochenschrift für Chemie und Pharmacie. Zurich. Weekly.
- Therap. Monats.* = Therapeutische Monatshefte. Berlin.
- Union Pharm.* = L'union pharmaceutique. Paris: Pharmacie centrale de France. Monthly.
- Wien. Klin. Rund.* = Wiener Klinische Rundschau. Vienna: A. Hölder.
- Zahn. Rund.* = Zahnaertliche Rundschau. Berlin.
- Zahntech. Reform.* = Die Zahntechnische Reform. Berlin: R. F. Funcke.

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Recent Progress in Pharmacy.

WORK in this subject proceeds only tardily, as a rule, at the beginning of a new year, and knowledge of the fact that a new Pharmacopœia would soon be published doubtless tended to act as a further check upon the progress of pharmaceutical investigations. But the past six months have, nevertheless, been marked by a notable degree of activity amongst workers in pharmacy and allied subjects, and the briefest summary of the results of their labours, as recorded in these pages, must needs extend to a not inconsiderable length. One of the first communications of note was a paper by Edmund White, on the modification of the specific gravity of THEOBROMA OIL that takes place under certain conditions. The paper was supplementary to one by White and Braithwaite on SUPPOSITORIES, read at an evening meeting of the Pharmaceutical Society in November last, and the result of the investigation which it recorded was to show that some molecular disturbance is caused in theobroma oil by the application of heat in melting it, the effect of the disturbance not passing away entirely for several days. Thus, it was found that a variation is possible of half a grain in the weight of a fifteen-grain suppository, according to the time allowed to elapse between the solidification of the mass and its removal from the mould. An unfortunate explosion, caused by ERYTHROL TETRANITRATE whilst being triturated in a mortar, led Peter Boa to refer, in a paper read at Edinburgh, to the dangers attending the preparation of that and other explosive substances for administration as remedial agents. He pointed out that the efficiency of a remedy, as well as the convenience of the patient and the reputation of the dispenser, are dependent on the judicious selection of the proper method by which to manipulate it; substances liable to explosion should invariably be powdered in a glass or porcelain mortar with a uniformly glazed surface, the pressure being uniform and not too great, and the subsequent mixing should be performed on paper by the aid of a bone or wooden spatula.

In a paper by C. F. Henry, on the preparation of UNGUENTUM ACIDI CARBOLICI, it was suggested that the phenol should be dissolved in glycerin, and wool-fat used as the basis of the ointment. The first suggestion has since been adopted by the compilers of the British Pharmacopœia. A communication by William Duncan, on RESINOUS EMULSIONS or mixtures of resinous tinctures with aqueous fluids, was intended to advocate the plan of filling the bottle three-fourths full with the latter, then adding the tincture by pouring it through a small funnel so as to avoid touching the sides of the bottle, and afterwards shaking thoroughly. The solvent action of proof spirit and acetic acid on COLCHICUM SEEDS has been investigated by R. C. Cowley and T. P. Catford, whose work on this subject was a continuation of that previously done by the first-named in connection with colchicum corm. The result of the work was to confirm the view

that acetic acid does not possess any advantage over weak spirit as a solvent of colchicine. Later, the subject of BACTERIOLOGY FOR PHARMACISTS was ably treated by Leo Atkinson; a paper on DISPENSING DIFFICULTIES was read by F. H. Alcock; the determination of SUGAR IN URINE was brought prominently under the notice of pharmacists by Arthur McKellar; and an anticipation of the new B.P. process for the preparation of FLUID EXTRACT OF LIQUORICE was published by Peter Boa, who had found that water is the best extraction medium.

An account of some experiments performed to ascertain the SOLUBILITY OF GLASS IN WATER has been recorded by J. C. Fell; a note on the DETERMINATION OF PHENOL by H. Hymans, and a discussion on the RECOPYING OF PRESCRIPTIONS was initiated by F. W. Gamble, after attention had been directed in this Journal to certain omissions to carry out the provisions of the Pharmacy Act in that respect. Some commercial samples of LIQUID EXTRACT OF TARAXACUM were found by A. J. Dey to differ much in appearance, and the results of an examination of the preparations indicated considerable want of uniformity. Notes on the presence of sugar crystals in ALCOHOLIC EXTRACT OF BELLADONNA, and on PHENACETIN which emitted a strong odour of benzene when powdered, were contributed by the same author. Attention has been directed to DAVIESIA LATIFOLIA by J. Bosisto, and a crystalline substance extracted therefrom has been examined by Paul and Cownley, whose results indicate that in all probability it is a glucoside. The work of Podwyssotski on PODOPHYLLUM has been supplemented by Dunstan and Henry, who find that podophyllo-toxin extracted from the Indian drug is identical with that previously obtained from *Podophyllum peltatum*; E. J. Millard has since urged, however, that it is obviously improper for manufacturers to describe resin from Indian podophyllum as podophyllum resin, B.P. The wood of GOUPIA TOMENTOSA has yielded formic, isovaleric, lauric and succinic acids in the hands of Dunstan and Henry, who have also found that oxycannabin from INDIAN HEMP is derived from cannabinol. The use of FORMALDEHYDE in pharmacy was the subject of a useful paper by George Roe; the PHARMACY OF THE PANCREAS was dealt with by Dr. J. C. McWalter; the alleged decay in the ART OF PRESCRIBING has been attributed by Edmund White to deficiencies in the hospital training of medical men; and the influence exercised by English pharmacists on RUSSIAN PHARMACY has occupied the attention of P. Spehr and P. H. Marsden.

A number of DISPENSING DIFFICULTIES have been satisfactorily solved by Harold Wyatt, whose notes dealt with preparations containing silver nitrate with vegetable powders, syrup of ferrous iodide with infusion of calumba, bismuth salicylate, hydronaphthol, cocaine with lead acetate, quinine, storax, Stockholm tar, etc. The demands, claims, and responsibilities of the DISPENSER'S ART afforded Dr. H. Macnaughton-Jones an excuse for some special pleading on behalf of public dispensers, and a paper on POOR LAW DISPENSERS was read by A. W. Antcliffe. The inconvenience caused by the presence of crude petroleum or rock oil in METHYLATED SPIRIT, as supplied for sale by retail, has been

referred to by Peter Boa, whose remarks on the subject were ably supplemented by J. Rutherford Hill and other Scottish pharmacists, the general opinion being that the objectionable addition does not operate in any degree as a check upon the use of the spirit as a beverage. The PHARMACY OF CANTHARIDES has been dealt with by Greenish and Wilson, who suggest new formulæ for liquor epispasticus, collodium vesicans, emplastrum calefaciens, and the tincture, vinegar, ointment, and plaster of cantharides. Unfortunately their suggestions were too late to be utilised in the new Pharmacopœia. An interesting lecture on PHARMACY IN IRELAND was delivered in Dublin by Mr. Robinson, a former examiner of the Irish Society, and the practical application of LIQUEFIED GASES in pharmacy was discussed by Professor Tichborne. The alkaloidal constituents of CASCARILLA BARK have been further examined by W. A. H. Naylor, who is of opinion that the existence of a base in the bark other than one allied to choline may now be accepted as a fact; a simple MOULD FOR SUPPOSITORIES has been devised by H. P. Header; a handy SYRINGE FOR FILLING CAPSULES by J. A. Forret; the PHARMACY OF MERCURY has been discussed by J. Fothergill; and a comprehensive paper on the MELTING POINT OF SOFT PARAFFINS was read at Manchester by James Grier. Other useful papers on the chemical side were those on the DETERMINATION OF ASH by D. B. Dott, and on GLUCOSE DETERMINATION by Cowley and Catford. The dispensing of ANTIPYRINE with spirit of nitrous ether having been touched upon by Professor Caspari, his observations were commented upon at Glasgow by Thomas Dunlop, who pointed out that the conclusion arrived at was to some extent fallacious.

The great event of the half-year, from a pharmaceutical point of view, has, of course, been the publication of the new BRITISH PHARMACOPŒIA. Issued to the press the day before Good Friday, an interval of more than three weeks was allowed to elapse before the book could be purchased. Meanwhile, however, through the courtesy of the Pharmacopœia Committee, opportunity was afforded for supplying information as to the contents of the work, and details regarding all important changes were published in the *Pharmaceutical Journal*—more particularly in regard to the processes and formulæ, full working particulars of which were given—and much was thus done in the way of facilitating a speedy acquaintance with the contents of the book. Naturally, criticism of the work was not long delayed, but up to the present little has appeared that can be justified by work actually performed since the Pharmacopœia was issued, and more extended experience will probably show that those responsible for devising the new processes and altering old ones knew more about the matter than most of their critics. The necessity—always apparent—for pharmaceutical co-operation in the work of revision has been more fully recognised, and thus some advance has been made towards co-ordination of the functions of medicine and pharmacy. Nevertheless, the British Pharmacopœia of 1898 is still essentially a work produced for physicians rather than pharmacists, and in the attempt to simplify matters for medical practitioners, the compilers have gone far to throw the practice of pharmacy more than ever into the hands of manufacturers, to the manifest detriment of the art and those who have been specially trained therein. Meanwhile, the properly trained pharmacist need entertain no fear with regard to the ultimate result in the matter of dispensing and supplying medicinal agents for human beings, inasmuch as individual work must ever exceed in value machine work, in all matters that involve exact adaptation to particular needs.

More recent contributions of pharmaceutical interest have

included an illustrated description of an APPARATUS FOR ADMINISTERING OXYGEN, by George Lunan; an attempt to overcome the difficulty involved in connection with an INCOMPATIBLE STRYCHNINE MIXTURE, by J. Rutherford Hill, and short papers by the same pharmacist on STRYCHNINE HYDRIODIDE, on INVISIBLE AND SYMPATHETIC INKS, and on METHYLATED SPIRIT IN PHOTOGRAPHY. The new official test for QUININE SULPHATE has been criticised by A. J. Cownley, who asserts that quinine sulphate containing 5.99 percent. of crystallised cinchonidine sulphate will answer the new B.P. requirements, though it is stipulated that it shall not yield more than 3 per cent. of crystals of impure cinchonidine. Some notes on PEPSIN ASSAYING, by A. H. Allen, were not altogether favourable to the new B.P. process, comparison of that with the U.S.P. method of assay being shown to be greatly in favour of the latter. The difficulties involved in the preparation of the alcoholic menstrua of the new B.P. have been minimised by the publication of useful dilution tables by F. C. J. Bird and W. Martindale, those by the first-named being particularly practical and adapted for the preparation of either small or large quantities of diluted spirit of any required strength. An examination of commercial samples of BENZOIN AND GUAIAECUM RESIN by J. Evans was a report of good work done in the laboratory of the School of Pharmacy; COMPRESSED TABLETS AND TABLET TRITURATES have again been dealt with by Frank Edel; the results of somewhat extended researches on CORYDALINE are recorded by Dr. W. H. Martindale, the purity of COCAINE HYDROCHLORIDE is the subject of a paper by Paul and Cownley; and the strength of LIQUOR STRYCHNINE HYDROCHLORIDI has engaged the attention of George Lunan. In addition, abstracts of a very large number of papers dealing with pharmacy and the allied sciences have been published in the *Journal* week by week, all investigations and results of importance having thus been dealt with, adequately and promptly.

Turning to the subject of pharmaceutical organisation, we find that the concluding half of the winter session has been no less busy a period amongst provincial associations than the previous half. More associations have come into existence since the beginning of the year, and it is satisfactory to note, on surveying the work of the past half year, that in the great majority of instances the members of the various associations have devoted themselves mainly to the consideration of matters of local or general importance to the craft. The numerous discussions on the Pharmacy Acts Amendment Bill, and the measures taken all over the country to facilitate the progress of that Bill, by bringing pressure to bear on Members of Parliament, have served to emphasise the fact that registered chemists as a class, whilst always prepared to do their utmost in the public interest, are also fully determined to protect their privileges as of old. This is all the more satisfactory since the omens are not altogether favourable in connection with the Government Poisonous Substances Bill. The tendency of that Bill, as cannot be too widely known, is in direct opposition to the established principle that, in regard to the sale of poisons, the safety of the public is best cared for by the special education, qualification, and registration of the seller. Possibly, therefore, the measure may require to be strenuously opposed in the House of Commons, and steps may require to be taken for that purpose at a very early date. Registered chemists throughout Great Britain ought, therefore, to be ready at a moment's notice to protest, through their Parliamentary representatives, against a Bill which may prove most inimical to their interests, whilst admitted by the Lord President of the Council when introducing it, to be little likely to confer any benefit on the public.

THE ASSAY OF EXTRACTUM IPECACUANHÆ LIQUIDUM.

BY HAROLD WILSON.

Demonstrator in Pharmacy to the Pharmaceutical Society of Great Britain.

The British Pharmacopœia contains a liquid extract of ipecacuanha, which is standardised to contain not less than 2 and not more than 2.25 grammes of alkaloid in 100 cubic centimetres, and an assay process is made official, of which the following is an outline:—

Twenty C.c. of the strong liquid extract are diluted with an equal volume of water and the alcohol removed by heating on a water bath; excess of solution of subacetate of lead is then added, and the liquid filtered off, the precipitate being washed with water and the washings added to the filtrate. This liquid is then freed from lead by precipitation with dilute sulphuric acid and subsequent filtration, the precipitate being washed with water, and the washings added to the filtrate. It is now transferred to a separator, excess of solution of ammonia is added, and the alkaloids are removed by shaking with three successive quantities of 25 C.c. chloroform. The mixed chloroformic solutions are evaporated in a tared dish, the residue dried below 80° C. and weighed as total alkaloids.

On trying the above process on a sample of the liquid extract I was struck by its complexity and by the length of time required for its completion. Twenty C.c. of liquid extract required about 7 C.c. of the official solution of subacetate of lead for complete precipitation, and a magma-like mass resulted, which filtered very slowly (taking three to five hours), and which, even after having been washed as thoroughly and carefully as possible, still contained a considerable quantity of alkaloid, as experiments proved.

Two separate assays of 20 C.c. of the liquid extract were made by the official process, 50 C.c. of water being used to wash the precipitate obtained on adding the excess of lead subacetate solution.

No. 1 assay yielded .386 alkaloidal residue.
No. 2 " " " .393 " "

The washed lead precipitates were then examined for alkaloid, as follows:—

The precipitate was washed from the filter with water, decomposed with excess of dilute sulphuric acid, and the liquid filtered from the sulphate of lead into a separator. Ten C.c. of ether-chloroform were then added and the mixture agitated; the ether-chloroform was allowed to separate and was then run off and rejected. This treatment was twice repeated. Excess of solution of ammonia was then added, and the precipitated alkaloids removed by agitation with successive quantities of ether-chloroform. The mixed ether-chloroform solutions were evaporated and the residue dried below 80° C. and weighed.

Precipitate from No. 1 assay yielded .031 gramme alkaloidal residue.
, " No. 2 " " " .028 " " " "

Not only, therefore, is the official process from the nature of the lead precipitate tedious to perform, but it is inaccurate, since it involves loss of alkaloid.

A number of experiments were then made with the object of devising a simpler, quicker and more accurate method of assay, as a result of which I suggest the following as possessing these advantages.

“Take 20 C.c. of the strong liquid extract, dilute with 20 C.c. water, place in a porcelain dish and dissipate the alcohol by evaporating the mixture to rather less than half its bulk; allow to cool. Now add 1 C.c. dilute sulphuric acid and transfer to a separator, washing the dish with 20 C.c. water and adding these

washings to the liquid in the separator. Add 10 C.c. ether-chloroform (ether and chloroform equal volumes), agitate, warm to promote separation; run off and reject the ether-chloroform layer and twice repeat the treatment with the same quantity of ether-chloroform. Add now 10 C.c. ether-chloroform and excess of solution of ammonia, agitate, warm, and run off the separated ether-chloroform layer into a tared dish; agitate with two more similar quantities of ether-chloroform, separate as before, adding these solutions to that in the tared dish. Evaporate the mixed solutions and dry the residue below 80° C. until of constant weight. This weight, less that of the dish, will give the weight of total alkaloids present in the quantity of liquid extract operated on.”

It was determined to compare the values of the official and suggested processes by assaying the same sample by both methods, and to ascertain the weight of alkaloid yielded as well as the amount of decinormal acid such weighed residue was capable of neutralising, thus obtaining a check on the relative amounts of alkaloid present.

Two assays of the same quantity of extract were, therefore, made by the process suggested:—

No. 1 assay yielded .417 gramme alkaloidal residue.
No. 2 " " " .426 " " "

The foregoing gravimetric results may be summarised thus:—

	Alkaloid Extracted.	Lost in Lead Precipitate.	Total.
Official Process	{ No. 1. .386	.031	.417
	{ No. 2. .393	.028	.421
	{ Mean. .389	.029	.419
Suggested Process....	{ No. 1. .417	—	.417
	{ No. 2. .426	—	.426
	{ Mean. .421	—	.421

From the above figures it will be seen that when the alkaloid is recovered from the lead precipitate practically the same quantity of alkaloid by weight is obtained by each process.

The relative alkaloidal value of these residues was then determined by titration. Owing to the fact that when chloroformic solutions of the alkaloids of ipecacuanha are evaporated the solution rapidly darkens and a coloured residue is obtained, it was found necessary to carry out this operation in a very dilute solution, and in order to obtain strictly comparative results exactly the same conditions were observed in every case. Each residue was dissolved in 10 grammes of rectified spirit and diluted with 600 grammes distilled water. Excess of $\frac{N}{10}$ H₂SO₄ solution was then added, and the mixture titrated back with $\frac{N}{100}$ NaOH solution, using tincture of cochineal as indicator. The number of cubic centimetres of soda solution required was divided by ten and subtracted from the number of cubic centimetres of acid added, giving the following figures:—

Official Method.....	{ No. 1. .386	=	13.97 C.c. $\frac{N}{10}$ acid.
	{ No. 2. .393	=	14.18 " "
Suggested Method ..	{ No. 1. .417	=	14.88 " "
	{ No. 2. .426	=	15.24 " "

The residues recovered from the lead precipitate were also titrated.

No. 1.	.031	=	1.02 C.c. $\frac{N}{10}$ acid.
No. 2.	.028	=	1 " "

From these figures the following calculations can be made showing that, within the limits of experimental error, the residue yielded by the suggested process is as rich in alkaloid as that of the official one:—

By official method from No. 1. assay 1 gr. alkaloidal residue	=	36.2 C.c. $\frac{N}{10}$ acid.
" " suggested " " No. 2. " " "	=	36 " "
" " " " No. 1. " " "	=	35.7 " "
" " " " No. 2. " " "	=	35.8 " "

As far as can be seen at present, titration appears useless as a

means of estimating the alkaloids of ipecacuanha. If we take the molecular weight of emetine (248) and cephaeline (234) as given by Paul and Cownley, and, assuming these alkaloids to be present in about equal quantity, we take the mean of their molecular weights (viz., 241), then every C.c. of $\frac{N}{10}$ acid used should correspond to .0241 Gm. of the mixed alkaloids. If, however, we calculate the above titration results by this method we see that there is a difference of from 50 to 60 milligrammes between the results of volumetric and gravimetric determinations, e.g. :—

Gravimetric.	Volumetric.	Difference.
.386	.337	.049
.393	.342	.051
.417	.359	.058
.426	.367	.059

This difference may be due to some impurity, but more probably to the third alkaloid which is present, and which Paul and Cownley believe to have a much higher molecular weight than either emetine or cephaeline.

By the process suggested fatty matter, resinous bodies, etc., are removed by agitation with ether-chloroform in acid solution. If this part of the process be carefully conducted it becomes unnecessary to subject the ether-chloroform solution of alkaloids to the usual purification by acid treatment, as when treated by the latter method the ether-chloroform, after shaking with acidulated water, has been proved to yield no residue on evaporation.

The drying of the alkaloidal residue till of constant weight is tedious, but no means can at present be devised for shortening this operation, as cephaeline has been shown by Paul and Cownley to lose weight at 100° C., and hence to guard against this loss the residue must be dried below 80° C.

The advantages claimed for the suggested assay process over that official are the two very important ones of speed and accuracy. The assay can be easily completed, with the exception of drying the residue, well within the time required by the official process for washing the lead precipitate alone. A residue of greater weight is extracted which has been proved by titration to be equally rich in alkaloid. From the mean results given earlier it will be seen that by the official process .389 Gm. is extracted and .029 Gm. lost, that is to say, the loss is between 1/14 and 1/15 of the total alkaloid present. These figures are based on the results obtained on carefully washing the precipitate with 50 C.c. water which, considering the time taken (at least three hours), was judged a fair quantity; but if double that quantity of water be used to wash the precipitate it has been proved to still contain a notable proportion of alkaloid.

The foregoing experiments have been carried out in the Pharmacy Laboratory of the Pharmaceutical Society.

SODIUM ACETO-SULPHANILATE.—This antipyretic is prepared by the acetylation of sodium sulphanilate, which produces, besides sodium aceto-sulphanilate, free sulfanilic acid and sodium acetate. The impure sodium aceto-sulphanilate is freed from these products by treating it with a little hot water, which leaves the free sulfanilic acid undissolved. The sodium salts are removed from the cold aqueous solution by 98 to 99 per cent. alcohol or by ether-alcohol, and purified from sodium acetate by means of boiling alcohol. Pure sodium aceto sulphanilate possesses the advantage over antifebrine that it is soluble in water, and is therefore much quicker in action.—*Pharm. Zeit. f. Russl.*, xxxvi., 653.

A NEW FORM OF PHOTO-MICROGRAPHIC CAMERA AND CONDENSING SYSTEM.*

BY E. B. STRINGER, B.A.

The apparatus which Mr. Watson Baker has kindly undertaken to submit to the Society on my behalf is an attempt to facilitate the work of photo-micrography, especially with high powers, and to afford an illuminating system more perfectly corrected, more powerful, and more under control than has hitherto been available.

The baseboard is confined to that part of the apparatus which carries the illuminating system and microscope, the further end of the camera being supported by a massive wooden block. To this are attached two long brass tubes, on which slide the supports for the bellows, and which themselves slide in slightly larger tubes attached to each side of the baseboard. By drawing out these inner tubes with the block, and sliding the bellows supports the other way, the camera can be extended to 40 inches, or it may be closed up to 11 inches; but at whatever length it may be used there is no baseboard projecting beyond the end of it, and the focussing screen is always in the most convenient and accessible position, namely, at the end of the bench, where the worker can be comfortably seated; also the firm support of the massive wooden block is always immediately beneath it, conferring the greatest possible solidity and freedom from vibration.

A door is provided at the side of the camera for the examination and adjustment of the image *in situ*, when a white card is substituted for the ground glass or other screen.

If it should be necessary—though in practice it very seldom is—to look down the microscope when it is in position, the camera can readily be drawn backwards altogether out of the way of the observer's head; and it will be seen that the whole camera can in a moment be entirely removed, and the microscope used, if so desired, for screen projection.

I have found that the secret of avoiding vibration is to clamp down nothing, but to let everything rest by its own weight on as large a surface as possible. To increase this effect, and to bring the apparatus into firm and intimate contact with the bench (and also to help to absorb vibration), it has underneath it a layer of sheet cork one-eighth of an inch thick, below which is another layer of felt also one-eighth of an inch thick. On these it rests with great firmness, and at the same time slides easily enough when pushed.

At the end of the baseboard next the camera is a triangular plate of brass, having three holes, into which the round feet of the microscope (Watson's H Edinburgh stand) accurately fit, the feet passing completely through the holes and resting on the board beneath, which is here covered with cloth. At the three angles of the plate are three milled screws, passing through holes which (when the screws are unclamped) are large enough to allow about a quarter of an inch of free movement in each direction. When the microscope is first put down these screws are released, and the microscope shifted until it is found to be exactly centred. The screws are then firmly clamped and are never again touched. The microscope can now be instantly put down in an accurately central position into the holes which receive the feet, and as easily taken up again. This enables the microscope used for ordinary observation to be employed for photography with as much ease and accuracy as the permanently fixed instrument found in some arrangements.

The small model instrument is preferred, not only because it is lighter and more convenient to move about, but also because its

* Read before the Royal Microscopical Society, December, 1897.

optic axis when in the horizontal position is lower; thus the optic axis of the whole apparatus, and consequently its centre of gravity, is lower, and its stability and freedom from tremor the greatest possible. The small, light body-tube also confers a greater sensitiveness on the fine adjustment than can be obtained in the full-sized instrument; and it will be shown farther on how the small tube may be used without any danger of flare from internal reflection.

The "turn out" device is dispensed with as being unnecessary where the microscope is not fixed down. All adjustments are easily made, with the powerful illumination provided, by projecting the image on to a screen of white card.

The front of the camera has sliding movements in both directions, by which the connecting flange can be once for all adjusted to exactly meet the eye-piece of the microscope. Behind it is the usual flap shutter for making the exposures, worked by a large milled head outside the camera.

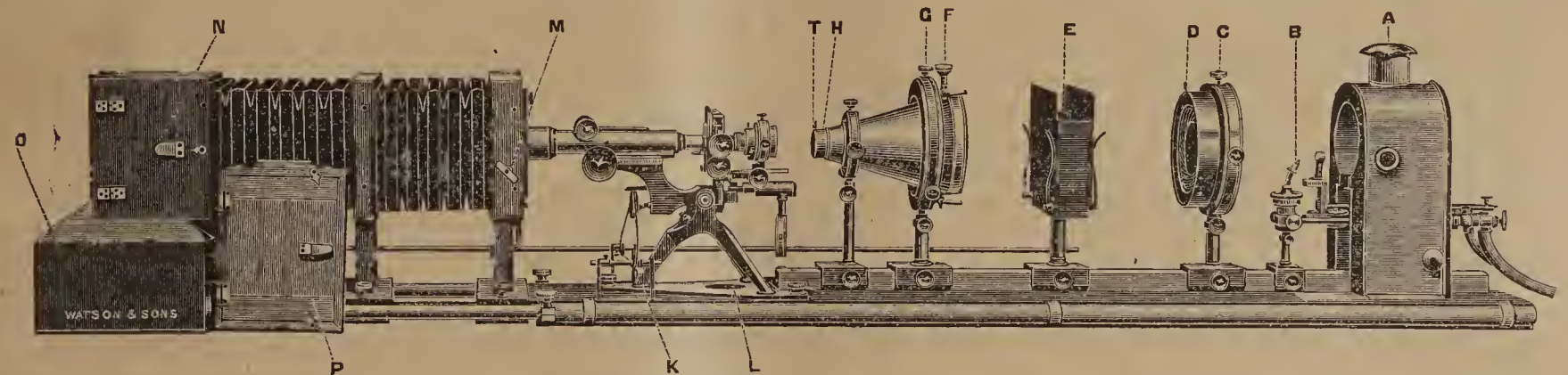
The focussing arrangement adopted is the one in which an endless cord passes over the fine adjustment screw and round two other pulleys below and on each side of it, by which any lateral drag on the microscope is altogether avoided. These pulleys can be changed

sity, and of that slight divergence which is best suited to working of the substage condenser.

The working of the whole system is as follows:—The light from the jet is first parallelised by the doublet condenser, which consists of two plano-convex lenses having their plane sides turned towards the radiant, the one next the radiant being a quarter of an inch less in diameter than the other, and the focal length of the combination being $2\frac{3}{4}$ inches, taking up an angle of 70° .

The parallel beam passes across an interval of about 10 inches, through the screen or trough of coloured solution carried by the intervening support, and enters the plano-convex lens $4\frac{1}{4}$ inches in diameter (having its convexity turned the other way to minimise the aberrations), by which it is converted into a converging cone. This, after passing through the water in the chamber between the lenses, is again parallelised by the much smaller plano-concave lens, and emerges from it as a parallel or, more strictly speaking, a slightly divergent pencil rather less than an inch in diameter, and enters the substage condenser. The plano-concave lens is of highly dispersive glass, and perfectly achromatises the whole system.

The converging arrangement is clamped at such a distance



B Oxyhydrogen jet with zirconium cylinder, covered by the cowl A when working. C Doublet parallelising condenser, with centring screws. D Iris diaphragm. E Holder for trough and light-filtering media. F Plano-convex $4\frac{1}{4}$ in. diameter, with centring screws G. H Plano-concave lens, with iris diaphragm T. K Connecting pulleys between focussing rod of camera and fine adjustment of microscope. L Triangular frame in which microscope feet are placed. M Flap shutter. N Door through which image is observed on card screen, etc. O Solid block of mahogany on which camera body is fixed and supported. P Dark slide.

and used of various sizes, those for high-power work being as small as it is possible to make them, so that a very slow movement is easily obtained. The focussing rod passes through the block at the end of the camera and terminates in a large milled head, which, whatever length of camera may be in use, is always close to the focussing screen and the left hand of the worker.

In extending or closing up the camera there is only one screw to be released, namely, the small one which clamps the focussing pulley on to the focussing rod. The clamping screws on the ends of the lateral tubes, and those on the bellows supports, are adjusted to a convenient tightness and not afterwards touched.

The condensing system, the oxyhydrogen jet, and a small lantern of sheet iron are all carried on the optical bench, which I have found it a great improvement to make square in section instead of prismatic, as has been usual heretofore. With the condensing system many difficulties were at first experienced, until Mr. E. M. Nelson very kindly interested himself in the matter, and computed a new set of condensers, following the same general plan as I had done, but making them larger ($4\frac{1}{4}$ inches in diameter) and employing the new Jena glasses. These, after one or two final alterations, proved entirely successful, and the result (the perfection of which is due to Mr. Nelson's optical knowledge and skill) is an illuminating system perfectly achromatised, and almost perfectly aplanatic, and, moreover, of much greater power than has hitherto been available, affording a beam of great inten-

from the substage condenser as to throw a spot of light rather larger than the opening in the condenser diaphragm. The smaller the radiant point, or the larger the opening in the diaphragm, the greater this distance should be. The best average distance is about $2\frac{1}{2}$ inches from the substage ring, as it stands at present. This also allows ample room for putting down and taking up the microscope and for using the mirror when the microscope is in place, if it should be necessary to do so. For "dark ground" work, or in using the Lieberkühn, the small iris may be removed and the nose of the converging system slid right up into the substage ring, so that there is no loss of light whatever.

The small weighted cone regulator, attached either to the main or to a tube of compressed hydrogen, supplies gas to the "mixed" jet (which has a much smaller nipple than usual) at a pressure of 2 inches of water; so that, with the hydrogen tap full open, the light is always of the same power, and exposures may be timed with certainty. The oxygen is better taken at a higher pressure direct from a tube having only the usual spring regulator, and controlled by the screw tap of the jet; but it is as well that the spring should be a weak one. The zirconia cylinder which is used, with the jet directed on to the end of it, gives an incandescent point almost as small as the electric arc, and is at the same time much more manageable and in every way superior to lime for the present purpose. With it the beam emerging from the first combination is almost perfectly

parallel. If a larger radiant, such as a lamp flame or Welsbach burner be used, it is much better to bring up the back combination as near to the other as the intervening support will allow.

It will be noticed that not only is the emergent beam entirely robbed of its heat by passing through so large a depth of water, but the jet is, in virtue of the whole arrangement, removed to so great a distance from the microscope that there can be no indirect communication of heat such as might affect the focal adjustment in high-power work. The illumination is also of such power that very deep and approximately monochromatic screens may be used, with moderate exposures; and excellent work may thus easily be done with objectives which are not apochromatic.

The device of the parallelising plano-concave lens is, of course, originally due to Kingsley, who first employed it in a microscope for screen projection about the middle of the present century, and it has since been used by Mr. Lewis Wright in his oxyhydrogen lantern microscope, now so well known.

The large iris in front of the combination next the light is an important feature. By it the substage condenser is focussed and centred, and when it is shut down to the right extent it will be found (besides rendering the whole system perfectly aplanatic) to entirely cut off that surplus light, which when reflected from the inside of the microscope tube and objective mount causes so much trouble and so many failures in photo micrography. So that it is no longer necessary to use a specially large tube, and the small tube with the greater sensitiveness it confers upon the fine focal adjustment can be retained. If no light whatever is to strike the sides of the tube (though a little does not of course matter) the diaphragm of the substage condenser must not be opened beyond its full aplanatic aperture.

There is besides a small iris beyond the plano-concave parallelising lens which cuts off any remaining stray light, and is also used for centreing.

The whole system is provided with centreing screws, and it, like the microscope, is centred once for all and never again touched. The only adjustment that has to be made with each fresh exposure is the centreing of the light itself (which is for this purpose provided with very sensitive centreing screws) and the adjustment of its distance from the condensers, which will be found to vary a little when different objectives and substage condensers are used. The small sheet-iron lantern slides in grooves on each side of the optical bench, and when slid backwards gives easy access to these screws.

Finally, it must be said that to employ this illuminating arrangement to the greatest advantage it is necessary that the substage condenser be proportioned in power as well as in aperture to the objective. The more nearly the power of the substage condenser approaches that of the objective, the wider can the large iris be opened, and the greater is the intensity of the illumination; but it is the intensity alone which is affected, the aperture of the substage condenser, whatever it may be, remaining unaltered. The best results appear to be obtained when the condenser is about one half the power of the objective.

If this proportion be pretty closely maintained, and the other conditions are fairly equal, as is often the case in the general run of work, the exposure varies but little with varying magnifications, averaging about two seconds with a light yellow screen and a plate of medium rapidity.

The apparatus was made for me by Messrs. Watson in the summer of 1896, and I must, in concluding, express my thanks to them for the care and thoroughness with which they have carried out my design.

EXAMINATION OF POWDERED VEGETABLE DRUGS.*

BY HENRY KRÆMER.

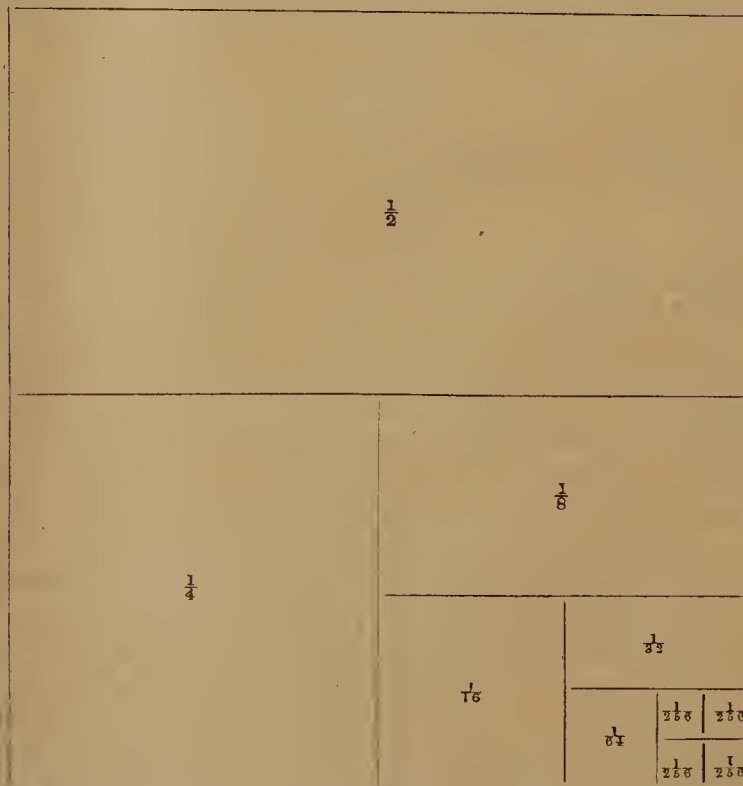
QUANTITATIVE EXAMINATION.

In a paper presented to the A. Ph. A. in 1894, a preliminary notice of a method for securing approximate quantitative results of the examination of a powder by means of the microscope was given. After a few years of deliberation and some practice the principles of the process are somewhat more satisfactorily developed and the results will be given. Since 1894 the results of several workers—Day ('A. Ph. A. Proc.', 1896) and Kebler ('Amer. Journ. Pharm.', 1897, p. 244), as well as the labours of some students during the past year, indicate that the principle of the process suggested is satisfactory, whatever the modifications recommended. The following are the important points embracing the principles of the process as developed thus far:—

(1) The same reagents and mounting media are employed in doing quantitative work as were considered in the qualitative examination of the powder. In quantitative work, not only some, but all of the important characteristic tissues and contents are to be rendered visible.

(2) The quantity of powder to be examined by means of the microscope must represent the sample in every particular; in other words, the sampling must be done properly and in accordance with the methods used in the assay of ores. While the quantity to be examined may consist of but a few grammes, it must thoroughly represent the lot of powder on which value is to be given.

(3) The standard powders, with which the powder under investigation is to be compared, must thoroughly represent the drug in the various ways in which it may be treated. The degree of fineness must especially be carefully borne in mind. A sample of a drug of No. 40 powder cannot be compared with one of No. 60. If the sample of a drug to be examined is of a No. 40 powder, the standards must also be of the same degree of fineness. If extraction of active principles is suspected in the powder it must be



$\frac{1}{2}$ = 0.500 gramme; $\frac{1}{4}$ = 0.250 gramme; $\frac{1}{8}$ th = 0.125 gramme; $\frac{1}{16}$ th = 0.0625 gramme; $\frac{1}{32}$ th = 0.03125 gramme; $\frac{1}{128}$ th = 0.0078 gramme; $\frac{1}{256}$ th = 0.0039 gramme.

* From the *American Journal of Pharmacy*. For remarks on qualitative examination see last week's Journal, p. 592. Concluded from last vol., p. 592.

compared with a standard that has been extracted. In fact, every treatment that is possible in a sample to be analysed must be given to a standard, if possible, with which the comparison is made.

(4) The amount of powder used in the examination is generally about 1/256th gramme (= 0.0039 gramme = 0.06 grain). In some cases twice this quantity (1/128th gramme), or but one-half this amount (1/512th gramme) may be used to greater advantage. The quantity of powder may be weighed out, or, what is more convenient, with practice a gramme is weighed out and divided with a spatula with the eye, as follows:—

(5) The cover-glasses used, whether round or square, should be uniform in size and thickness for comparison of the mounts of the standard with those of the specimen to be tested.

(6) The amount of reagent employed in making a mount must be just sufficient to float the cover-glass, and as few air-bubbles as possible are permitted to be formed.

(7) A homogeneous mixture of powder with reagent must be formed before the cover-glass is put down. This is best done by taking the edge of the cover-glass in a pair of forceps and distributing the powder in the mounting media or reagent.

(8) After the mount has been made and the powder examined previously qualitatively, the quantitative estimation of the powder is determined. This is based on one or more of the structures or constituents that are characteristic of the drug or drugs that may be present. A few examples may be given:—

In cinchona, the bast fibres are best selected.

In quillaja, the monoclinic calcium oxalate crystals are most characteristic.

In *Belladonna folia*, the pieces of tissues, with some cells containing the characteristic grayish sand-like crystals of calcium oxalate, are selected.

In *Hyoscyami folia*, the pieces of tissues, with some cells containing the characteristic cubical or tetragonal crystals of calcium oxalate, are used.

In *Stramonii folia*, the pieces of tissues, with some cells containing the characteristic "rosette-shaped" crystals of calcium oxalate, are most characteristic.

In zingiber, the estimation is based on the starch grains, or better, the oil-secreting cells.

In scilla, the number of cells with groups of acicular crystals are best selected.

In *Belladonna radix*, the starch grains are most easily used, but it must be borne in mind that there are several kinds of belladonna root in the market.

In nux vomica, the lignified hairs are most characteristic.

In rheum, the large "rosette-shaped" crystals of calcium oxalate are best selected.

In caryophyllus, the oil-secreting reservoirs are used.

In cinnamomum, the groups of stone cells or starch grains are characteristic, taken in connection with the presence or absence of cork cells.

In sarsaparilla, the starch grains are considered after the kind of root has been ascertained.

In glycyrrhiza, the characteristic fibres with calcium oxalate crystals adjoining them, or the starch grains, are employed.

(9) The method consists in counting the number of characteristic elements in several portions of the slide, and may be performed in several ways:—

(a) By the use of an ocular micrometer ruled in 100 square millimetres, as proposed in 1894. Five portions, at least, of the mount are examined, as in the places marked X (Fig. 2).

The number of characteristic elements that appear in each of these places in certain portions of the ocular micrometer are

counted, as, for instance, those that appear in the square millimetres marked X (Fig. 3).

The low power ($\frac{1}{2}$ to $\frac{2}{3}$ -inch objective) is used in some cases, as in the estimation of rheum, scilla, etc.; but in most instances, especially when starch grains are to be counted, a higher power ($\frac{1}{4}$ to $\frac{1}{3}$ -inch objective) is preferred, as in *Belladonna radix* zingiber, etc.

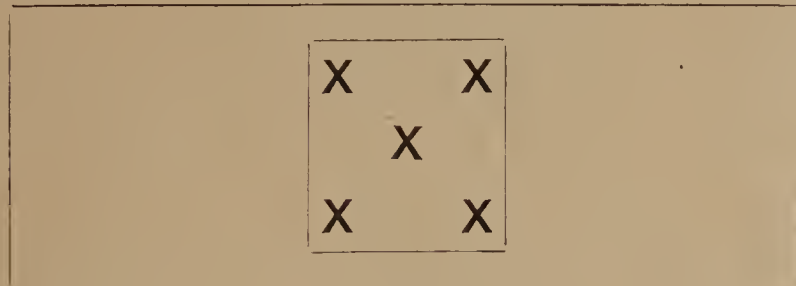


FIG. 2.

(b) While these ocular micrometers ruled in square millimetre are easily made, still the makers of microscopical accessories charge such a very high price for the same that it has been found desirable to devise another way for doing the same kind of work. An ordinary ocular micrometer divided into tenths of millimetres is taken, and the number of elements between the outer portions, ruled to a less number of divisions (as those marked X, Fig. 4), are counted.

It is better, when using this ocular micrometer, to turn the latter around 180° after counting in the one direction, and counting again. In other words, an additional count is made, i.e., ten are made upon each mount.

(c) There are some cases where it is not desirable to use either (a) or (b), as when the elements or tissues are so large that it is more practicable to exclude the ocular micrometers, and to count all of the tissues or constituents as they appear in the whole field of view of X in Fig. 1.

The low power ($\frac{2}{3}$ to $\frac{1}{2}$ inch) may be used sometimes, as in the estimation of cinchona, quillaja, glycyrrhiza, etc., while in other

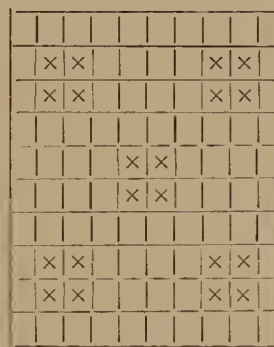


FIG. 3.

drugs, such as *Hyoscyami folia*, *Belladonna folia*, etc., a higher power ($\frac{1}{4}$ to $\frac{1}{3}$) is used.

(10) The number of mounts to be made of the standard and the powder under examination should generally not be less than twelve each. But as two to three mounts can be made upon the same slide, from four to six slides only are necessary for each powder.

(11) If the powder is found to be a mixture, a similar compound, representing the proportions found, should be made up, and the powder under investigation be compared with it.

(12) It is apparent that the quantitative results are purely comparisons of an unknown with a known powder. The conditions must be nearly the same in both. The sampling must be done similarly; the same amount of powder must be used in both, and no more reagent or mounting media should be used than is neces-

sary to hold the cover-glass without any air being impinged. The same microscope and powers, as well as other conditions, must be employed to secure even approximate results, as this is all that can be expected at present.

It would be useless for the author to record some of his standards and results; but it no doubt will be profitable to give the records



FIG. 4.

of one or two instances where a number have worked upon the same powder.

STANDARD OF NUX VOMICA.

No.	Hairs.
1. Mean of 10 readings	12
2. " 8 "	12½
3. " 10 "	10·9

A sample of cinchona, that contained 75 per cent. of cinchona and 25 per cent. of wheat starch, was assayed by the process given under 9 (b) for starch and 9 (c) for bast fibres, and gave the following results to nine different workers:

No.	Cinchona. Per cent.	Starch. Per cent.
1. Mean of 20 readings	74	23
2. " 10 "	67	—
3. " 20 "	82	25
4. " 12 "	77	28
5. " 16 "	66	35
6. " 12 "	77	27
7. " 11 "	69	23
8. " 20 "	80	30
9. " 28 "	75	22
Total " 149 "	74·11	26·66

Conclusion.—We need more effective work in the qualitative study of powdered drugs, and we have some recent evidences that this will be done in this country.

Approximate quantitative results may be obtained in the examination of unknown powders by the methods given. There are some cases, at least, where the quantitative determinations of admixtures and adulterations, if they are to be determined at all, can be done so only by means of a microscopical method.

It is possible that a microscopical separation of active principles may be effected of both drugs as well as their preparations. This would be the desideratum in quantitative microscopical work. Thus far the work of the author has been unsatisfactory in this direction, because, while at times results come, still the products disappear as quickly, owing no doubt to microscopic conditions of heat and moisture altering the products formed.

DETERMINATION OF SUGAR.—Reigler (*Zeit. Anal. Ch.*) proposes a new volumetric method for estimating sugars that reduce Fehling solution. The strength of the copper solution is determined by adding KI and a little conc. H_2SO_4 , and titrating the iodine liberated by means of hyposulphite. After adding a certain volume of the saccharine solution to a known quantity of the copper solution, the liquid is filtered and the precipitate washed. The CuO in the filtered liquid is estimated as before, and accurate results may be obtained. The author gives the following details of the solutions employed:—Take 10 C.c. copper solution ($CuSO_4$, $5H_2O$ 34·64 grms. in 500 C.c. H_2O); 10 C.c. tartarated soda solution (173 grms. in 500 C.c. H_2O); 2 C.c. conc., H_2SO_4 ; 30 C.c. H_2O ; 10 C.c. of the saccharine solution, which must not contain more than 1 per cent. of sugar; and lastly 1 gramme KI.—*Bull. de la Soc. Chim. de Paris* [3], xix.-xx., No. 11., 493.

MAKING AND FILLING SOFT GELATIN CAPSULES.

BY FRANK EDEL, DES MOINES, IA.

Some months ago I noticed an article on laboratory notes, in which the writer stated that his experience with the soft empty capsules of the market had not been favourable. The experience of this writer was so different from my own that I could but attribute his lack of success to nothing else than faulty manipulation in closing them. I have succeeded very well with this operation, but I always used extreme care not to get any oily substance on the edges of the capsules, closing them with a blunt glass rod containing a drop of the following gelatin mass:—

Mass for Closing Capsules.	
Gelatin	25 parts.
Glycerin	10 "
Sugar	8 "
Water	45 "

Soak the gelatin in the water, add the sugar and glycerin, then dissolve on a water-bath.

When I first tried to do this work I did not succeed as well as later, owing to the fact that I used the gelatin solution too hot. I found from experiment that a temperature of 120° F. was about right, and never after had any more trouble on this score.

Later I took it into my head that it would not be a difficult matter to make the capsules myself, but for a time I could get no satisfactory moulds. The first moulds I used were made of wood, shellaced well to make them smooth. Subsequently I secured moulds made of tin (manufactured in Germany), and with these I had not the slightest difficulty, after a little practice, in making nice capsules in the winter time; in the summer I found, however, that it was necessary to have some means of hastening the hardening of the gelatin. To obviate this latter trouble I rigged up a rotary fan, working with a foot pedal, which worked satisfactorily.

The moulds should be rubbed with a soft cloth holding enough olive oil so as to leave just a trace of oil on them, the rubbing being some distance up the supporting rod. The gelatin mass having been melted and of a temperature of about 110 degrees, the mould is dipped in and slowly withdrawn, and then rotated so as to distribute the gelatin coat evenly, and when it begins to harden set in a frame in a current of air. As soon as they have become sufficiently firm, the capsules are cautiously removed from the moulds, and then the rough ends cut off by clipping with a pair of shears. The capsules may then be set aside in a suitable frame until perfectly cool, when they are ready to fill.

The mass given above works very nicely, but may be modified to suit individual preferences. If it is desired to make hard capsules, the glycerin must be omitted. I have found the following recommended in a foreign exchange, very satisfactory:—

Mass for Hard Capsules.	
Gelatin	6 oz.
Acacia	1 oz.
Sugar	1 oz.
Water	5 oz.

Dissolve the acacia in the water; in this soften the gelatin, then add the sugar and heat on a water-bath until solution is effected; remove any scum that arises and use as directed for soft capsules. Hard capsules are not used as largely as they formerly were, the soft capsule taking preference, but they are made in the same manner.—*Western Druggist*.

EXTRACT OF NASAL GLANDS.—This organic preparation is obtained, according to Jacquet, by macerating the pituitary membrane of the sheep in 0·4 per cent. resorcin water for 24 hours at a temperature of 65° C. The solution is then filtered and the filtrate again heated for 24 hours to a temperature of 65° C.—*Pharm. Centr.*, xxxviii., 678.

PHARMACEUTICAL SOCIETY.

NORTH BRITISH BRANCH.

A meeting of the Executive of the North British Branch was held in the Society's House, 36, York Place, Edinburgh, on Friday, June 24, 1898, at 11 a.m., Mr. J. LAIDLAW EWING in the chair.

Present: Messrs. Ayre, Boa, Bowman, Coull, Currie, Ewing, Fisher, Henry, Johnston, Kermath, Kerr, McLaren, Moir, Storrar, and Strachan.

Apologies for absence were intimated from Messrs. Johnston, Hardie, McAdam, and Mitchell.

The minute of the meeting for election of the executive was read.

Mr. STORRAR moved that Mr. J. Laidlaw Ewing, Edinburgh, be elected Chairman for the ensuing year.

Mr. CURRIE seconded the motion, and it was unanimously agreed to.

Mr. EWING, in accepting, said he had fully made up his mind to retire this year, but he had yielded to the representations made to him and would willingly do service for another year.

Mr. KERMATH moved that Mr. W. L. Currie, Glasgow, be elected Vice-Chairman for the ensuing year.

Mr. FISHER seconded the motion, and it was unanimously agreed to.

Mr. CURRIE, in accepting, said at last meeting he had felt it might be necessary for him to retire from the Executive altogether, but he was glad to say his health was much better than it had been and he would be pleased to serve for another term.

The CHAIRMAN then formally welcomed the new members, Mr. Boa, who had already done good service, and Mr. Ayre, Perth, whom they were glad to welcome for the first time.

Mr. AYRE returned thanks.

Mr. KERR moved:—

That the Chairman, Vice-Chairman, and resident members of the Executive be appointed a General Purposes Committee to attend any business arising between meetings of Executive or remitted to them by the Executive.

The motion was seconded by Mr. STRACHAN and unanimously agreed to.

The Executive went into Committee to consider the nomination of examiners. On resuming, Mr. FISHER moved:—

That the Chairman and Vice-Chairman, and Messrs. Bowman, Kermath, Kerr, Storrar, and Strachan, be appointed a Committee for nomination of Examiners, and to consider any names that may be submitted to them, and to report to a meeting of Executive to be held prior to the meeting of Council in November.

The motion was seconded by Mr. MOIR, and unanimously agreed to.

The evening meeting arrangements were considered in Committee and remitted to the General Purposes Committee.

A detailed plan and estimate, amounting to about £80, for ventilating the hall and laboratories by means of Blackman fans and electric motors, was considered and remitted to the General Purposes Committee with powers; it being understood that only a portion of the scheme would be carried out in the first instance.

The Chairman and Vice-Chairman, and Messrs. Bowman, Coull, Fisher, Kerr, McLaren, and Moir were appointed delegates to the Belfast meeting of the British Pharmaceutical Conference in August.

On the suggestion of Mr. MOIR it was agreed that meetings of Executive in future should be held at 11.30 a.m. instead of 11.

The meeting then closed.

SCHOOL OF PHARMACY PRIZE EXAMINATION QUESTIONS.

A Paper.

PHARMACY (PRACTICAL DISPENSING). PROFESSOR GREENISH.

Monday, June 27.—From 10 to 1.

Dispense the following prescriptions, labelling, wrapping, and addressing each, writing your own name on both label and wrapper:—

1. Potass. Bromid. gr. ij.
- Ext. Bellad. gr. ½.
- Ol. Theobrom. ℥ss.
- Fiat supposit. Mitte vi.
2. Argenti Oxid. gr. iij.
- Ext. Bellad. gr. iij.
- Ft. pil. xij. Varnish.

3. Ol. Menth. Pip. gtt. j.
- Ft. pulv. Mitte vi.
4. Paraff. Liquid. ℥ij.
- Tinct. Opii ℥xxiv.
- Antim. Tart. gr. ½.
- Aq. Ad. ℥iv.
- Ft. mist. Sig. "The Emulsion."

B Paper.

PHARMACY (PRACTICAL DISPENSING).

PROFESSOR GREENISH.

Wednesday, June 29.—From 10 to 1.

Dispense the following prescriptions, labelling, wrapping, and addressing each, and writing your name on both label and wrapper:—

1. Hydrargyri. gr. i.
- Ol. Theobrom. ℥ss.
- Ft. supposit. Mitte vi.
2. Ol. Carui. gtt. ½.
- Ferri Sulph. gr. ¼.
- Strychnin. gr. ⅓.
- Aloin. gr. ½.
- Pulv. Pip. Nig. gr. i.
- Ft. pil. i. Mitte xii. Take one three times a day.
3. Nitro-glycerin. gr. ʒss.
- Ft. pulv. Mitte vi.
4. Ol. Theobrom. ℥ii.
- Resin. Scamm. gr. xxxii.
- Aq. ad ℥iv.
- Ft. mist. Sig. "The Emulsion."

PHARMACY.

PROFESSOR GREENISH.

Monday, June 27.—From 2 to 5.

1. Describe the apparatus required for the operation of dialysis. How is the operation performed? What is its object? Under what circumstances is the operation likely to be successful or the reverse?
2. What means are at the disposal of the pharmacist for aiding solution? Give instances and exceptions.
3. What characters should a good pill mass possess? What excipient would you select for a volatile oil, carbonic acid, powdered digitalis leaves, sulphonal, extract of aloes, phosphorus, potassium iodide, calomel, ammoniacum? For what class of drugs would you employ syrup, mucilage, powdered tragacanth, marshmallow root, liquorice root?
4. Describe and discuss the processes given in the British Pharmacopœia of 1885 for the preparation of Decoctum Sarzæ Compositum, Syrupus Ferri Iodidi, Syrupus Papaveris, Extractum Stramonii, Extractum Ergotæ liquidum.

BOTANY.

PROFESSOR REYNOLDS GREEN.

Tuesday, June 28.—From 2 to 5.

[Not more than Four Questions are to be answered.]

1. Give an account of the gaseous interchanges between a plant and the atmosphere in which carbon is involved. Point out in what particulars they are of importance to the plant.
2. What do we mean by *cohesion* and *adhesion* respectively as applied to floral structures? Explain how they are brought about and illustrate your answer by reference to an inferior ovary.
3. Give an account of the arrangement of the tissues in the petiole of a foliage leaf, and show how they are continuous with those of the stem on the one hand and the lamina of the leaf on the other.
4. Describe the peculiar features of the fruits of the Umbelliferae and the Compositae.
5. What are gametangia? Describe two forms with which you are familiar.

PRACTICAL BOTANY.

PROFESSOR REYNOLDS GREEN.

Tuesday, June 28.—From 10 to 1.

1. Make a microscopic preparation to show the structure of A. Mount it in glycerin. Leave with it a lettered sketch calling attention to its distinctive features.
2. Identify and briefly describe the microscopic preparations B, C, D.
3. Comment on the morphology of E, F, G.

MATERIA MEDICA.

PROFESSOR HENRY G. GREENISH.

Wednesday, June 29.—From 2 to 5.

1. Write a short account of the Thyroid Gland.
2. Describe carefully the quilled bark obtained from *Cinchona succi rubra*, *C. calisaya*, *C. officinalis*, comparing them with regard to their appearance, alkaloidal constituents and medicinal value.
3. What drugs official in the British Pharmacopœia of 1885 were obtained from *Colechicum autumnale* and *Atropa Belladonna*? Describe them. To which should, in each case, preference be given for medicinal use, and why?
4. How is Galbanum obtained? By what characters would you identify it? What are its chief constituents?
5. In framing the official descriptions of various drugs, to what points should, in your opinion, particular attention be directed? How are the necessary data for such statements to be obtained?

The Sale of Poisons in Great Britain.

Precautions Required by the Pharmacy Act, 1868, to be Observed in Selling by Retail and in Dispensing.

POISONS.

All the Articles named or referred to in the following list, both in Part 1 and Part 2, are POISONS within the meaning of the Pharmacy Act, 1868.

SALE BY RETAIL.

I.—Relating to Part 1 and Part 2 of the List.

It is unlawful to sell any "POISON" by retail, unless the vessel, wrapper, or cover in which it is contained, be distinctly labelled with the name of the article, the word "Poison," and the name and address of the seller. This applies to all the articles in both Parts of the List.

II.—Relating to Part 1 only.

It is unlawful to sell, by retail, any poison included in PART 1 of the List, to any person unknown to the seller, unless introduced by some person known to the seller; and on every sale of any such article the seller shall, before delivery, make or cause to be made an entry in a book to be kept for that purpose, of—

1. The date of sale;
2. The name and address of the purchaser;
3. The name and quantity of the article sold; and
4. The purpose for which it is stated to be required;

to which the signature of the purchaser, and of the person, if any, who introduced him, shall be affixed. *The article must*

also be labelled with the name of the article, the word "Poison," and the name and address of the seller.

III.—Relating only to Arsenic and its Preparations.

It is unlawful to sell Arsenic or any of its preparations, unless, in addition to all the foregoing regulations, the following provisions of the Arsenic Act be also observed:—

1. That the poison, if colourless, be mixed with soot or indigo, so as to colour it.
2. That the person to whom the poison is sold or delivered be of mature age.
3. That the occupation, as well as the name and address, of the purchaser be entered in the poison-book.
4. That when the purchaser is not known to the seller, and is introduced by some person known to both, this person shall be present as a witness to the transaction, and shall enter his name and address in the poison-book.

DISPENSING.

None of the foregoing regulations apply to any article when forming part of the ingredients of any medicine dispensed by a Registered Chemist and Druggist; but it is necessary, if a medicine contain a poison included in Part 1 or Part 2 of the List, that the ingredients of the medicine, together with the name of the person to whom it is sold or delivered, be entered in a book kept for that purpose (*Prescription Book*), and that the name and address of the seller be attached to the medicine.

List of Poisons within the Meaning of the Act.

Part 1.

<p>Not to be sold unless the purchaser is known to, or is introduced by some person known to, the seller;</p> <p>ALSO</p> <p>Entry to be made in Poison-Book.</p> <p>OF</p> <ol style="list-style-type: none"> 1. Date of Sale; 2. Name and address of purchaser; 3. Name and quantity of article; 4. Purpose for which it is wanted; <p>attested by signature;</p> <p>AND</p> <p>Must be labelled with</p> <ol style="list-style-type: none"> 1. Name of article. 2. The word "Poison." 3. Name and address of seller. 	<p>Arsenic, and its preparations. (<i>For special regulations see page 39</i>);</p> <p>Aconite, and its preparations;</p> <p>Alkaloids:—All poisonous vegetable alkaloids and their salts;</p> <p>Atropine, and its preparations;</p> <p>Cantharides;</p> <p>Corrosive Sublimate;</p> <p>Cyanide of Potassium, and all metallic cyanides and their preparations;</p> <p>Emetic Tartar;</p> <p>Ergot of Rye, and its preparations;</p> <p>Prussic Acid, and its preparations;</p> <p>Savin, and its oil;</p> <p>Strychnine, and its preparations;</p> <p>Vermin Killers, if preparations of poisons the preparations of which are in Part 1 of this schedule.</p>
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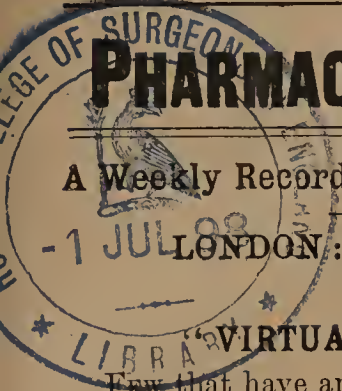
Part 2.

<p>Must be labelled with</p> <ol style="list-style-type: none"> 1. Name of Article. 2. The word "Poison." 3. Name and address of seller. 	<p>Almonds, Essential Oil of (<i>unless deprived of Prussic Acid</i>);</p> <p>Belladonna, and its preparations;</p> <p>Cantharides, Tincture and all vesicating liquid preparations of;</p> <p>Chloroform;</p> <p>Chloral Hydrate, and its preparations;</p> <p>Corrosive Sublimate, preparations of;</p> <p>Morphine, Preparations of;</p> <p>Nux Vomica, and its preparations;</p> <p>Opium, and its preparations; and preparations of Poppies;</p> <p>Oxalic Acid;</p> <p>Precipitate, Red (Red Oxide of Mercury);</p> <p>Precipitate, White (Ammoniated Mercury);</p> <p>Vermin Killers (see Part 1). Compounds containing "Poisons," prepared for the destruction of vermin, if not subject to the provisions of Part 1 are in Part 2.</p>
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Recommendations by the Pharmaceutical Society of Great Britain for the Keeping, Dispensing, and Selling of Poisons.

(Adopted at a General Meeting of the Society, May 17, 1871.)

1. That in the keeping of Poisons each bottle, vessel, box, or package containing a poison be labelled with the name of the article, and also with some distinctive mark indicating that it contains poison.
2. Also that in the keeping of poisons, each poison be kept on one or other of the following systems, viz. :—
 - (a) In a bottle or vessel tied over, capped, locked, or otherwise secured in a manner different from that in which bottles or vessels containing ordinary articles are secured in the same warehouse, shop, or dispensary; or
 - (b) In a bottle or vessel rendered distinguishable by touch from the bottles or vessels in which ordinary articles are kept in the same warehouse, shop, or dispensary; or
 - (c) In a bottle, vessel, box, or package kept in a room or cupboard set apart for dangerous articles.
3. That in the dispensing and selling of poisons all liniments, embrocations, and lotions containing poison be sent out in bottles rendered distinguishable by touch from ordinary medicine bottles, and that there also be affixed to each such bottle (in addition to the name of the article, and to any particular instructions for its use) a label giving notice that the contents of the bottle are not to be taken internally.



PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences

LONDON: SATURDAY, JULY 2, 1898.

"VIRTUALLY A TRADE MONOPOLY."

Few that have any practical acquaintance with the working of the Pharmacy Act, 1868, will entertain any doubt that, as a means of regulating the practice of pharmacy, the provisions of that Act are in many respects imperfect and clumsy. But, at the same time, it must be conceded that, notwithstanding its manifold incongruities, the Act has proved to be useful in regard to the object which was paramount with the Legislature at the time it was passed—the protection of the public against the dangers of indiscriminate sale of poisons. Under the torture of judicial construction the Act has, in some respects, acquired a significance that has been considered different from, or even directly opposed to, the original intention of the Legislature and, consequently, more or less unsatisfactory to parties adversely affected by it. But on the whole the experience of more than thirty years has shown that the administration of the Act has been conducive to the public welfare. It has been the means of establishing, on the basis of certified competent knowledge and under control of the Privy Council, a legal qualification for carrying on the business of a chemist and druggist; it has been successful in the endeavour to enforce the safeguard of individual qualification of sellers of poisons, observance of which the Act declares to be imperatively necessary for public safety; it has also been equally successful in repressing the sale of poisons under the dangerous disguise of secret proprietary articles or "patent medicines," a practice which was, some years ago, matter of strong condemnation by all who were aware of the mischievous results of that practice. In securing these results by the administration of the Pharmacy Act, the main consideration that has led to success has been the safety of the public. Charges have been made that the administration of the Act operates unfairly in restraint of trade; but charges to that effect have hitherto proceeded only from persons infringing or endeavouring to evade the provisions of the Act: they have therefore been of little account except as creating some undue prejudice against its administrators, for if persons registered under the Act have also been to some extent benefited by the restriction the Act imposes upon the sale of scheduled articles, that result has been altogether subsidiary to the attainment of the main object of public security against poison. There is, therefore, no ground whatever for regarding the restricted sale of poisons, within the meaning of the Act, as partaking in any sense of the nature of a monopoly. But within the last week countenance has apparently been given to this view of the restricted sale of poison by a remark of the Lord President of the Council, when moving the second reading of the Poisonous Substances Bill in the House of Lords. The remark quoted at the head of this article, coming from the head of the department which controls the administration of the Pharmacy Act in the public interest, will be noted with considerable surprise by members of the pharmaceutical body.

Considering the nature and object of the Bill which is now before the House of Lords, it may be that the DUKE OF DEVONSHIRE'S remark was not retrospective, but intended to apply only to the trade in articles to which that Bill relates. That constitutes one of the difficulties which have arisen in connection with the Pharmacy Act. The attempt to deal with it according to the provisions of the Act has been a marked illustration that even a sound principle requires to be suitably applied in order to be useful. The dangerous nature of oil of vitriol and the other mineral acids is sufficiently patent to make the exercise of care in the handling of those articles indispensably necessary and, in the case of carbolic acid—which has, from a trade point of view, come into existence since the Pharmacy Act was passed—this necessity has been rendered especially conspicuous by the continual records of fatalities caused by that article. Many years ago the attention of the Council of the Pharmaceutical Society was directed to the danger with which the unregulated sale of these articles was attended: in accordance with its function under the Pharmacy Act, their addition to the Schedule of Poisons was therefore recommended. But the excellent principle that the vendor of poisons requires to be a person of education and certified technical skill was not accepted by the Privy Council as the only point for consideration in approving the suggested additions to the Poison Schedule. Regard for the corresponding inconvenience that might result from such restriction of the sale of these articles, has had such preponderating influence that the efforts of the Council of the Pharmaceutical Society to carry out the provisions of the Pharmacy Act in that respect have consequently been ineffectual.

The Bill now introduced—in tardy response to the very urgent representations that have been made on the subject by medical men, coroners' juries, etc.—is an attempt to remedy the assumed inapplicability of the Pharmacy Act to regulate trade in articles that are a source of danger to the public. But the attempt to meet this public demand is made in such a manner as to involve apparent repudiation of the principle that the seller of poisons should be educated and skilful: at least it suggests that this principle is not applicable to trade as it is in dealing with poisons used as medicine. Possibly the DUKE OF DEVONSHIRE'S mention of trade monopoly may have been intended only to refer to what he considers might be the effect of adding the articles in question to the Poison Schedule of the Pharmacy Act. But before that view can be accepted as conclusive there appears to be need of evidence that it is well founded: very sufficient reasons should be given for departing from the recognised principle of the Pharmacy Act in regard to a matter for which it affords ample provision. The calling of a chemist and druggist has hitherto been barred to all who did not conform to the demand made in the interest of the public for proof of qualification. The entire body of registered chemists will therefore be justified in taking exception to a proposal which practically throws discredit upon the principle on which the business of chemists and druggists has been carried on for the past thirty years under the control of the Privy Council. Indications are already given of a tendency in this direction, but as the subject will certainly be considered by the Pharmaceutical Council as well as by provincial associations, discussion in this place is not desirable at present, except for the purpose of drawing attention to the salient points of the question raised.

ANNOTATIONS.

THE INCOMPETENCE OF THE NEWSPAPER PRESS to instruct the public on the subject of poisons and the statutory provisions intended for the prevention of accidents is again demonstrated by the *Bristol Times and Mirror* in an article which states that the duty of proposing additions to the Poison Schedule of the Pharmacy Act entrusted to the Council of the Pharmaceutical Society "has not been performed," so that by reason of this default in regard to carbolic acid and a considerable number of poisons in common use, and obtainable by any person without inquiry or formality of any kind, many deaths have been caused which would doubtless have been averted if the deadly agents had been more difficult to procure. Bristol city is scarcely the place where such stupid rubbish could find currency, and we trust that some local member of the Pharmaceutical Society will not fail to purge it of the reproach due to such an exhibition of ignorance by enabling the *Mirror* to reflect the facts of the case with less grotesque distortion. Another note on the same subject in the *Universe* is too obscure to be intelligible, except in regard to the astonishment expressed that the Privy Council should have refused to add carbolic acid to the list of poisons included under the Pharmacy Act, and that the Duke of Devonshire's Bill proposes to allow any person to sell it and other poisonous substances. "Curious this" is indeed an appropriate comment of our contemporary.

THOUGH SCHEDULED POISONS are responsible for a large proportion of accidental deaths, it would be far from correct to assume that such a fact indicates any appreciable lack of efficiency in the regulations imposed by the Pharmacy Act, 1868. What those regulations are is shown at page 10, where a list of the scheduled poisons is also printed. In addition, the recommendations adopted by the Pharmaceutical Society twenty-seven years ago for the keeping, dispensing and selling of poisons, have been reprinted. The adoption of the procedure recommended is a voluntary matter, but it says very much for the public spirit of registered chemists that the suggested precautions as to storage, labelling, etc., are almost universally adopted by them, in one form or another, according as their business requirements permit. Moreover, similar precautions are already taken by chemists in respect of all the poisonous substances scheduled in the Privy Council's Bill, as well as many others not so scheduled. Despite the fact, therefore, that there is considerable variation in the manner in which the recommendations of the Society are interpreted, the fact remains that chemists as a class impose upon themselves regulations that go far beyond those required by the Statute, frequently beyond those recommended by the Society, and as a consequence scores, if not hundreds, of fatalities are thus prevented. Almost every reader of the Journal could instance one or more cases in which he has been able to prevent mishaps by interposing obstacles in the way of procuring scheduled poisons, whereas an exceedingly small number have ever been concerned in cases where death has been accidentally caused by such poisons. The list published annually by the Registrar-General must be largely discounted by the fact that scheduled poisons are extensively handled in hospitals and private practice by persons who are not registered chemists, and when due allowance is made for the deaths that occur under chloroform anæsthesia and as the result of mistakes made by nurses and other persons incompetent to deal with poisons, it is obviously unfair to charge chemists with laxity in carrying out the requirements of the law in this matter.

A CASE IN POINT has recently occurred at the Manchester Workhouse Hospital, where an inmate died after a dose of poison had been administered by a nurse in mistake. The practice in that Hospital is to keep all poisons in bottles of a particular type, which are stored in a special cupboard quite apart from other medicines, and the arrangements have worked so successfully that no accident of the kind reported had happened for some twelve years. But the best arranged plans are apt to fail, sooner or later, when machinery is depended upon rather than the qualification of individuals, and so the inevitable accident happened at last. According to the evidence of Miss Jackson, the nurse in charge of the case, the patient was in a state of collapse, and the medical officer ordered that she should be given a half-ounce dose of chloral-bromide solution. Witness thought she carried out this instruction, but half a minute after the dose had been taken she discovered that the bottle she had taken the dose from contained Battley's solution of opium. Questioned by the Coroner, the nurse said the medicine was taken out of a cupboard where the ordinary and poisonous medicines were stored together (*sic*). She at once informed the doctor of the mistake, and the stomach-pump was applied, but the patient became insensible, and though everything possible was done for her she died.

THE SUPERINTENDENT NURSE said the poison cupboard was always locked at night, but Battley's solution being frequently required, and Miss Jackson being a senior nurse, it was left in her care. The consulting physician at the workhouse, who also gave evidence, explained that Battley's solution was put apart from the other poisons during the night because much inconvenience would be caused if it were locked up. In that case the nurse would have to go in search of the night superintendent, and as the building was an immense one, she might be away for an hour from her patients in seeking the superintendent. The jury, in returning a verdict, agreed with the medical evidence, censured Nurse Jackson and the head nurse, as having been guilty of gross carelessness, and recommended that bottles containing poison should be kept solely in a particular cupboard, which should be in the charge of one person only. In the Registrar-General's report for 1898, the case will presumably be included under the head of accidental deaths by opium poisoning, but no clue will be afforded as to whether the poison was supplied by a chemist or not, and it is quite possible that the then Lord President of the Council may base an argument for imposing on chemists and druggists further restrictions with regard to the sale of poisons, on statistics drawn up by the Privy Council officials, and including this and other cases of accidental poisoning due to the carelessness of hospital nurses.

AN INTERESTING SPECIMEN has been sent for the Editor's inspection by Mr. Graham Bott, of Lewisham, in the form of a calceolarea grown in open ground by himself. It shows the curious freak of a calceolate corolla. This curious modification—an instance of peloria—was developed on the same peduncle with the usual shaped corollas, but instead of being somewhat slipper-shaped, it has assumed the form of a tube about three centimetres in length, somewhat swollen in the middle and tapering towards each end. The apex is covered by, or terminates in, a small greenish band having a slit-like opening. The flower is apparently destitute of andrœcium and gynœcium, and it appears as if the growth of all the petals was equal throughout; they are united along its whole length, having no limb, thus presenting a regular, instead of an irregular, corolla. Dr. Maxwell Masters, to whom

the specimen has been shown, points out that all the petals are regular instead of two regular and three irregular, as usual, and that similar cases have been figured in the *Gardeners' Chronicle*. He also remarks that, though Darwin maintained that it is always the central or terminal flower which becomes modified, that is not invariably the case, as is proved by the present instance.

THE EXAMINING BOARD IN ENGLAND, appointed by the Royal College of Physicians of London and the Royal College of Surgeons of England, under a regulation dated May 12, 1898, permits one year of the curriculum of professional study subsequent to registration as a medical student to be spent at institutions recognised by the board for instruction in chemistry, physics, practical chemistry, and biology, provided evidence is produced that such period has been spent by the student in receiving instruction in these subjects. Six months may also be spent subsequent to registration as a medical student at an institution which is recognised by the board for instruction in chemistry, physics, and practical chemistry only, provided evidence is produced that the candidate has been receiving instruction in those subjects during this period. The committee of management reserves the right of visiting and reporting upon the efficiency of any institution recognised by the board for instruction in chemistry, physics, practical chemistry, and biology. Information relating to the conditions of registration as a medical student may be obtained on application to the Registrar of the General Medical Council, 299, Oxford Street, London, W.

THE ENFIELD MEDICO-ETHICAL SOCIETY, at its annual general meeting, held on Wednesday, June 22, passed the following resolution: "That the Enfield Medico-Ethical Society has heard that chemists are in the habit of prescribing for patients, and that they beg to call their attention to the fact that such a practice is illegal, and that proceedings will be instituted against them in the event of such a practice being continued." The Secretary of the Society was also instructed to forward copies of this curiously constructed resolution to every chemist in the district, and that instruction appears to have been acted upon. Medical ethics, no doubt, are mysterious and wonderful in their way, but we fail to see how the members of this little medical coterie at Enfield can justify themselves against a charge of discourtesy in presuming to act in such a manner as they appear to have done. They might at least have had the decency to abstain from insulting chemists who were not known to have offended in the manner objected to.

THE PETROLEUM COMMITTEE has decided by eight votes to six to recommend the raising of the flash-point from 73° to 100°. It is pointed out by the *Times* that when the question was proposed last week that the draft report submitted by the chairman (Mr. Collings) be read a second time paragraph by paragraph, and an amendment was moved to substitute the name of Mr. Ure for that of the chairman—the basis of Mr. Ure's report being the raising of the flash-point—the amendment was rejected by eight votes to five. Two members of the committee, however—Mr. Harold Reckitt and Mr. Compton Rickett—who supported Mr. Collings at the outset, have now thrown in their lot with Mr. Ure; and the transference of their votes, together with the presence of Mr. Tully, a high-flash advocate, who was absent when the first division was taken, changed the chairman's majority of three into a minority of two. Considering that Mr. Collings, who, as chairman, did not vote, must also be treated as an opponent of the amendment, the actual position of affairs is that eight members of the Committee are in favour of the 100° flash-point and seven against it. The paragraph upon which issue was joined was that in which Mr. Collings invited the Committee to recommend the

adoption of the present flash-point—namely, 73° (Abel), as the dividing line between petroleum oil and petroleum spirit. Some of the members would have supported a compromise, 90° and 85° being actually proposed in substitution for the chairman's 73°. But Mr. Ure and his friends would make no concession; and the result is that instead of presenting to the House a practically unanimous recommendation in favour of raising the flash-point to 85° or 90° the Committee recommends, by a bare majority, that the 100° test be adopted.

MR. URE'S CONCLUSIONS, which the Committee was invited to endorse, were:—(1) That, practically, complete immunity from lamp accidents would be obtained if only oil with a flash-point above 100° F. were in common use as an illuminant; (2) that this object would be secured without legislation absolutely forbidding the use as an illuminant of oil with a flash-point below 100° F. by a simple enactment substituting 100° F. for 73° F. where it occurs in the Act of 1879; (3) that it would be desirable at the same time to enact some such provisions as are contained in the Inflammable Liquids Bill of 1891 relative to the test and the verification of the test to be applied in ascertaining the flash-point; (4) that the main conditions attached to the licences under the 1871 Act should be uniform and ought not to be left to the discretion of each local authority, and that further powers should be conferred on the central authority to compel local authorities to enforce the law in their respective districts; (5) that, provided the foregoing conclusions be adopted and given statutory force, it is unnecessary to impose further restrictions on the keeping or conveying of mineral oil, except to insist on adequate means being taken to prevent outflow wherever oil is stored in populous places and in considerable quantities; and (6) that it would be advisable to make some provision, such as is found in Clause 34 of the Inflammable Liquids Bill of 1891, for a formal investigation into all explosions or fires in connection with inflammable liquids, whatever be their flash-point.

PROFESSOR FERDINAND COHN, the distinguished botanist, died suddenly at Breslau on Saturday last of heart disease. He was born in 1828, and appointed to the chair of botany at Breslau University in 1859. His best known work is entitled 'Die Pflanze,' but in recent years he had laboured with success in the field of bacteriology, and published a book on 'The Development of Microscopic Algæ and Fungi,' showing the destructive action of parasitic fungi and bacteria.

A NEW FRENCH PHARMACY LAW has been promulgated, which provides that henceforth there will be only one diploma as *pharmacien*, corresponding to the existing first-class diploma. Persons holding foreign qualifications will no longer be able to practise pharmacy in France, unless they have obtained the diploma of *pharmacien*, after examination by a State Pharmacy Board. Even then, permission will be withheld unless Frenchmen, holding pharmaceutical diplomas granted in the country to which the foreigner belongs, are permitted to practise pharmacy in that country. Foreign students desirous of receiving the French diploma will be governed by the same regulations as French students, though a special diploma may be granted to them, which will not entitle them to practise pharmacy in French territory; whilst allowance may be made for previous studies in foreign countries. Until April 19, 1900, students will be allowed to enter for the title of *pharmacien* of the second class as at present, and holders of the diploma of that class will be able to practise pharmacy anywhere in French territory.

REVIEWS AND NOTICES OF BOOKS.

A TEXT-BOOK OF BOTANY. By Dr. E. STRASBURGER, Dr. FRITZ NOLL, Dr. H. SCHENK, and Dr. A. F. W. SCHIMPER. Translated from the German by H. C. PORTER, Ph.D., and the proofs revised by A. C. SEWARD, M.A. Pp. i.-x., 1 to 632, with 594 Illustrations, in part coloured. Price 18s. net. London: Macmillan and Co., Limited. 1898.

The progress of modern botany is in no way more strikingly indicated than by the growing tendency towards a division of labour in the preparation of text-books on the subject. It is true that most students' books bear a single name on their title pages, but unless the authors have been assisted by specialists in branches with which they are not personally familiar, certain sections of the books usually fail to give satisfaction to those who have occasion to resort to them for assistance. In the present work we have the outcome of a collaboration by four authors, whose names alone should suffice as evidence of the excellence of the matter provided, translated into English in an exceptionally satisfactory manner. The result is a harmonious whole, and the book will probably be resorted to by advanced students for some years to come.

The first part of the book treats of general botany, and is divided into sections on morphology—external and internal, and physiology. Part two is devoted to special botany, and also includes two sections—Cryptogams and Phanerogams. A marked feature of the whole work is the evident care that has been taken to bring the whole subject up to date, whilst pharmaceutical students will appreciate the fact that detailed reference is made to nearly two hundred medicinal plants, many of which are illustrated. The illustrations are exceedingly numerous, and an interesting experiment has been made in the direction of colouring some that are arranged amongst the letterpress. These include *Colchicum autumnale*, *Paris quadrifolia*, *Arum maculatum*, *Agrostemma githago*, *Caltha palustris*, *Aconitum napellus*, *Anemone pulsatilla*, and several others. The colouring greatly enhances the appearance of the pages, and affords a suggestion of what botanical text-books may be like in the not far distant future.

In the section on external morphology, the thallus is taken as the starting point, the transition from the thallus to the cornus described, and after some little attention has been devoted to branch systems, we are introduced to the shoot and its development. The cell, [its contents, varieties, and combinations, are next dealt with, the vascular bundle system being clearly explained without too much dependence being placed on the stellar theory of Van Tieghem. As a result, much unnecessary mystification is avoided, and for that students will doubtless be duly thankful. Some of the illustrations in this part of the work are more or less familiar, but many of them are apparently new, and the whole [are of real assistance in helping to supplement the explanations given in the text. It is interesting to note, by the way, that the term "bark," as used in this work, is applied to all dead tissue external to the innermost layers of cork. "If the layers of the secondary periderm constitute only arcs of the stem circumference, [the bark will be thrown off in scales, . . . if, on the contrary, the periderm layers form complete concentric rings, then hollow cylinders of the cortical tissues are transformed into the so-called ringed bark."

The section on physiology is also freely illustrated, and will be found to give a comprehensive survey of modern views regarding the plant as a living being. Without being too diffuse all

matters of primary importance are clearly explained, and no better guide could be adopted by past students who may be desirous of freshening up their knowledge of the subject. Regarding the remaining sections of the book, space will not permit of much being said. But a few words of praise must be spared for the section on Cryptogams, a fair example of which may be found in the well-arranged pages dealing with the Schizomycetes. In the brief space of four pages a most lucid and comprehensive description of that order of plants is given, and the space devoted to the higher forms is used to equal advantage. The Phanerogamia naturally occupy the largest proportion, relatively, of the whole book, and this concluding section contains much useful information on economic botany. Lists of officinal and poisonous plants, together with a full index, complete the work, which can be strongly recommended to the notice of pharmacists and other advanced students.

A REFERENCE BOOK OF PRACTICAL THERAPEUTICS BY VARIOUS AUTHORS. Edited by FRANK P. FOSTER, M.D. In two volumes. Pp. 652 and 618. Price 50s. London: Smith, Elder and Co.

The names of the thirty-three joint authors of this work are among the best known in the medical profession in America, and they are sufficient guarantee of the soundness of the vast amount of well-arranged information contained within the covers of the two large volumes. The object of the writers has been to provide a work of reference for the use of the practising physician rather than a treatise on materia medica. It is well observed in the preface: "The 'therapeutic nihilism' that but a few years ago was justly deplored by Professor Bartholow has been succeeded by a wave of over-activity for which it is not difficult to account. We have now to master the task of judiciously employing remedial agencies, many of which are new. For this purpose we require the frequent appearance of trustworthy records of what has been accomplished with these novel agents, for in no other way can the individual practitioner keep pace with the progress of therapeutics."

To review a work of this kind adequately would entail the writing of a book of criticism almost equal in size with the original. All that can be attempted is to select here and there a few drugs and to examine the manner in which they are dealt with. Among the familiar minerals embodied in the Pharmacopœia is manganese and some of its salts. To this metal from time to time various remedial properties are attributed, some writers going so far as to recommend it as a substitute for iron. Dr. S. M. Brickner, in his article dealing with this subject, refers to the results of Garrod's investigation, which "proved conclusively that manganese was useless in the treatment of anæmia and chlorosis." A good account of piperazine (di-ethylene diamine) is given by Dr. H. A. Griffin, who says, "It must be confessed, however, that the expectations that were formed of piperazine when first the remedy was introduced, have not been realised, and though in some few cases of uric acid accumulation its administration may be attended with success, this is perhaps due rather to its alkaline reaction and possibly to its favouring the conversion of uric acid into urea by oxidation than to any power it has to act as a solvent of uric acid. In this connection the results of some recently conducted experiments are instructive. Bohland (*Therap. Monats.*, May, 1894) administered piperazine in a case of leucæmia, in which the urine deposited a uric acid sediment. The remedy was given in large doses, and its use was continued for a long time, but not the slightest alteration was observed in the amount of uric acid eliminated."

The surgical aspects of therapeutics are dealt with as fully as the

medical, thus Dr. J. L. Corning gives a detailed account of the various modes of producing local anæsthesia by cocaine, and the directions he gives for the avoidance of large veins, for prolonging the duration of anæsthesia by means of the elastic band, and the use of dilute solutions for hypodermic use, are admirable. In regions like the back, when elastic compression cannot be employed, the author recommends injection of alternate quantities of cocaine solution and of oil of theobroma, which is to be solidified by the subsequent application of the ice-bag. It is doubtful whether this somewhat cumbrous proceeding will find favour among surgeons generally. This article, on the whole, forms a most suggestive compend of the known therapeutic uses of cocaine, and may serve as an example of the thoroughness that characterises even the smallest sections of the work. There is added to the volume a special index, where, under the names of different diseases, the chief remedies most commonly used are enumerated. This index will greatly facilitate the use of the book in any emergency. The editor is to be congratulated on the way in which he has arranged a vast amount of information, and he and all concerned with the production of the book may find satisfaction in having produced a most complete and useful lexicon of modern therapeutics, a work the serious and scientific tone of which, and the fulness and accessibility of the matter, must render it an invaluable addition to medical practitioners in every English-speaking country.

THE BOTANISTS' VADE MECUM. By J. WISHART. 1898. Pp. 143. Price 2s. net. Edinburgh: E. and S. Livingstone.

The author of this little book was at one time a Herbarium Medallist of this Society, and having also been assistant lecturer on botany in Robert Gordon's College, Aberdeen, he has had excellent opportunities of learning the needs of both students and teachers. The work before us is evidently the outcome of a felt want. Every one who has attended a botanical excursion, whether of a university class or a field club, knows that many students (who may or may not be already familiar with the characters of the principal natural orders) ask the names of the plants they find, and too often rest content therewith, without learning the character of the genera to which they belong. 'The Botanists' Vade Mecum,' if properly used, as its author intends, will give this information. It is furnished with an index like a memorandum book, one letter to each page, so that it is extremely easy to refer to the page on which the genus is described. The genera are arranged alphabetically under the natural orders, so that here again time is saved and the characters of the genera are reduced to a minimum. The only book that is easy of reference hitherto available for this purpose is the 'Treasury of Botany,' but this being in two volumes, is not fit for the breast-pocket like the 'Vade Mecum.' The 'Vade Mecum' is not intended to take the place of a teacher, but to help the student, whilst saving the teacher's time. There are many details not mentioned, such as the fugacious character of the sepals in *Thalictrum* and *Fumaria*, the absence of which will compel the student to seek the teacher's aid. But as a guide to the characteristic features of the genera of British plants it is an excellent little work, which will unquestionably be appreciated by beginners in systematic botany. A still further help to students might have been given if the author had had the courage to do what teachers can well do, but which systematic botanists are naturally careless about, viz., using a definite and uniform termination for the natural orders and their subdivisions respectively. It is difficult for a student to remember that Irideæ and Dioscoreæ are natural orders and not tribes when they have the tribal termination "ææ" instead of "acææ," and simi-

larly to remember that Araucariaceæ is a tribe of Conifereæ (Pinaceæ). Another feature that would improve the value of the book would be a concise description of the characters of the subdivisions of the larger natural orders, such as Ranunculaceæ, Compositæ (Asteraceæ), Leguminosæ (Fabaceæ), etc. It is a great help in getting a comprehensive view of the genera if these, when numerous in a natural order, can be formed into groups.

The tabular classification at the end of the book enables the student to see at a glance the general arrangement of the vegetable kingdom, and the number of species given under each order helps the student to realise their relative importance.

The very convenient size, about 3 inches by 5½ inches, and only ⅝ inch thick, and the small price, 2s. net, taken in connection with the immense amount of information concisely and clearly put, should render the book a welcome friend to students who really wish to increase their knowledge of systematic botany.

CHEMICAL SOCIETY.

The last meeting of the session was held on Thursday, June 16, Professor DEWAR, F.R.S., in the chair. There was a fairly large attendance of members, and many of the papers were of an extremely interesting character. The first, by G. T. MOODY, D.Sc., dealt with the

Preparation of Standard Acid Solution by Direct Absorption of Hydrogen Chloride.

The author commented on the difficulty he had experienced in supplying third-year students with a standard acid solution that could be relied on. He threw on the screen drawings of an apparatus which he had devised for generating hydrogen chloride gas and passing it into a weighed quantity of water. Figures were given showing the extreme accuracy with which such solutions could be made, and it was demonstrated that much time may be saved by adopting this method, owing to the readiness with which the gas is absorbed by water.—This communication, which evoked no criticism, was followed by two of a series of papers on the terpenes by J. A. GARDNER, M.A., and G. COCKBURN, B.A. In the first paper the authors dealt with the

Halogen Derivatives of Fenchone.

It was shown how, by the action of phosphorus pentachloride, a substance may be obtained having the formula $C_{10}H_{14}Cl_2$. This may be prepared in two isomeric modifications. It was shown how closely the action of phosphorus pentachloride on fenchone resembles that on camphor. The second paper described a research on the

Oxidation of Fenchone.

Nitric acid was the oxidising agent employed, and the products were separated by means of their salts. The many acids obtained were briefly referred to. The next paper was remarkable from the fact that it drew forth eulogistic remarks from Professor ARMSTRONG. It concerned the

Investigation of Nitro-Camphor and its Derivatives,

by T. M. LOWRY, B.Sc. The author was able to prove a case of desmotropic change without the presence of a third substance. It had been found by Kipping and Lapworth that nitro- π -brom-camphor gave three different crystalline forms, according to the solvent employed, having melting points respectively of 108, 126 and 142° C. By examination of their optical activity, etc., the author concludes that the first and last of these forms are desmotropically related, and that the third is a mixture representing the equilibrium point in the reversible change.—Dr. ARMSTRONG then read a paper for T. B. WOOD, M.A., and W. T. W. SPIVEY, M.A., on

Cannabinal.

The authors had obtained the acetate of cannabinal. To this crystalline substance they assigned the formula $C_{15}H_{18}O_2$, which differs from that given by Dunstan and Henry. They find that the so-called cannabinal is not the active constituent of Indian hemp. There was no discussion, and JAMES WALKER and J. K. WOOD engaged the attention of the members with a paper on the

Solubility of Isomeric Substances.

After this, W. H. BONE described an

Improved Form of Gas-Analysis Apparatus.

The author had found the Dittmar apparatus far from satisfactory

in dealing with small quantities of gas. He then employed the McLeod apparatus, but sometimes experienced a difficulty from the fact that the sides of the explosion-tube frequently became coated with carbon when insufficient oxygen was present for complete combustion. Moreover, this apparatus stands so high above the bench that it is difficult to work it satisfactorily and easily. Therefore, the McLeod apparatus was modified, chiefly as regards its height and the explosion-tube. By lessening the height the author claimed greater facility in manipulation, and by making the explosion-tube separate from the measuring-tube the apparatus was rendered capable of being cleaned more quickly, a very considerable saving of time being effected.—Dr. ARMSTRONG considered that the Frankland apparatus was all that could be wished for, and asked the author to state his objections thereto. He further criticised the so-called improvements in the apparatus devised by the author, and questioned the desirability of altering the position of the explosion-tube. He considered that a serious risk of error was run in transferring the gases after explosion from the explosion-tube to the measuring-tube.—Professor McLEOD rose to disclaim the merit of inventing the apparatus which bears his name. This apparatus is in reality Frankland's apparatus, which Professor McLeod has only slightly modified. One part of the apparatus, however, he did claim as his own, that being the vessel which acts as a mercury reservoir. He, like Professor Armstrong, failed to appreciate the improvements in the apparatus described, and spoke in favour of the Frankland apparatus.—The PRESIDENT then called for a paper, by W. A. Bone and John Wilson, on

The Action of Light on Acetylene.

During June and July of last year, glass vessels containing acetylene were exposed for several days to the action of the sun's rays on the roof of a laboratory. The gas was prepared from copper acetylide by the action of dilute hydrochloric acid. In two or three days a brown deposit formed on the inside of the vessels. In a fortnight the inner surface of the vessels was completely covered with a brownish deposit. That the action was due to light was evident from the fact that the glass away from the light remained clear and uncoated. It appears, also, that when once the vessel has become opaque the action ceases, no more deposit being formed. The experiment was repeated in the summer vacation, *i.e.*, during August and September. The vessels were examined at the end of this period, and it was noticed that the same reaction had gone on, only in a less degree. Tubes of acetylene were diluted, some with an equal volume of oxygen, others with the same proportion of nitrogen. The gas in these tubes after long exposure under similar conditions remained undecomposed. The examination of the decomposed gas in the affected tubes showed that no saturated hydrocarbon had been formed. The solid produced was removed from the tubes by means of nitric acid. The authors have not yet determined the precise nature of the changes that acetylene undergoes in these circumstances, but they intend following up the investigation during the present summer. It was mentioned that Professor Vivian Lewes has noticed the formation of this brown deposit in vessels of acetylene that have been standing for a considerable time. By this time the evening was well advanced and few remained to hear the last paper by ARTHUR CROFT HILL, B.A., on the

Reversible Hydrolysis Effected by Certain Enzymes.

The author dealt with the methods by which enzymes may be extracted and the various analytical methods used in the conversion of certain carbohydrates and proteid bodies. It was shown that, while chloroform is injurious to certain enzymes, alcohol has no effect on them. In experiments with maltose the extract of the enzyme maltase was diluted with twenty times its volume of water. Proof was shown that the hydrolysing action of the enzyme is incomplete, and hindered by the presence of glucose; but the effect may be increased by greater concentration. The author found that in the case of maltose the action is reversible, but it is doubtful whether reverse action takes place in the case of other enzymes, as a high concentration would be necessary. It is open to question whether this reverse action goes on to a large extent in living cells; possibly an essential condition would be the removal of the products, as soon as they are formed, by means of other enzymes.—Dr. BROWN and others spoke in high terms of the value of this communication, and the PRESIDENT alluded to the accuracy of the work and expressed satisfaction with the succinct report of

the investigation which the author had drawn up. The work was carried on in the new Davy-Faraday Research Laboratory, and it would be gratifying to the donor, Dr. Ludwig Mond, who happened to be present, to find that in that building sound original work of the greatest practical value and scientific interest was already being carried out.—The PRESIDENT announced that many papers yet remained, among them being one by Arthur Lapworth, D.Sc., and Charles Mills, dealing with

Nitration and Substitution in Nitro-Compounds.

In consideration of the lateness of the hour these, however, were taken as read. A ballot was taken during the evening, and the names of the newly-elected fellows were read out, among them being Harry Lancelot Lee, late lecture-assistant to Professor Norman Collie at the School of Pharmacy. The PRESIDENT commented on the continued vitality of the Society, as evidenced by the abundance of papers brought before each meeting during the present session, and then adjourned the meeting for the summer vacation.

PHARMACEUTICAL TRANSACTIONS.

CAMBRIDGE PHARMACEUTICAL ASSOCIATION.

A special meeting of the Cambridge Pharmaceutical Association was held on Friday, the 24th inst., at the "Prince of Wales" Hotel, for the purpose of discussing the proposed regulation of

The Sale of Certain Poisonous Substances

and the Companies Amendment Act.—Mr. A. SIDNEY CAMPKIN, J.P., presided, and there was a good attendance of members, including Messrs. E. Saville Peck, B.A. (Vice-President), B. Sidney Campkin (Hon. Secretary), H. F. Cook, C. S. Addison, H. J. Parson, W. L. White, G. McAvoy, A. P. Barker, C. Male Piggott, and others.—The CHAIRMAN, in submitting a proposition with reference to the proposed regulation of the sale of poisonous substances, pointed out the somewhat invidious position in which qualified chemists would probably be placed, and suggested that the Government Bill had been framed without sufficient reference to the Council of the Pharmaceutical Society, as it would recognise the sale of many potent poisons at present not included in either Schedule of the Act 1868 being placed in the hands of persons who had little or no knowledge of their composition or dangerous effects, and who were in no way qualified (as chemists were under the Pharmacy Act). The Council, as representing the body of qualified chemists, had long endeavoured to secure an extension of the Poison Schedule so as to include the mineral acids, acetate of lead, and other poisonous substances which had largely been sold by ironmongers, oilmen, grocers, and others, but if the new proposal was to be adopted they would find themselves in a worse position than under the present law, inasmuch as unqualified persons would be empowered to sell poisons by the use of "Poison" or "Caution" labels. The principle of the Pharmacy Act was that in the interests and for the safety of the public, the sale of poisons should be restricted, and placed exclusively in the hands of qualified men, who by training and experience were best qualified to form an opinion as to whom and under what conditions a sale should be made. The President of the Pharmaceutical Society, in his address in May last, pointed out that the trained and experienced chemist was the proper person to whom the sale of poisons should be entrusted, and that as a fact he turned away a greater number of would-be customers than any other business man, from the fact that he exercised much discretion towards applications for poisons or poisonous substances, and this they all knew to be a fact. It was, too, by observance of the regulations as to registration that a recent poisoning case had been traced, as it would not probably have been had not the sale been in the hands of a chemist who knew and felt his responsibility in the sale. Accidents did, and would, at times occur, and improper use be made of poisons under the most rigid regulations, but the evil was minimised and the safety of the public secured by insistence of the disposal of poisons (even for most legitimate uses) by properly qualified and responsible persons, who were not only fully acquainted with their composition and danger attendant upon their use, but constantly cautioned those to whom they supplied them at the time of sale. He thought it would have been better that the poisonous substances in the new Schedule should have been

added to Part 2 of the Act of 1868. Had this been done the proposed regulations would have been unnecessary, and the sale would have been restricted to qualified persons. He would suggest that a resolution should be adopted calling attention to the danger to the public if the new regulations became law, and submitted a proposition which was discussed in detail.—Mr. WHITE fully concurred, and thought the resolution should be sent in the first instance to the Pharmaceutical Society, expressing their admiration at the manner in which the Pharmaceutical Society had overcome the opposition to the Pharmacy Acts Amendment Bill. He also thought that there was a risk of the new Act for Regulating the Sale of certain Poisonous Substances would be in conflict with the Act of 1868 relating particularly to the "Substances sold for the purpose of poisoning insects or vermin" where arsenic or strychnine and such-like substances entered into their compositions. These views were supported by Mr. PARSON, Mr. ADDISON, and Mr. C. SAVILLE PECK.—Mr. MCAVOY thought that none but registered and qualified persons should be entrusted with the sale of poisons, and the sooner this was fully recognised the better for the safety of the public.—Mr. H. F. COOK also supported this view and called attention to the remarks of Dr. Clark, M.P., recently in the House, which he thought were in no way justified by their own experience; further discussion followed, and eventually it was agreed unanimously—

That the attention of the Pharmaceutical Council be called to the provisions of Clauses 1 and 2 of the Act for regulating the sale of certain poisonous substances, and to suggest that the Act may be amended so as to provide that no person other than those qualified or registered under the Act of 1868 shall sell any poison scheduled under the Act, and that the proposed new Schedule should be added to Schedule 2 of the Act of 1868.

—The CHAIRMAN then introduced the subject of the Companies Bill, now before Parliament, and submitted a proposition upon the lines of a petition forwarded by the Pharmaceutical Society of Ireland. He had spoken upon the subject more than once at the annual meetings of the Pharmaceutical Society, and he felt that the meeting and pharmacists generally were fully in sympathy with him. There was now an opportunity upon the proposed Act for the insertion of a clause in the direction they had long needed, although it appeared improbable that the Bill would now be passed this session; still, it would be as well to make their wants known by the suggested amendment, he moved:

That this Association urges that a clause should be inserted in the Companies Bill, now before Parliament, to provide that no company may be registered to do acts for which a course of educational training and examination is required by Act of Parliament as a qualification, and unless each member of such company is qualified under such Act.

—Mr. PARSON seconded this, which was supported by Mr. Addison and others, and carried unanimously.—It was agreed that both resolutions should be forwarded to the Pharmaceutical Society, with a request that attention would be given at the earliest opportunity.—The subject of early closing on Thursday afternoons during the summer months was discussed, on the motion of Mr. Parson, when it was agreed that two o'clock should be the hour.—The SECRETARY reported as to the proposed summer outing of the Association, when it was agreed by a majority of twenty to eight in favour of a trip to Hunstanton, on Thursday, July 7, and that final arrangements be left to the Hon. Secretary.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

A circular has been sent out during the past week by this Association to every medical man in the neighbourhood, and chemists throughout Devon and Cornwall, in order to secure uniformity in the dispensing of B.P. preparations. The circular states that all prescriptions written on and after July 1, will be dispensed according to the new B.P., 1898, in the absence of instructions to the contrary. It also points out that the alterations in potency, etc., of the official preparations are numerous, the list of such alterations given in the *P.J.* Synopsis of the B.P., 1898, being reprinted *in extenso*.—The usual monthly Committee Meeting was held on June 28, when Messrs. Goss and Cooper were elected new members. The SECRETARIES (Messrs. A. D. Breeze and C. J. Park) of the Annual Outing Committee reported the very satisfactory balance in hand of £4, which was unanimously voted to the General Fund.

NORTH-EAST LANCASHIRE CHEMISTS' ASSOCIATION.

A special and fully representative meeting of this Association was held at Blackburn on June 23, to protest against the Government's Poisonous Substances Bill, now before the House of Lords. Mr. THOMAS CRITCHLEY of Blackburn, presided, and after explaining the object of the meeting, Mr. R. L. GIFFORD, of Blackburn, the Hon. Secretary said:—Mr. Chairman and Gentlemen. It has been more and more impressed upon the mind of our committee that the conditions under which we labour have become almost if not quite intolerable and the introduction of the "Poisonous Substances Bill" by the Duke of Devonshire, brings matters to such a pitch that our committee demands that the whole position of our professional status be reviewed. I will endeavour to state the case. Thirty years ago Parliament concluded that in the interests of the public it was desirable poisonous substances should be distributed and dispensed by men educated and trained in their properties—in other words, a profession of pharmacy was created. In creating a profession the Legislature cannot carry out its wishes. It can only indicate them because of the time which must elapse before an educated body is produced, and it is not disputed that the Legislature of 1868 intended that our education and training should be made more and more vigorous on the one hand and on the other that at an equal pace our duties and professional work should be extended. What has occurred in its history? Scandalous history, I say. The examinations have been made more and more severe. On this hand the Pharmaceutical Council—the body entrusted by Parliament with the carrying out of its intentions—has done its duty, and a body has been produced able to do the work the framers of the Act had in view. But from the other point of view—the point of view of just as continuously safeguarding and increasing our privileges as in imposing more stringent qualification—we must conclude that the work of the Council for the last thirty years is quite completely unworthy of the great trust the Society acquired. Practically we have obtained no privilege since 1868, and have lost what we had. We see the profession of medicine increasing its privileges almost at the same rate as our difficulties and educational requirements are increased. Twenty years ago the profession of dentistry became in fact what is now an organised profession. The same principle applies to the law, and even the stockbroker is jealous of his legal rights. With us the Act has been emasculated beyond recognition. Would the Legislature of 1868 have expected that in thirty years' time a score of drugs would represent the responsibilities of the chemist. Perhaps this is a fair way of putting the case. Let every man of reasonable education and judgment be asked what ought to be done with all powerful drugs, herbs, and chemicals, and every man will tell you that only trained men should handle them. Well, if you can appeal successfully to the ordinary intelligence, why not press your facts until you produce a more sensible state of affairs? It probably is no exaggeration to say that not more than 1000 chemists obtain a livelihood by their profession—the other 5000 obtain a living more or less in spite of their qualification. It is impossible quite to stamp *esprit de corps* out of men brought up and educated to it, whilst the outsider has neither conscience, knowledge, nor responsibility to restrain him. Would the sane legislator dream of making it possible for the reporter here to become a chemist by the simple process of calling his wife and five children together and making his hearth a registered office. Yet that is what he can do. He can blossom forth as "Reporter, Limited, cash chemist," and our wise judges have made this possible. They have, in fact, created this law. Gentlemen, it seems always to be presumed that we shall not be listened to if we ask for advantages. The imposition of duties gives the right to them. This principle applies in all professions, and if the practice of pharmacy has to advance with equal pace as the nation's life, the principle of responsibility involving rights must operate.—Mr. TAYLOR, of Bolton, then submitted the following resolution:—

That this meeting of chemists and druggists, whilst of opinion that it is necessary to provide some regulations as to the sale of the articles named in the Government's Poisonous Substances Bill, regards that Bill as inadequate for the purpose, and ambiguous in its details. This meeting is also of opinion that the Bill constitutes a dangerous departure from the principles of the Pharmacy Act of 1868, and call upon the Pharmaceutical Council to strongly oppose the Bill.

He moved it, he said, with all his heart. Before saying anything strictly pertinent to the resolution he should like to say that they, as pharmacists, while claiming that the law should be strictly enforced with regard to the sale of poisons, should also be careful to observe the law themselves, and no temptation to try to make a

few pence or a few shillings extra, or to gain a little at the expense of some rival, should prompt them to deviate in the slightest degree from the strict letter of the law. That was the course of conduct he marked out for himself when he started business eighteen years ago, and he could honestly say he had not once departed from it. They must always bear in mind that the Pharmacy Act was not passed primarily to protect him and them, or any of those who should follow them in the trade, but solely for the benefit of the public. Apart from that they had no reason for any restrictions or any privileges being granted to themselves. The State, with a desire to hedge round the sale of poisons with restrictions, found ready-made to its hand a body of men who even at that date were fairly well trained in the handling of such things, into whose hands it could commit the sale of poisons, at the present time they were better qualified than at any other time in the history of pharmacy to deal with those substances. That had placed upon them a moral obligation to observe the law, which should be stronger than any legal obligation, and if they betrayed that trust they would not get, nor would they deserve, the sympathy either of the Legislature or the general public. In going more particularly into the matter he was not going to say anything about the Pharmaceutical Society or its enforcement of the Pharmacy Act, except that they would be foolish, and more than that, if they placed themselves in a false position—if, while calling upon the Council to enforce that Act strictly, they grumbled because it sometimes hit themselves. It would not hurt anybody who observed the law, but only those who broke it, whether qualified or unqualified men. As they claimed to be protected from unqualified men, they on their part should undertake to protect the public from such persons. Every qualified man who had a branch shop was bound, doubly bound by honour—a matter which did not weigh at all with the unqualified man—to put into every branch shop a qualified man. They objected to the Government Bill because it tended to break down the fence which had been put round the sale of poisons. If it became law, it would practically create a new set of poisons. They knew perfectly well from their experience as business men that the public would forget the distinction if they recognised it, and would see only upon a certain bottle a label, "poison." The Bill, in effect, said that those poisonous substances did not need trained men to sell them. They are dangerous, it said, and if their sale is not restricted, it must be regulated. One of them—carbolic acid—held the record as the cause of death to-day, and on that ground the State said: "We must regulate the sale of these things. Because they are useful in the arts, necessary in manufacturing, and because some industrial concerns consume large quantities of them, no restrictions must be placed upon their sale, and they can be trusted to the hands of men not qualified to know how they are made, what they are used for, or any of their properties." He felt sure they would all say that was a dangerous departure from the principle of the Pharmacy Act of 1868. If those things were dangerous, if the sale needed regulation, if it were desirable that they should be hedged round with safeguards that would prevent their indiscriminate use or administration, then on the face of it they were not things to put into the hands of any tradesman to sell. They would know that the legislation was not directed against themselves. It was not claimed that they had neglected their duty in the sale of those things, for they had done voluntarily for years what the Government now sought to impose upon outsiders. They had labelled those substances "Poison," and exercised a great deal of discretion as to the vials in which they should be sold, and at the cost of time to themselves had instructed the public in their use and against their dangers. They had laid upon themselves the duty of standing between the public and the indiscriminate and unsafe use of all the substances, without exception, named in the Bill. The proposed legislation, therefore, was not called for by any neglect on their part or by anything that they, as a trade, had ever done. That tended to lend weight to their argument that if those substances required special protection and regulation they required also to be placed in the hands of those who had been trained to their use, who knew what they were and what dangers they possessed. And the great evil of the Bill, if it passed into law, was that it would allow those substances to be sold indiscriminately if labelled "Poison" and bearing the name and address of the seller. That would destroy, in the public mind, the distinction which now exists between the more dangerous—so-called—of those substances, and people would begin to ask why, if one kind of poison could by

law be sold by a greengrocer, draper, or perfumer, another kind of poison could, by law, be sold only by a qualified chemist and druggist. There seemed to be an idea in the minds of some people that there was no need for regulated sale of poisons except they were to be used for medicine. Dr. Clarke, for instance, seemed to think that all the trade had a right to ask for, and all that public safety demanded, was that the poisons should be carefully labelled only when they were for internal use. Surely Dr. Clarke and those who thought with him did not know that the percentage of deaths occurring, either through accident or suicide, from the more dangerous poisons was very small. He (the speaker) did not think there was any trade or profession in the world to-day which could show fewer mistakes, fewer forgetfulnesses of duty, fewer accidents from carelessness or incapacity than their own. He said that without any reservation. They knew oftentimes that in medical practice mistakes and accidents occurred of which the public heard very little. They were, however, far from being uncommon. If, however, a druggist made a mistake, whether in dispensing or in the sale of poisons which are used for some improper purpose, the public heard all about it, and injustice was often done by irresponsible talk by editors who knew little about the Pharmacy Acts. He thought it was something to be proud of that, as a trade, so little could be said against them. They knew perfectly well that Mr. Gladstone, when a deputation from the British Pharmaceutical Conference at Liverpool a few years ago visited Hawarden, bore testimony to the fact that the number of accidents in their trade was wonderfully small, and the number of deaths infinitesimal. He repeated that none of those precautions were aimed at them or were needed by them. They had strong grounds for going before the Government and the public and saying, "We have done our duty, we are able, capable, and well qualified to discharge all the duties placed upon us with regard to the sale of poisons, and you are making a great mistake and doing us and the public an injustice if you try to break down in the least the distinction in the public mind between things which may be sold by qualified men and things which may be sold by anybody." The Bill was inadequate, because a mere label on the thing did not always suffice to prevent accident or improper use. The fact that poisons were in the hands of qualified men would act as a valuable deterrent to those who desired to use them wrongfully. If these poisons were put into any man's shop, then the suicide and the murderer could get what they wanted. The Bill was ambiguous because it had not properly defined several things. It required redrafting by the aid of practical pharmacists, who knew what their duty was and what they had to safeguard people from. They also objected to the Bill because it departed from the principle of the Pharmacy Act, which provided that all substances dangerous to life should be handled only by trained and licensed men. The Government was taking a dangerous step, for if once the door was opened, they could not tell who would walk in. The last thirty years had proved the wisdom of the Pharmacy Act, and if hundreds of lives had been lost by the misuse of carbolic acid or similar substances, the fault did not lie at their door, or at that of the Pharmaceutical Society. They had only to put their case before the country and before Parliament with a bold front, with as clear logic and as reasonably as they could, to make sure that the Bill would not pass into law in the form in which it was drafted. It was not a mere commercial question, it was a question of principle and moral responsibility.—Mr. WELLS, of Blackburn, seconded the resolution, and said that the accidents due to chemists had been very few indeed, and they were the only people fitted to carry out the sale of dangerous poisonous substances. He also remarked that a similar Bill to the present one was introduced in Parliament in 1875, but it did not go further than the second reading, and he hoped that the one they were discussing would meet with the same fate.—Councillor RALPH SHORROCK (Darwen) and MESSRS. GARLAND (Blackburn) and BROWN (Burnley) supported the resolution, which was unanimously carried.

AMYTIN AND AMYTOLS.—Ichthyolsulphonic acid and the aromatic oily substance which form the two chief constituents of ichthyol, dissolve a third body which is contained in ichthyol, and which is itself insoluble. Ichthyolsulphonic acid exerts the same solvent action on other bodies such as camphor, phenols, ethereal oils, etc. Amytine is a 33 per cent. aqueous solution of this acid and the preparations made with it are introduced under the name of amytons.—*Pharm. Zeit. f. Russl.*, xxvi., 641.

LETTERS TO THE EDITOR.

GLYCERINUM ACIDI BORICI, B.P., 1898.

Sir,—Criticism of this preparation would obviously be premature, but may I ask in what respect is it superior, as a means of exhibiting boric acid, to the solution prepared by boiling together $1\frac{1}{2}$ ounces each of boric acid and borax in sufficient water to produce a pint of solution? The increased strength of *syrupus ferri iodidi* deserves a word of notice. It is 26.7 per cent. stronger than it was. For the preparation of the cold infusions a glass dialyser can be made very useful. The bell-shaped form (not too large) is best, and a piece of muslin twice the size required to cover the larger mouth is necessary. Stretch it over the rim, place on it the quantity of *calumba* or *quassia* ordered, fold the muslin over, and tie round firmly. Then if the dialyser be suspended by loops from a stirring rod resting on a wide-mouthed measure or glass jar, and the length of the loops adjusted so that the drug is just below the surface of the water, the infusion can be poured off clear at the end of the time specified.

Dover, June 22, 1898.

J. F. BROWN.

LIQUOR STRYCHNINÆ HYDROCHLORIDI, B.P., 1898, AND STRYCHNINE HYDROCHLORIDE.

Sir,—Mr. George Lunan points out (*Pharmaceutical Journal* last week, p. 587) a discrepancy in the 'Extra Pharmacopœia,' ninth edition, p. 422, where it is stated that the above "solution is one-tenth weaker than" the corresponding preparation of B.P., 1885. I do not admit, however, the accuracy of his figures. I think I took my formula for strychnine hydrochloride as $C_{21}H_{22}N_2O_2 \cdot HCl$, which is the only one given in Watts' 'Dictionary' (first ed., vol. v., 422). This is the anhydrous salt, and it gives the proportion of alkaloid as 90.16 per cent. Regnault gives the salt as crystallising with $1\frac{1}{2}$ aq.; Ernst Schmidt gives it with 1 and 2 aq.; the British Pharmacopœia gives it with 2 aq., and further states that, dried at $100^\circ C.$, it should lose 7.3 to 8.8 per cent. of moisture. To this latter statement I will refer later. Mr. Lunan makes out that the new solution has only 80.6 per cent. the alkaloidal value of the old preparation, that it is in fact one-fifth weaker. Both preparations (that of B.P. 1885, being made in fluid parts) are so-called 1 per cent. solutions, and if the hydrochloride be reckoned with $1\frac{1}{2}$ aq. the percentage of real alkaloid is 84.04; if with 1 aq. it is 85.46. This gives the solution as being only about one-seventh weaker. In 1885 the preparation was increased in strength about one-eleventh without any serious objection or result; now it will be reduced to about the original strength, that of *liquor strychninæ* B.P. 1867, and with a more consistent name. The advantage in slightly reducing the strength is that it prevents the deposition of crystals complained of when exposed to a low temperature. This crystallisation was shown to be increased by the acidity of the solution. By using the hydrochloride an excess of acid is avoided, and from my experience in preparing several lots, the present official solution will not crystallise by any exposure to cold. The slight reduction in strength, moreover, has the further advantage in being on the side of safety, and medical practitioners have no cause to be alarmed—the strength is not doubled like that of tincture of *nux vomica*. In a contemporary, it is complained that the new solution does deposit crystals on keeping. I have two specimens before me, made on January 19, 1897, and checked by myself; one was prepared exactly as B.P., 1898, the other *sine* alcohol—a 1 per cent. solution in sterilised distilled water for hypodermic injection. Both solutions were then exposed all night to a temperature near freezing point, certainly under $40^\circ F.$, and they did not crystallise. In fact, both are perfectly good and free from fungi at the present time. I have referred to the statement in the B.P. that strychnine hydrochloride should lose 7.3 to 8.8 per cent. of moisture when dried at $100^\circ C.$ This is not correct. Gmelin says (vol. xvii., 494), on the authority of Nicholson and Abel, that the crystals lose the whole of their water of crystallisation, amounting to 7.17 per cent., at $120^\circ C.$, but that Gerhardt states, on the contrary, the salt, dried at $100^\circ C.$, loses 4.81 per cent. (or 2 aq.) at $130^\circ C.$ only. My experiments, on an average of three commercial samples which were not effloresced, give a mean of loss at $100^\circ C.$ of 1.695 per cent.; at $120^\circ C.$ of 6.33 per cent.; and at $130^\circ C.$ of 7.183, which corresponds, I must acknowledge, to nearly 2 aq. The salts are

all neutral. Being carefully stored I have not noticed this salt become effloresced as stated in B.P.

10, New Cavendish Street, W.,
June 29, 1898.

WM. MARTINDALE.

A DISCLAIMER.

Sir,—With reference to the recent prosecution of a chemist in Battersea, in which Frederick Davis, a photographer, is mentioned as the informer, owing to communications which have been forwarded to me, I beg to say I am in no way related to or connected with this person. I shall be glad, therefore, if you will be good enough to publish this disclaimer.

51, Imperial Buildings, E.C.,
June 27, 1898.

FREDERICK DAVIS.

SALE OF POISONS BY UNQUALIFIED PERSONS.

Sir,—It gratifies me as a young member of the craft to see so often in the *Pharmaceutical Journal* reports of convictions of unqualified persons for contravening the Pharmacy Act. It is hard for any chemist, and especially a young aspirant to pharmaceutical honours, to find himself, after his time and money have been spent in study, face to face with an unqualified vendor of drugs and patent medicines, *sine cumque veneno*. I only wish that there were more convictions, and I should only be too glad to help to bring to justice some of these transgressors—a task by no means hard to me. But I come now to a point raised in last week's *Journal*, and that is, in regard to chemists failing to carry out the regulations of the law in their own businesses. We cannot expect to receive much sympathy from Government when chemists wantonly break the Pharmacy Act; and such cases as the cyanide case last week deserve to be punished. I find it is not an uncommon practice to break the law when selling poisons, and it is absurd, as you say, for a chemist to try and stop illegal trading in poisons by unqualified persons when he is breaking the same Act only in another way; and many chemists allow unqualified assistants to handle poisons with impunity. I am afraid it is a case of seeing the mote in out brother's eye whilst not perceiving the beam in our own eye. Let us then—I am appealing now more especially to the younger members of the profession, who have still the battle to fight—try and bring to light these cases of illegal selling where we can, not forgetting ourselves to carry out the law fully. It is as easy to carry it out as to break it, and I am sure we shall only be doing our duty to the Society to which we belong. We are surrounded by much competition, the stores, etc.; there are even some medical men who supply their patients with goods which should pass through a chemist's hands. I could quote instances, but it is sufficient to show what we have to put up with, but if times are bad and we find it a struggle for existence, even that should not keep us from doing our duty and fulfilling the law, which is allowed to be broken by unqualified men and companies.

June, 25, 1898.

IN DIE MALO (136/14).

CHEMISTS AS CO-OPERATORS.

Sir,—In last week's *Journal* I noticed, under the heading of "Pharmacy in Australia," an announcement to the effect that several pharmacists in Melbourne had formed a company to buy special lines in large quantities (thereby obtaining the lowest possible rates), which were then distributed to the members according to their individual requirements. These chemists were thereby enabled to successfully compete with their unqualified competitors, and, by selling patents at the same prices as these people, were in a great measure enabled to counteract and nullify that unhappy and mistaken idea that a part of the public has got hold of, that at the "stores" drugs and chemicals are sold at the same cheap rates as patents. Everyone interested knows that the drug stores simply use low-priced patents as a bait wherewith to hoodwink an unsuspecting public, and to entice them into their (the stores) establishments, when their assistants forthwith proceed to sell some proprietary which bears an outrageously large profit, which compensates, to a certain extent, for the loss on the patent. For, alas, even drug stores must make a profit, albeit they try to make out that they sell medicines for the fun of the thing. If, therefore, it were possible for chemists to advertise and sell patents at the same prices as the stores, the attraction of the latter would cease, and that part of the chemists' custom which has, unfortunately, drifted to the stores, would most certainly return. For it is an undisputed fact, that although chemists may sell patents at rather higher prices than the stores, they most un-

doubtedly sell far superior drugs and chemicals at a much more reasonable price. Then again, a chemist's trade, almost without exception, is a purely personal one, a kind of trade which it is exceedingly difficult to conceive a stores man cultivating. So that as soon as it becomes a *fait accompli* that the public can obtain its patents from the chemist at the same price as from the stores, then, considering the enormous difference between the *locus standi* of the two, and recognising the value of a fully qualified, carefully trained chemist and druggist in whom they may place explicit confidence without the slightest fear of that confidence having been misplaced, the public would entirely ignore and cease entirely to frequent the stores. I would suggest, therefore, as a remedy for the present state of affairs, that all the chemists in each town form a company for the purchase of such lines as may have a ready sale in their neighbourhood, and which, being purchased in large quantities, might be more advantageously bought. I know for a fact that this is done in several towns in England, being found to work admirably. So much so, that the participants in the scheme, being able to meet the stores with their own weapons, are already gaining ground. It is high time that chemists combined for their mutual protection against their common enemy the stores, for it is evident that the chemist and the stores cannot exist together, and I am in favour of existing a little longer yet, if possible. Therefore, if someone more experienced and capable than myself will only take the hint from the above rough suggestion, and formulate some scheme which might be adopted by local organisations in every town, I think a very decisive blow could be struck against the stores. If that were so, and chemists would remunerate their assistants a little more liberally, so as to neutralise any desire on the part of young men to engage with the stores on financial grounds, I feel sure that the life of the stores would be exceedingly short. In conclusion, may I express a hope that some one else will kindly express an opinion with a view to a scheme of some kind being advanced.

June 22, 1898.

C. H. H. (116/7)

THE POISONOUS SUBSTANCES BILL.

Sir,—I notice with considerable regret that the above Bill has already been read a second time in the House of Lords. The Bill is entirely retrograde in its scope and intention, and therefore very objectionable. Should it unfortunately reach the House of Commons, I hope monster petitions will be sent from every town and city in opposition to the same. Personally, I would rather leave the sale of carbolic acid where it is at present, as also the mineral acids. My experience has been that the more poisons are scheduled the less business there is done in them. If, however, the Government are not satisfied with the *status quo*, the present Bill should be dropped, and the substances mentioned in it might be added to the Poison Schedule under Part 2. As regards the last clause, I have always been opposed to any compulsory system of poison storage or poison cupboards, and, therefore, object to that part most strongly. I think each chemist should be allowed to store his poisons in his own manner and be responsible for what he does. In my opinion that is better than being fettered by any cut and dried Government arrangement.

Liverpool, June 29, 1898.

WALTER A. GRACE.

ANSWERS TO QUERIES.

BOTANICAL.—Your curious specimen is the flower of *Aristolochia siphon* (Aristolochiaceæ). [Reply to J. A.—13/4.]

BOTANICAL.—The plant is probably new. Please send a complete herbarium specimen if you can. [Reply to G. B.—12/29.]

BOTANICAL CASE.—Write to Butler's Natural History Agency, Brompton Road, London, S.W., or to Watkins and Doncaster, 36, Strand, W.C., for copies of their lists. You can then decide for yourself. [Reply to G. B. G.—13/5.]

FIRST EXAMINATION.—Any good text-book of arithmetic will serve your purpose, and should give everything you require to know about the metric system. You will find a complete list of metric equivalents in the *Pharmaceutical Journal* for June 4 last, at page 534. [Reply to C. B.—13/2.]

SPECIALIST FOR DISEASES OF THE HAIR.—It is against our rule to recommend particular medical men. Ask the advice of your local medical practitioner. [Reply to EPIDERMIS.—12/30.]

GLUCOSE.—Dextrose or grape sugar. You must have omitted to look in any work on organic chemistry. The liquid glucose of commerce is a variable product, prepared by the action of acids on starch. [Reply to SAXIN.—12/32.]

REAGENTS, METHODS, AND FORMULÆ.—They have not been republished in book form, as yet. It is hoped to continue publication of the supplementary list of reagents, etc., at an early date. [Reply to CAERDYDDIAN.—13/6.]

TEST FOR AMMONIUM SALTS.—The precipitate is only produced in highly concentrated solutions of neutral ammonium salts, and after some time has elapsed. Its separation may be promoted by shaking the mixture, or by rubbing the inside of the test-tube with a glass rod. [Reply to C. B.—13/3.]

SALE OF METHYLATED SPIRIT.—You must obtain a retailer's licence at a cost of 10s. per annum, and may then stock not more than 50 gallons. You must not sell the spirit between 10 p.m. on Saturday and 8 a.m. on Monday, nor more than 1 gallon at any one time. [Reply to X. Y. Z.—12/17.]

PREPARATION FOR FIXING THE MCUSTACHE.—This is a solution of 1 part of sandarach in 5 fluid parts of alcohol, perfumed with mirbane and some other aromatics. You would find the hard resin of tolu, left after making the syrup, or balsam of tolu itself, quite as satisfactory when dissolved. [Reply to SALOL.—12/13.]

DARK ROOM.—It is a decided advantage to prevent the light from the lamp falling directly on the dry plates during manipulation, but if you get a good lamp—such as the Phoenix, described in our last Photographic Supplement—it can be fixed so as to diffuse quite sufficient light on the table without the necessity of fixing reflectors. [Reply to A. McK.—12/33.]

ANALYSIS OF MALT.—We know of no book specially devoted to the analysis of malt. You will find full details of all modern analytical processes in the pages of the 'Journal of the Society of Chemical Industry.' You will also find the best technical information on brewing in the same journal, which devotes a special section to this industry. There is an excellent *résumé* of the analysis of malt in 'Allen's Commercial Organic Analysis,' Vol. ii., pp. 330-327. [Reply to E. W.—12/11.]

PASTE FOR LABELS.—An excellent paste, which is very adhesive and will keep for an indefinite period, can be made by thoroughly mixing rye flour, 400, with powdered boric acid, 2, and water, 1600. Strain through a sieve; add strong nitric acid, 12; heat, with constant stirring, until the mixture thickens; then cool, add clove oil, 1, and again strain through muslin. Add 10 per cent. of glycerin when labels are to be pasted on tin. If at any time the paste should have dried up, the addition of a little warm water will restore it to its original consistence when well stirred. [Reply to L. B. and Co.—13/1.]

PERCENTAGE SOLUTION.—A fluid ounce of water at 62° F. weighs 437.5 grains, and contains 437.5 fluid grains or 480 minims. To make a solution containing a definite percentage by weight, you should first weigh the active ingredient, then dissolve in sufficient water, and finally make up the weight of the solution to 100 parts by adding more water. The B.P. centesimal (not "percentage") solutions contain a definite weight of active ingredient in 100 fluid grains or 110 minims. If you adopt the same plan you will not be far wrong. [Reply to UNDECIDED.—136/8.]

OBITUARY.

MAINWARING.—On June 16, Richard Mainwaring, Chemist and Druggist, Southport. Aged 78.

PRATT.—On June 20, Jonathan Burford Pratt, Chemist and Druggist, Newbury, Berks. Aged 82.

PRIESTMAN.—On June 22, Abraham Priestman, Chemist and Druggist, Barrow-in-Furness. Aged 31.

PARLIAMENTARY NOTES.

THE POISONOUS SUBSTANCES BILL came on for second reading in the House of Lords on Friday, June 24, when the Duke of Devonshire (Lord President of the Council) said:—My Lords, the object of this Bill is to give to the public some protection against the indiscriminate sale of poisons beyond that which is already provided for by the Pharmacy Act, 1868. There are certain poisons which are included in the Schedule of that Act: the Act also imposes certain restrictions—as to labelling and in other respects—on the sale of these poisons; but the principal restriction the Pharmacy Act imposes is that the sale of scheduled poisons is limited to persons registered by the Pharmaceutical Society. It was thought that the list of poisons in the Schedule might be extended by the Privy Council on the recommendation of the Pharmaceutical Society, and repeated applications have been made to the Privy Council to include under the Pharmacy Act certain other articles which are enumerated in the Schedule to this Bill. For instance, carbolic acid, which is largely used by many people as a disinfectant, is the principal one. But the Privy Council has always declined to include these articles in the Schedule to the Pharmacy Act upon two grounds: first, the ground of the inconvenience to which the public would be exposed if any additional difficulty were imposed in the way of obtaining these extremely necessary articles, and secondly, on the ground of the dislocation of trade which would be caused if the sale of these articles were placed in the hands of what is virtually a trade monopoly. On the other hand, the Privy Council has received repeated recommendations from coroners' juries to the effect that some additional precautions should be afforded against the indiscriminate sale of these articles. It is not pretended that legislation of this Bill, or any legislation, can very largely diminish the number of deaths which annually take place in consequence of these articles. Out of 579 deaths which took place in the years 1895 and 1896—which are the most recent statistics available—by the use of articles in the Schedule of this Bill, only 111 were due to accidental or general causes, 468 being cases of suicide. Of course, it is not contended that any restrictions which can be imposed will deter persons who are determined to take their own lives; but of those 111 cases of accidental death by these poisons, 29 were cases of children under ten years of age. I think your Lordships will agree with me that whatever protection can be given against such accidental use of these poisons, it ought to be given. The present Bill is the result of the representations to which I have referred, and in regard to these articles it is confined to placing the sale of substances included in the Schedule to this Bill and not included in the Schedule of the Pharmacy Act, under certain restrictions as to labelling; and, in the next place, giving the Privy Council the power of adding to or removing certain articles from the Schedule. The Bill also contains a certain amendment of the Pharmacy Act itself. That Act has not been altogether effectual in preventing accidental deaths from the use of poisons included in the Schedule of the Act, for, out of 786 deaths which took place in the years which I have referred to, caused by the use of poisons included in the Schedule of the Pharmacy Act, exactly one-half were cases of accident, the other half being cases of suicide. There were 393 cases of suicide by these poisons, and there were 393 cases of accidental death. The Pharmaceutical Society has power to make further regulations as to the sale of these poisons, but, for some reason or other, up to this time it has neglected to do so, and the second clause of this Bill provides that the Privy Council may make such regulations independently of the Pharmaceutical Society. These are the objects of this Bill, and, as I have said, while we cannot hope that it will cause any great diminution in the number of deaths which take place owing to the use of these poisons, I think your Lordships will agree that, so far as possible, the number of accidents caused by them ought to be restricted.—The Bill was then read a second time, without discussion.

IN THE HOUSE OF LORDS on Monday, June 27, the Duke of Devonshire moved that the House go into Committee on the Bill for Regulating the Sale of Certain Poisonous Substances. There were no amendments offered, and the Earl of Morley (Chairman of Committees), on the resumption of the House, reported the Bill without amendments. On the motion of the Duke of Devonshire the report was received.

THE HOUSE OF LORDS STANDING COMMITTEE met on Tuesday, when Lord Herschell occupied the chair, and the Poisonous Substances Bill was considered. No amendments were made and the Bill was ordered to be reported. The Third Reading is fixed for Friday of this week.

THE POISONS BILL has passed through the House of Lords with considerable celerity, and may be expected to appear in the Commons early next week. Nothing but the *ex-parte* statement of the Duke of Devonshire in moving the second reading has yet been urged in its favour; but the veriest bungler in prophecy may safely predict that a good deal will be said against it by the registered men of Great Britain. To those who know the facts it seems something like abuse of position for the Lord President of the Council to couple pharmacy with the words "trade monopoly." His Grace is the head of the Department which supervises, by its own officer, the high educational tests and practical training demanded of registered men, and he should know that there is as little justification for describing pharmacists as monopolists as there is for applying a similar term to medical men or to lawyers. The whole tenor of his remarks was misleading, and steps must be taken in the lower House to correct the misunderstanding. Even Democracy, so we are told by Mr. Burns, does not concede the right of free trade in potent substances, and it is a little incomprehensible to find the foremost of our nobility calmly discounting the principle of technical education by talking about "monopoly" when the public safety is in question.

LORD HARDWICKE has given notice to move the second reading of the Pharmacy Acts Amendment Bill in the House of Lords on Thursday, the 7th inst. No doubt his lordship would have put the Bill down for an earlier date if he had not been in charge of the Aliens Bill, which, by the way, occasioned some slight contention in the Standing Committee.

THE PETROLEUM COMMITTEE is waxing somewhat warm over its report, and appears to be approaching rather dangerously near its own flashing point in wrangling over the "flash point" of the oil it is discussing. The newspaper agitation concerning the "deadly 73°," combined with the fact that Scotch oil is of considerably lower inflammability, have decided the Committee, by a majority of one, to recommend the fixing of 100° (Abel) as the minimum indication of safety. It is very significant that of the majority (seven) voting for the increase three were Scotch members, which may be taken as a further exemplification of the national shrewdness. Mr. Alexander Cross was one of the three. The effect of the Committee's decision will be to render nugatory a large number of the suggestions made to the Committee by the late Col. Sir V. Majendie. It is, however, improbable that legislation will follow the lines of the Committee's recommendation.

ICE CREAM may achieve the distinction of a place in the Schedule to the Poisonous Substances Bill if the note of alarm sounded by Sir H. Maxwell in the House of Commons on June 22 has the rousing effect intended. The hon. baronet, who represents Wigton, asked whether the provisions of the Public Health Acts and the Food and Drugs Acts were inefficient to control or prohibit the sale of poisonous compounds, such as these ices, which swarm with assorted colonics of bacilli and are served up to the youth of Britain in unwashed glasses by unwashed foreigners. It seems pretty certain that the questioner was as ignorant of the scope and application of the Food and Drugs Acts as the vendors of ice cream are of the first principles of cleanliness. Is "ice cream" a food or a drug, and by what standard should it be judged? What a neat question it would be for the Bench to determine whether a sucking-glass of "cream" containing a definite percentage of micro-organisms was "of the nature and substance demanded"! Mr. Chaplin told his questioner that the Public Health (London) Act of 1891 could be made to apply to vendors of the doubtful delicacy.

THE PHARMACEUTICAL SOCIETY, as a body engaged in secondary education, has had its merits recognised by the drafters of the Secondary Education Bill which is tabled for second reading in the Commons on the 18th inst. The object of the Bill is to reconstitute the Education Department, with a view to securing recognition for and increasing the efficiency of secondary education. This ideal is sought to be attained by having an Advisory Council attached to the Central Education Authority. The Council is to

be a corporate body and is to include nine representatives of universities and nine representatives of professional bodies. The latter are the Medical Council, Legal Education Council, Incorporated Law Society, Associated Chambers of Commerce, Institute of Civil Engineers, Institute of Mechanical Engineers, the Pharmaceutical Society, Institute of British Architects, and the Society of Actuaries. There may be some heart-burnings on account of the omissions, but the list is pretty representative of the callings in which personal professional qualifications are demanded.

CHEMISTS SHOULD NOTE the changes in Parliamentary representation, and turn them to account if possible. "The means that heaven yields should be embraced and not neglected." The Crewe Division has become re-enfranchised by the return of the Hon. R. A. Ward, whose lengthy absence had occasioned some comment. Constituents who desire to effect an introduction with a view to Poisons Bill eventualities might find no more favourable moment for approaching him than the present. Durham, too, is in the throes of an election, and both candidates could have been advantageously interviewed by chemists. The candidates are the Hon. Arthur Elliott (U.) and Mr. H. F. Boyd (R.), and the result of the poll will be known by the time the Journal is in the hands of our readers. But some good might be done by seizing the successful candidate at the psychological moment, *i.e.*, in the hour of his triumph. Gravesend is another vacant constituency, present member, Col. Dampier Palmer, having signified his wish to retire. Is the pharmaceutical calling too insignificant in a Parliamentary sense to have any hand in choosing a successor? *Verb. sap.*

MR. STRACHEY (S. Somerset) moved the reduction of the Customs vote on Friday, June 24, for the purpose of calling attention to imports of adulterated foods. He complained of the increase of the imports of adulterated butter and of milk containing boracic acid, and thought the stuff should be stopped, instead of which the cases in which adulteration was detected were merely reported to the local authorities, who more often than not declined to prosecute. The Minister in charge of the vote admitted the justice of the complaint, but thought it was hard on the Chairman of the Board of Customs to have his salary cut down because the law as to adulteration was unsatisfactory. Mr. Strachey thereupon wisely withdrew.

TUNBRIDGE WELLS AND DISTRICT CHEMISTS' ASSOCIATION.

A well-attended meeting of the above Association was held on June 23. The proceedings were of exceptional interest, the subjects dealt with causing considerable discussion. The correspondence included letters from the local members of Parliament in reference to the Pharmacy Bill, both of them having given it their active support. The replies of the medical men to the circular letter sent by the Association respecting the new B.P. were submitted to the meeting, and it was decided, in consequence of the general acquiescence of the doctors to the suggestions made, that the new B.P. be adopted on and after June 24. A letter from Mr. Gower, of Tonbridge, was next read, on the sale of the proprietary articles at unprotected retail prices. Mr. Gower proposed that the Association should communicate with the proprietors of such articles, stating the intention of its members to discourage the sale of their goods on the existing terms. A spirited discussion followed, and as a result the following resolution was passed, and sent to the Secretary of the P.A.T.A.

That this Association is prepared to support the P.A.T.A. in bringing influence to bear on the proprietors of those articles of which the retail prices are not protected, and to encourage the sale of protected preparations.

The proposal by Mr. STANLEY SMITH that all chemists should close at 4 p.m. on Wednesday failed to meet with approval, and Mr. ROGER's amendment that 8 p.m. during the winter be the general hour for closing (Saturday excepted) was also rejected. The "early" hour of 9 p.m. was the nearest approach to unanimity which was attained.—Mr. ALDRIDGE submitted some useful notes on a few of the 1898 B.P. preparations, which were duly discussed. A few brief remarks were made by the PRESIDENT on the Government Poisons Bill, but the subject was deferred to the next meeting.

PHARMACY IN AUSTRALASIA.

[From our Melbourne Correspondent.]

The publication since my last of the annual report to the Government by the Pharmacy Board of Victoria supplies a large amount of up-to-date information, some items of which may prove of interest to your readers. Up to the close of 1879 it appears that the total number of pharmaceutical chemists registered under the Pharmacy Act, 1876, was 631. From 1880 to 1897 (inclusive) 578 have been added, making a total of 1209. Of the number registered since 1879, 244 passed the Final and 67 the Modified examination of Victoria; 139 were registered under certificates from the Pharmaceutical Society of Great Britain, and 16 under the certificate of the Pharmaceutical Society of Ireland; 14 qualified by foreign diplomas, and 118 were registered by virtue of having been in business at or before the passing of the Pharmacy Act, 1876. On December 31, 1897, the names remaining on the *Pharmaceutical Register* of Victoria numbered 829. During the past year, out of 87 students entering for the Preliminary examination, which is compulsory before apprenticeship, and embraces Latin, English, and arithmetic, 42 were successful, and 18 out of 30 candidates passed the Final examination. The qualifications necessary before being eligible for this examination are: Having passed the Preliminary examination before apprenticeship, and served for not less than four years as an apprentice in the business of a registered pharmaceutical chemist, or chemist and druggist, or homœopathic chemist, and having attended one course of lectures, and passed examination in each of the following subjects at the College of Pharmacy, Melbourne, or some school or college of pharmacy recognised by the Board, *viz.*, materia medica, botany, chemistry, and practical chemistry. For the Modified examination, provided for candidates who had served a period of not less than three years' apprenticeship, commencing three months at least before the date of the passing of the Pharmacy Act, 1876, entries have never been very numerous, and last year numbered only two, one of the candidates only proving successful. In a separate report the Government Medical Officer (A. Shields, M.D.) bears high testimony to the care and thoroughness which characterise the Board's examinations, both in the written and oral departments, and were it not for their strictness the proportion of passes would no doubt show to greater advantage than it does.

THE BOARD REFERS in high terms of appreciation to the valuable aid to State education rendered by the Melbourne College of Pharmacy, "which is every year extending its usefulness." During the past year the number of students who presented themselves for examination for the certificate of the College was as follows:—Chemistry and practical chemistry, 70, of whom 29 passed; and materia medica and botany, 69, of whom 29 were successful. Of the examination, as a whole, a paragraph in the report states that the numbers attending—258—are in excess of previous years, "and embrace students who, after serving their indentures of apprenticeship in other colonies, came to Victoria to attend the lectures at the College of Pharmacy, and pass the final qualifying examination"—A fact of which, as you can understand, Victorian pharmacists are naturally not a little proud.

VERY SPECIAL ATTENTION is drawn by the Board to the position in which they are placed by the decision in the "Pink Pills" case. "The effect of this decision leaves the Board powerless to restrict the sale of other crude poisons, and allows of the general and indiscriminate distribution of such common means of suicide and murder as 'Rough on Rats,' 'Battle's Vermin Killer,' and like cheap deadly poisonous admixtures. Facilities for homicide and self-destruction have always been lamentably easy of access, and stronger powers than were believed to have been possessed under the Act were long desired. But the legal dictum takes away the only and inadequate restraining power which it was thought the Act reposed in the Board, leaving it practically impotent to give effect to the expressed intention of the Legislature as contained in the preamble of the Act—to restrict the sale of poisons for the safety of the public, and to lessen the frequency of fatal accidents through crime and careless custody. The Board makes no doubt that this matter of vital importance to the community will receive attention from the Government, and

that such an amendment of the Act will be promptly urged upon Parliament as will place the Board in a position to efficiently discharge its responsible duties to the public." I may add that the Board have been carefully considering and consulting with counsel as to the amendments to be suggested, and resolved at their last meeting that the President and Registrar should wait on the Chief Secretary, and ask that an Amending Act should be introduced into Parliament at the earliest possible moment.

THE VICTORIAN CUSTOMS DEPARTMENT has recently made a slight change in the classification of bottles containing spirits or other liquors. The tariff prescribes that bottles containing spirits, etc., being a reputed quart and under, shall be dutiable at the rate of 6*d.* per dozen; and that bottles of an imperial quart and under, and not containing spirits, etc., shall be charged a duty of 3*d.* per dozen. In future bottles containing over an imperial quart will be free, while the duty on those containing an imperial quart will be 3*d.* a dozen, and on those containing less than an imperial quart, 6*d.*

AT THE MELBOURNE COUNTY COURT an action was recently brought against Mr. S. E. D. Carlisle, a St. Kilda chemist, the plaintiff claiming £175 damages. The case for the plaintiff was that defendant had erroneously dispensed a prescription—"Fluid extract of cascara (Parke Davis), 2 ozs.; fl. extr. of liquorice, 2 ozs. (Capt. Zi. modo dictu). One teaspoonful (measured) to be taken as directed"—erroneously marking the label "one table-spoonful." The plaintiff stated that he had been severely purged, and subsequently suffered from hæmorrhago, but on admitting to the jury that he had not been incapacitated from attending to business, they returned a verdict for the defendant.

A NEW ZEALAND CORRESPONDENT, commenting on the small number of candidates presenting themselves for the Pharmacy Board examinations, throws the blame on the unsatisfactory state of the pharmacy laws, which "encourages young men to look for registration by easier and less commendable methods than examination. Each year that the passage of the Pharmacy Bill through Parliament is delayed increases the number of those who expect to be—and who, no doubt, will be—registered under a special clause, and without examination, and already the number of these is by far too many. We have at the present time many instances where young men lately starting in business—or still in the condition of assistants—are, instead of qualifying by study and subsequent examination, quietly awaiting the passage of the Bill into law, when they will register in virtue of 'vested interests.' The picture is scarcely creditable to our, generally speaking, go-ahead friends in New Zealand.

IT IS CLAIMED BY DR. GINDERS, Government Officer at the Hot Springs Sanatorium, Rotorua (N.Z.), that he has found a spring, lately opened to supply the new sulphur baths, which completely eradicates the desire for alcohol. The doctor writes:—"If I had heard this from one or two individuals only I might have disregarded it, but hearing it commented on almost daily, I have taken the trouble to look up the cases. Two of these were very aggravated examples of inebriety, whose acquaintance I first made in the courthouse, where I found myself under the painful necessity of fining each of them the usual 5*s.* and costs. They assure me that they find themselves new men since bathing in these sulphur baths, and have lost all taste and desire for liquor of every kind. Three other patients of mine, to whom I have found it necessary to advise total abstinence, corroborate this testimony, stating that they have felt no craving for stimulants since using the baths. They are very enthusiastic in the matter, and think that an asylum for inebriates should be established here at once. No doubt the craving for alcohol is kept up by a congested state of the mucous membrane of the stomach, so that the *modus operandi* of these waters is not far to seek; the congestion is relieved by the powerful determination of blood to the skin. In like manner, hæmorrhoids are cured by our acid waters, from the relief afforded to a congested liver. This should be good news for the Prohibitionists, and, in the event of their floating an inebriate asylum company, I shall expect to be remembered in the distribution of promoters' shares.

PHARMACY IN IRELAND.

[From our Belfast Correspondent.]

WHAT THE PHARMACIST REQUIRES is a new "Patent" Medicines law, because his livelihood is being filched away imperceptibly by the spread-eagle American "patent" medicine vendor. Even where a profit is allowed him, the stores descend like the harpies on the Trojan feast, and destroy what they cannot enjoy. The Proprietary Articles Trade Association is undoubtedly helping chemists, but it can hardly be considered an unmixed good that pharmacists and druggists should as it were combine to confer a sort of legal status on vendors who are not pharmacists, and who cannot be considered the friend of the lawful chemist. It is said that the latter has his "prescriptions" to fall back upon, but the recent decisions in Irish Courts of Justice have given such a fillip to companies that the aforesaid monopoly is likely enough to disappear before long.

BESIDES, THE MEDICAL MAN in many instances overlooks the interests of the pharmacist and himself by prescribing some proprietary drug. No one is advantaged by this, except the proprietor; the patient is only charged more heavily. The B.P., with its vast reserve of condensed pharmacy, should surely answer all the ends of a diagnosis. It is somewhat interesting to contemplate the efforts of the pharmacist to sell his own article as "equally good" when compared to the required quackery stuff. The customer, strong in the convictions which the advertiser has not failed to reiterate ceaselessly, that "substitutions must not be accepted," for a time smiles courteously, but firmly refuses. Nevertheless, his manner is as of one who just expected such by-play and duplicity, but was on that account more and more confirmed that the "mellow medicines for mournful men" had gained another trumpeting testimonial. His faith even surpasses that of the young lady who, on feeling faint in a theatre, recovered on receiving from a doctor friend a medical tablet to keep in her mouth, the tablet being—a button!

THE WELL-MEANT EXPLANATIONS of the pharmacist, who is able to give a better and a cheaper medicine, though, of course, not coupled with the hog-wash of testimonialising, are so much waste time. His very earnestness is misread (by old ladies who consume the fag-end of their lives in squandering their money in order to prolong their days) as badness of heart. A chemist I know is so much aware of the absolute adamancy of this class of people that he immediately complies with their request. This excites their suspicion, and they invariably ask a number of questions and examine the bottle well before leaving. Their credulity is not less remarkable than the peculiar disposition which makes them shun all medicines but "one." Some prefer "Brown Bolts for Bilious Beefeaters"; others would live and die by the Whangdoodle variety, whilst each in turn eulogises Father Brown's Elixir, or Holt's curc for the mumps, etc. To mention a case in point. A medical gentleman informs me that he is aware of two cases where death was accelerated, if not caused, by the taking of certain anti-febrine powders without the physician's cognisance. Certainly the indiscriminate drug vendor ought to be suppressed, or at least the law should make him prove by test cases that his "cure" can do what he declares, as in the famous case of the Carbolic Smoke Ball Company. Phenacetine relieves pain, eocaine toothache and neuralgia—but neither will create a new nerve or a sound tooth. But the *fin-de-siècle* pill! What will it not do? It is a travesty of pharmacy and an outrage on the memory of Hippocrates.

I HAVE LYING BEFORE ME a sheaf of "patent" advertisements which advocate the use of marvellous and infallible remedies, culled from a bunch of religious weeklies—the *British Weekly*, *Methodist Times*, *Christian Advocate*, *Life of Faith*, *Wesleyan Mission Notices*, etc. One of them in the Scriptural, as distinct from the flamboyant style, gives an interview on the cure of a hopeless consumptive:—"A skeleton, bad cough, and night sweats. The doctor gave no hope of recovery, said he could not get better. Got a dose of C—'s medicine and a rub with liniment. The doctor when he came again expressed surprise at the change, and told us to continue the medicine. He had no idea what medicine we were giving him." It is thus seen that this "Lourdes" miracle-worker does not hesitate to sneak in behind a legal practitioner's back to ply his quackery. If the patient had died no doubt the doctor would have been blamed. He employs a

medical assistant (ungraduated) and gives personal consultations. Is it not a mischievous thing that reverend editors whose editorials teem with sanctified admonitions should countenance such illegal practices? The system is well worked; the journals being religious bring shoals of poor factory-girls, etc., to the mill of the quack, the latter pays the journal part of the profits, and of course the pharmacist, whom the law has appointed, is robbed.

THE "METHODIST TIMES" last month contained a most lurid and overwhelming diatribe against Bryant and May's matches, urging its readers not to use them because the "matches poisoned those who made them." In the very same issue of that journal some dozen advertisements appear of quack drugs which "cure" everything. Now these vile "medicines" poison the thousands who use them as effectually as yellow phosphorus. The exposure of Hernia Specialists and Harness's Electric Belts, etc., is lost on such journals. The above periodical appeals to the opinions of Sir William Thompson and Sir W. Ferguson as to the demoralisation of vivisection. What, then, has it to say to the opinion of Sir Walter Foster, M.P., an eminent London physician, who declared, "in the interest of the public certain blatant advertisements of drugs ought to be stopped"?

THERE OUGHT NOT TO BE two measures of morality even in a religious paper. These quacks are all recognised by several well-marked characteristics:—1. The doctor declares positively that the patient cannot live (this in spite of the fact that medical reticence is a proverb). 2. After one dose of the quack elixir marked improvement sets in. 3. The patient throws away his crutches or his walking-stick, or anything that will introduce a dramatic climax. The fact that he throws away his money is not mentioned. One victim's testimonial declares that he carried his crutches to the druggist, and yet another chopped his to pieces. There is no reason given for these strange actions, except indeed that the performers were mad, which is not an unlikely result of quackery. Some years ago in Belfast a quack's performance drew large crowds of old men with stiff joints. Their muscles were rubbed with liniment. The roads were littered with crutches, sticks, bandages, etc. The authorities tried to put it down; his made it worse. The doctors emigrated. But the craze passed, and it is common to hear a crippled patriarch remark: "These crutches will never be as good as the old ones." Another old man who had for ten years never come down the stairs without assistance, the morning after the "cure" surprised his family by bounding down the steps like a deer. This was blazoned abroad. The second morning he came down the stairs alone—and broke his neck. That was not blazoned abroad. One is astonished that clergymen of all sects, who uphold the inviolability of their own order, should, by means of public testimonials, eulogise the vilest and unhealthiest concoctions, and thus depreciate the inviolability of the second highest order in the State.

Mr. A. J. O'SHEA, L.P.S.I., Donegall Street, has been appointed apothecary to the new Mater Infirmorum Hospital.

A YOUNG LADY partaking of strychnine from a plate (which had been set as rat-poison) in the presence of her lover, a Mr. Maxwell, of Ballymena, is by no means a cheering spectacle. The fact that it occurred suggests that human nature is still a mystery; that the Coroner system needs a stimulus, especially in country districts; and, further, that the attempt to make a rat-poison itself without any "kitchen" is nearly as good as trying to make a dog drown himself without the stone round his neck.

A WELL-KNOWN RAT-POISON used with great success by professional rat-catchers is a mixture of aniseed, meal, and plaster of Paris. This would not be so dangerous in farmyards. The rodent devours it greedily, and the plaster of Paris, being a great absorbent of moisture, hardens into a flinty mass, and—hey presto! In the days when Hercules Street occupied the site of Royal Avenue in Belfast, rats were numerous.

A CHEMIST in that vicinity was pestered with their invasions. He laid poison on herrings, meat, etc., without success. The linseed meal drawer was cleaned out twice. At last a device suggested itself. He carefully ground up a large dose of arsenic amongst the linseed meal, and the next morning a score or so of belated stragglers had bivouacked near the field of battle.

ANNOUNCEMENTS.

CHEMISTS' ASSISTANTS' UNION.—A meeting will be held at the Horseshoe Hotel, Tottenham Court Road, W., on Thursday, July 7, at 8 o'clock, to elect a Council and draft the rules. It is desired that this meeting should be thoroughly representative, and that every assistant who can will attend.

THE POISONOUS SUBSTANCES BILL.—A meeting of the Manchester Pharmaceutical Defence Association will be held on Thursday evening, June 7, in the Chemical Club, Victoria Hotel (Room No. 68) for the purpose of discussing the above Bill, and to which all chemists are invited. It is suggested that the said Bill is both unsatisfactory and incomplete, and that amendment is necessary. Every chemist in the district is therefore requested to attend, and so assist in adding weight to any amendments that may be forwarded at this meeting. The chair will be taken at 8 p.m. by Mr. Walter Gibbons.

THE ROYAL PHOTOGRAPHIC SOCIETY will hold its forty-third annual exhibition from September 26 next to November 12, in the Gallery of the Royal Society of Painters in Water Colours, 5A, Pall Mall East, London, S.W. Entry forms may be obtained on application to the Secretary of the Society, 12, Hanover Square, London, W.

ACCIDENTAL POISONING CASES.

OXALIC ACID has been taken in mistake for Epsom salts by Walter O. Lamburd (39), potman, of Islington Green, who died as the result. The packets containing the Epsom salts and the poison were both kept in the same room, hence the mistake. A jury found that death was due to accidental poisoning.

A BOTTLE MARKED "LAUDANUM" was found close by Samuel Townley (56), painter, of Hurst, who was sitting in a chair unconscious. He was taken to Ashton Workhouse Infirmarium, where death occurred on Wednesday, June 22. He told the nurse that he took the laudanum to relieve pain. "Misadventure," a jury said.

AN OVERDOSE OF CHLOROFORM self-administered to induce sleep, is supposed to have caused the death of Gladys W. Hewitt, nurse-maid, at Pensnett, on Tuesday, June 14.

SULPHURIC ACID, kept for cleaning corks, was taken in mistake for medicine, by W. J. Womack, a newsagent of Bethnal Green, after a heavy drinking bout. A jury returned a verdict of "Death by misadventure."

PERSONAL NOTES.

MR. C. E. CORTIS STANFORD, B.Sc., eldest son of Mr. Edward C. C. Stanford, an old pharmaceutical student, has passed the final professional examination for the Glasgow University M.B. degree.

MR. C. T. THONGER has purchased the business of his father at Harborne, Birmingham, recently sold by the Sheriff under an execution order.

MR. MARTIN MAGOR is resigning his seat on the Aston District Council.

MR. G. W. KENDALL, chemist and druggist, has disposed of his business at 163, Dewsbury Road, Leeds.

LIEUTENANT-COLONEL CLIFFORD PROBYN was last week elected Sheriff of the City of London, at the Guildhall. Colonel Probyn is a member of the London County Council, and this is the first occasion on which a member of that body has been appointed to the office of Sheriff for the City.

MR. ERNEST ALBERT UMNEY, pharmaceutical chemist, has been admitted as a partner in the firm of Wright, Layman, and Umney, Southwark, London. Mr. E. A. Umney was a pupil with Mr. Martindale, of London, and was the Pharmaceutical Society's silver medallist in practical chemistry in 1897.

Pharmacy and the Allied Sciences

REVIEW OF CURRENT WORK.

G. Dickson and T. H. Easterfield point out that well-burnt charcoal reacts readily with fuming nitric acid, the action being accompanied by a considerable rise of temperature, and that when boiled for twenty-four hours with fuming nitric acid, the charcoal goes entirely into solution. On dilution of the solution with water, a black, amorphous substance is precipitated, resembling the "mellogen" of Bartoli and Papasogli, whilst mellitic and non-crystalline acids remain in solution. The black, amorphous substance is easily soluble in alkali, and on oxidation by alkaline permanganate yields oxalic and mellitic acids in about equal proportions. Charcoal was found to yield 25 per cent. of its weight of crystalline ammonium mellitate by boiling it with fuming nitric acid for twenty-four hours and further oxidising it by adding potassium chlorate to the boiling solution; the organic acids, after precipitation as barium salts, are converted into ammonium salts. The yield of mellitic acid varies only slightly, whether the charcoal contains 2 or only 0.2 per cent. of hydrogen. Coal under similar conditions gives only a small yield of mellitic acid. Even nitric acid of sp. gr. 1.1 can oxidise well-burnt charcoal. After boiling continuously for seven days, the charcoal is changed to a black, impalpable mud, soluble in alkali. The nitric acid solution contains mellitic but no oxalic acid.—*Proc. Chem. Soc.*, 197, 163.

Under this name a mixture has been introduced for making a liqueur. It consists of angelica and coriander fruits, 100; anise fruits, 15; fennel herb, 10; peppermint herb, 50. The herbs are cut up very fine while the seeds are left whole. Chlorophyll makes a suitable green colouring matter, extract of curcuma is serviceable for yellow, and kermes for red.—*Pharm. Post*, xxxi., 246.

A. G. Perkins finds that the Indian dyestuff "Waras"—a purplish powder which covers the seed pods of *Flemingia congesta*, an erect, woody shrub of Africa and India—in its general properties and microscopic appearance closely resembles kamala. The principal crystalline constituent found in the powder was "flemingin," $C_{12}H_{12}O_3$, an orange-red powder consisting of small, prismatic needles melting at 171 to 172°. In appearance and numerous properties it resembles the rottlerin of kamala, but is distinguished from that by its solubility in alcohol, and by the browner tint of its alkaline solutions. In an alkaline bath it dyes silk a golden yellow, and is a stronger dyestuff than rottlerin. On fusion with alkali it gave acetic acid, salicylic acid, and an acid of higher melting point which was not identified. Another constituent, "homoflemingin," was present in minute quantity only. It forms glistening, yellow needles which melt at 164° to 166°, and possess properties resembling those of flemingin. Two resins were extracted, the first of high melting point, described as a brick-red powder soluble in alkali, with a deep brown tint. It yields acetic and salicylic acids on fusion with alkali, and dyes silk in shades which are redder than those produced by flemingin. The resin of low melting point is a deep orange-brown, transparent mass which melts below 100°, is soluble in alkali with an orange-brown colour, and closely resembles the resin of low melting point of kamala. On fusion with alkali, acetic and salicylic acids are obtained, and on boiling with nitric acid (sp. gr. 1.5) oxalic acid is formed. It is concluded that the above substances are closely

related to, though not identical with those present in kamala. Waras dyes silk a golden-yellow shade, and is a much stronger dyestuff than kamala.—*Proc. Chem. Soc.*, 197, 162.

In a work on the algal flora of the Hamburg waterworks, Herr O. Strohmeier states that the green algæ—*Cladophora*, *Spirogyra*, *Enteromorpha*, *Stichococcus*, etc.—have a very powerful effect in purifying water by the destruction of bacteria through the agency of the oxygen which they exhale. Those algæ, on the other hand, which are enclosed in a mucilaginous sheath, especially diatoms, have a very prejudicial effect on drinking water, by stopping the filters through which it passes.

T. B. Osborne and G. F. Campbell have continued their useful work on vegetable proteids, those of the horse-bean (*Vicia faba*), vetch, and soy-bean (*Glycine hispida*) being the latest dealt with. They show that the seeds of the pea, lentil, horse-bean and vetch agree in containing legumin, legumelin and proteose, whilst the three first-named also contain vicilin. A careful comparison of the reactions and properties of those proteids has revealed no difference between preparations of the same substance from different seeds. The globulin legumin is the chief proteid constituent of the seeds, as much as 10 per cent. having been found in the meal of vetch seeds, whilst the pea, lentil, and horse-bean contain a mixture of it, with vicilin, to the extent of 10, 13, and 17 per cent. respectively. No method for the quantitative separation of legumin and vicilin has yet been devised, but it is stated that the lentil contains most vicilin—probably about one-third of the mixed globulins—and the horse-bean least. Vicilin is apparently not a derivative of legumin, as it is absent from vetch seeds, and it is remarkable for containing less sulphur than any other known proteid. Legumelin is either an albumin or a globulin, probably the former, and has been found in all the leguminous seeds examined by the authors, except the white bean (*Phaseolus vulgaris*) and the blue and yellow lupin. The proportion of this constituent in seeds ranges from 2 per cent. in the pea to 1.25 per cent. in the lentil and horse-bean. Proteose is present in small amount only, the pea containing about 1 per cent., the horse-bean about 0.5 per cent., and the lentil and vetch still less.—*Journ. Am. Chem. Soc.*, xx., 393, *et seq.*

The yellow soy-bean and a variety known in Japan as *Kiyusuki diadzu*, have been examined by T. B. Osborne and G. F. Campbell, the result of whose investigation is to show that the chief proteid constituent of the beans is "glycinin," a globulin similar in properties to legumin, but containing nearly twice as much sulphur, four-tenths more carbon, and one-half per cent. less nitrogen. Its percentage composition is given as follows:—Carbon, 52.12; hydrogen, 6.93; nitrogen, 17.53; sulphur, 0.79; oxygen, 22.63. The soy-bean also contains a more soluble globulin which resembles phaseolin in composition and reactions; but the amount of this proteid present is small. Besides these globulins about one and five-tenths per cent. of the albumin-like proteid legumelin was obtained; it had previously been found in the pea, vetch, horse-bean, lentil, adyaki bean, and cow-pea. Finally, a small quantity of proteose was found in the soy-bean.—*Journ. Am. Chem. Soc.*, xx., 419.

F. Escombe supports the view of Gorup-Besanez, that during germination amides and amido-acids perform different functions. The former are produced only in small quantitative by direct hydrolysis, being chiefly formed synthetically from the further transformation of amido-acids and of nitrogenous sub-

stances derived from the reserve carbohydrates. This synthesis of amides can take place in the dark, and the further stages, at all events, of proteo-hydrolysis are due to the action of enzymes. It is most probable that proteids cannot be produced from amides in darkness, and nothing can yet be said as to the rationale of their regeneration in the light. According to Sig. N. Passerini (*Bull. Soc. Bot. Ital.*, 1898, p. 71), it is common, under ordinary circumstances, for not more than 20 per cent. of the seeds of the olive to germinate. If immersed for ten minutes in water at 40°-50° C., they germinate more rapidly; a temperature of 60°-70° in the water increases the proportion that germinate; while immersion in water at 90° destroys the power of germinating.—*Science Progress*, 1898, p. 219.

F. Günther has modified his previous statement that Maclagan's test for the purity of cocaine hydrochloride could not be depended on, by now merely claiming that the liquid above the crystalline precipitate should remain clear. In addition he states that, in carrying out Maclagan's test, as described by Böhringer (*P. J.*, lx., 449), two solutions should be made, each with 0.10 gramme of the cocaine hydrochloride in 85 C.c. of water, one of which should remain clear after the mere addition of 0.2 C.c. of .960 liquor ammonia, and the other solution should give a crystalline precipitate within fifteen minutes of vigorous stirring.—*Pharm. Centralh.*, xxxix., 383.

E. Bourquelot and H. Herissey confirm the statement of Poumède and Figuier, published in 1847, that the gelatinous body of gentian root is pectin. They find that a slight hydration of the gelatinous matter takes place with water at ordinary temperatures, and to a greater extent if the resin present in the root be first removed, as well as when a trace of acid is present. The pectin thus obtained with the aid of mineral acids, however, differs in optical activity from that obtained by water alone.—*Journ. de Pharm.* [6], vii., 473.

These are new products obtained, according to A. Claus, by heating o-acetyl-*p*-bromophenol or the corresponding chlorophenol for some time on the water bath with the theoretical proportion of phenylhydrazin in acetic acid solution. The bromo compound separates from alcohol in yellow shining leaves, larger crystals being slowly deposited from dilute solutions; the latter melt at 167° C. It is insoluble in dilute alkali. The chloroxazolide is obtained in yellow crystals melting at 172° C.—*Zeit. d. allg. oest. Apoth. Ver.*, lii., 305.

H. K. Miller is of opinion that the practice of wiping flasks with a dry cloth just previous to weighing them is the cause of serious errors. In some fat determinations he noticed a considerable increase in weight. On making a second weighing of a flask containing an oil extracted from a sample, and careful experiment led to the conclusion that in wiping the flask it became electrified; the static charge, acting on the floor of the balance, appeared to induce in it a charge of opposite character, and the mutual attraction between the two charges seemed to have the effect of increasing the weight of the flask. The potential of the charge, it is pointed out, would vary with the atmospheric conditions, and with the manner of wiping the flask. Thus, by using a linen cloth, in very dry weather, it was found possible to produce such a charge on a 100 C.c. flask as to require 0.08 Gm. additional weight to restore equilibrium. Since, however, a high charge like this would be rapidly dissipated, the flask would appear to lose weight. It was found that a charge

which apparently caused an increase in weight of about 0.01 Gm. would be retained quite a long time, and the error thus introduced might easily be overlooked. Moreover, a small charge was found to be retained for many days on a flask kept in a desiccator. Whilst, therefore, in damp weather a charge would readily pass off and not give rise to an error, on a very dry day the practice of wiping glassware just before weighing seems liable to cause serious errors.—*Journ. Am. Chem. Soc.*, xx., 428.

From observations on material consisting of about 2000 embryos of barley, Herr J. Grüss asserts that, in the germination of seeds, cane-sugar is formed in the cell out of dextrose; cellulose and starch being then produced out of the cane-sugar. In the formation of the starch and cellulose, no substance belonging to the group of aldehydes is set free in the molecules of sugar.—*Ber. Deutsch. Bot. Gesell.*, vol. xvi., p. 17.

In a paper read before the Quekett Microscopical Club (*Journal*, 1898, p. 1) Mr. G. Masee supports the view that the *Basidiomycetes*, and among them the *Agaricineæ*, constitute the most modern group of fungi, and the one most perfectly adapted to existing circumstances, as is shown by their universal distribution and their immense numbers, amounting to about 11,000 existing species of *Basidiomycetes*. The *Clavariaceæ*, with about 300 species, form the lowest type, and exhibit the smallest amount of differentiation. Then come the *Thelephoreæ*, about 1000 species, which exhibit the gradual evolution of a method for the protection of the hymenium from rain and dust. Next the *Hydneæ*, with about 1000 species, in which we see the introduction of a new plan for increasing the area of the hymenium by covering the spore-bearing portion with densely-packed slender teeth. Next the *Polyporeæ*, about 2500 species, in which the same idea is carried out in another way, the hymenium constituting a lining to the cavities of innumerable slender tubes. Finally, the *Agaricineæ* constitute the most modern and the most highly organised group, comprising the enormous number of about 6000 species.

Dr. A. Nestler describes the mucilage-cells in the leaves of various species of *Malvaceæ*, which he regards as organs for the absorption and retention of water. They are epidermal cells in which the cuticle projects into the interior in a conical or funnel-shaped form, presenting the appearance from the outside as if the cuticle were perforated. The nucleus is always situated near the mouth of the funnel. It is the inner and lateral walls of these cells which become converted into mucilage. The author finds Böhmer's hæmatoxylin the best reagent for demonstrating the mucilage-cells, imparting to them a deep blue colour.—*Oesterr. Bot. Zeitschrift*, 1898, p. 94.

In galls produced on *Ulmus campestris* by the attacks of an aphid, *Schizoneura ulmi*, Sig. N. Passerini finds a gum differing in its properties from other gums—arabin, cerasin, etc.—and from mucilage, dextrine, and other carbohydrates found in vegetable tissues. The solid portion of the gum consists chiefly of a gummy substance which is precipitated by alcohol, the precipitate being amorphous, yellowish, tasteless, very soluble in water, with the appearance of gum arabic, but differing from that substance in several properties. It is strongly dextro-rotatory, and has an energetic reducing action on copper salts.—*Bull. Soc. Bot. Ital.*, 1898, p. 70.

PHOTO-MICROGRAPHY.—IV.

BY EDMUND J. SPITTA, L.R.C.P. LOND., M.R.C.S. ENG., F.R.A.S.

Achromatic and Apochromatic Objectives.

We come now to a far more difficult branch of the subject, namely, the selection of objectives. These are of two kinds, the achromatic and the apochromatic. The former have been in existence for years and are being slowly and steadily improved both in quality and definition, whilst the latter are of more recent invention. So far as the superiority which the apochromatics possess over the achromatics, there is no possible room for doubt, but seeing they are so very much more expensive and that achromatics of recent years—since the introduction of the Jena glass—have reached to so far a greater pitch of perfection than formerly, it will be advisable to discuss the use of both kinds.

The achromatic is built on an entirely different principle to the apochromatic, for even in the best makes, the inevitable residual colour of the secondary spectrum is always well marked: Indeed, with this type it is impossible with our existing knowledge to entirely remove it. Opticians have striven for years to improve their general performance, but no achromatics seem to perform so well as those lately introduced by Mr. Conrady. I have only been able to test a few of the lenses, because his series is not yet complete, but those that have been tested show, besides an excellent performance on all the recognised test objects, a very great advance in one particular, and it is this: The ordinary achromatic will not stand eye-piecing beyond five or seven diameters at the most without producing a "rotten" image, but the objectives in question will work easily with ten, and, using suitable objects, even with an eye-piece of eighteen. Here we have, then, a decided improvement, and I understand that it is dependent upon an entirely different line of thought in their construction. Mr. Conrady considers, *ceteris paribus*, that the real improvement in the construction of achromatics of the future will lie in the careful uniting of equal phases of the rays to be joined in one focus, and inasmuch as his results so overpower those hitherto obtained, I believe his theory worthy of most careful consideration. Notwithstanding what has been said, some very fine lenses do already exist, such as No. 2 Leitz, Nos. 6 and 7A Richert, the 1/10th immersion by Leitz, and the semi-apochromatics by Reichert, let alone some excellent objectives recently brought out by the old-established firms of Ross, Beck, Wray, and others.

But in making a selection we must first pause to consider how we are going to photograph at all with a visually constructed objective. Let us suppose, for instance, we put a visually constructed inch on to the microscope, focus, and take a photograph. We should find (supposing we were photographing the proboscis of a blow fly) that all the suetorial tubes which had been focussed so carefully on the ground glass were absolutely out of focus on the plate. The reason of this is not far to seek. Microscopical objectives computed for visual use are all constructed to give their image by the union of the yellow or yellow-green rays of the spectrum, because the eye perceives this colour more powerfully than any other, hence it is obvious, inasmuch as each colour in the achromatic brings its image to a focus in a different plane, that if we focus in yellow the image produced by the violet rays, which are those used in ordinary photography, will be outstanding at another point on the axis. In photographic lenses this trouble is got over by uniting with the yellow some portion of the violet end of the spectrum, so that when we focus in the yellow we unconsciously focus in the violet at the same time. By this means it is very evident, if the optician has done his work well, our visual focussing will produce a sharp picture on the negative, although taken by the violet ray. There is only one

practical way of getting over this difficulty—using visually corrected objectives for photography—and that is to photograph in monochromatic light and to use a correspondingly stained plate. Yellow light is by far the best, and it works well with the Edward's plate; but what I think much better is to do away with the visually corrected achromatic altogether, and to employ objectives corrected for photography. Wray sells an excellent series, and I have often obtained with them the very best results, and with some specimens, when using low powers, almost indistinguishable from that obtained by the use of apochromatics; although this is not usual unless the object photographed be one with coarse detail, and so not require high N.A. to resolve it. Those, therefore, who must content themselves with the cheaper form of lenses, are strongly advised to buy achromatics especially arranged for photography, although they are of limited use for serious visual purposes. The reader may think this not a little curious, for what can be brighter and more crisp than the image produced by a good photographic lens? But the fact is, the corrections that have to be applied to a microscopical objective are of a far higher order than those which are sufficient for even the best of photographic lenses, errors left outstanding as negligible in the latter are of quite sufficient importance to destroy the best performance of the former. I must caution those who are commencing the subject not to be led away by purchasing achromatics said to be made for the two-fold purpose, visual and photographic. There are other optical reasons which must, both theoretically and practically, in the existing state of our knowledge, forbid anything like perfection in these lenses for double use. At their best they are but a compromise, and so do not give the best of results for either purpose.

The apochromatic system, of which I shall now speak, is necessarily a very intricate one, for a very large number of lenses enter into the formation of one combination. They are therefore necessarily very costly, but the resulting effect is a perfectly colourless image of great excellence, brilliancy, and purity. Readers are also further cautioned most strenuously to avoid apochromatics which have been brought out of cheap design, claiming to be as good as the more expensive ones. I have examined most carefully one of this make, and found that it was not perfectly apochromatic, as stated, and that its N. A. was but slightly over 1.26, although sold as 1.40.

Photographically speaking, one great advantage of the real apochromatic system is that photographs can be taken in any colour, for all rays of the spectrum are sensibly brought to a common focus. It will be seen at once how very important this is, especially when dealing with objects of feeble contrast in colour, such as the bacilli of diseases. It may be mentioned that owing to their feeble staining, in some instances the only chance of making a good photograph is to use some coloured screen, whereby a colour contrast can be produced between the bacillus and the background. This done, a good photograph can be obtained provided the lens focusses the same in all colours, but it is equally obvious that if an ordinary achromatic were used the final result must of necessity—there is no discussing the matter—be greatly inferior. We have only to look at the photographs taken of these objects in past years by achromatics of the then highest order, and compare them with those taken at the present day by means of apochromatics. The sum total, then, of the remarks on lenses comes to this:—When photo-micrographs are desired of the very finest order and of high amplification, such as photographs of diatoms or bacilli at 1000 or 2000 diameters, nothing will give the perfection required save the apochromatic used with its compensating eye-piece; if, however, medium power work up to, say,

300 or 400 diameters, is the sole ambition of the photographer, then he may confidently rest assured his results will be worth looking at should he employ achromatics well corrected for photography. It is an open question whether these photographically corrected achromats should be used with an eye-piece or not. Personally I have no hesitation in saying I prefer that they should; but it is equally well known that in some photographers' hands with certain specimens, and certain degrees of magnification, excellent results have been obtained without. But a doubt still remains in one's mind even then whether better results still would not have been produced should an eye-piece have been used. With the apochromatic system, inasmuch as part of the final correction of the objective is obtained by the use of the special compensating eye-piece, so it is absolutely necessary to use one with this type of objective, and I think that of all the compensating eye-pieces made the best results are usually obtained in photography with those specially designed for projection purposes. They are termed "projection eye-pieces." These, with suitable camera length, will nearly always fulfil the requirements of the photomicrographer, but at times when he wishes over 1000 diameters it may be necessary to put them aside and use the ordinary compensating eye-piece, as they extend so much higher in power, even up to 27 diameters. This is another superiority of great service with apochromatics, they bear eye-piecing to almost any amount without producing a "rotten" image.

Dry and Immersion Objectives.

Whether apochromatic or achromatic, objectives are of two kinds—"dry" and "immersion"—by which is meant that one is used dry as it comes from the maker, and that the other—to insure its best optical performance—needs a drop of cedar wood oil or some other suitable fluid interposed between the front lens and the cover-glass of the specimen. Both these varieties must be explained, but to do so intelligibly it will be necessary to premise my remarks by considering for a moment, in as few words as possible and in a popular manner without mathematical detail, the subject of refraction of light.

Light is always supposed to travel in straight lines—"rectilinear propagation" as it is called. Bundles of rays issuing from an illuminant may not be parallel amongst themselves, constituting what is called diverging or converging light; or they may travel side by side with unerring rectitude—such as we meet with in the light coming from the stars or the sun—when they receive the technical name of "parallel light." The path of any ray in a given medium is always straight until it meets with another medium more or less dense than itself, when, with one exception, it is bent aside, undergoing what is called "refraction." After such bending, however, it will again resume its rectilinear propagation along its new path, until it meets with a fresh medium, when on entrance it will be bent again if the density be different. Change of density then of the medium is the cause of refraction, and this must be held in mind. It will be well now to briefly point out the nature of the alteration of direction brought about by the change of medium, and for purposes of description have resort to Fig. 1.

Let A B C D represent the outline of a circular vessel, A C being the water line, and B D drawn at right angles to this level passes from B to D through E—which direction is called the "perpendicular" or "normal," all angles being referred to this line. When the beam is incident along B to E perpendicularly into the new medium, there is no refraction or reflection—the only instance where it undergoes no bending—for it passes on into the water, uninterrupted following the course of the line E D. But

when it is incident at any other position—say at m along m E there is refraction at E, for the beam will be found to strike the point n. Suppose it is incident at m' along m' E, then there is also refraction at E, for the ray will be found at n'.

Snell made a celebrated investigation concerning this bending of the rays, by which their path can be predicted. Were it not for his discovery, about to be explained, we should not have had the grand computations of lenses with which, in the present day, we are all so familiar.

He first drew a line from m to meet B E at o, and another from n meeting E D at p. The lengths o m and n p were measured and divided one by the other; a quotient was obtained.

Now what he discovered

was the fact that wherever the angles were taken, whether from m or m', the quotients, in all cases using water and air, came out the same viz., 1.333. This was called the refractive index of water. Other substances were tried, and each substance had its special refractive index. Flint glass, for instance, is found to be 1.54 to 1.64, according to its manufacture, and so on with other substances, complete lists being found in all books upon the subject. If the reader be mathematically inclined, he will at once see these lines, m o, n p, really represent the sines of the angles B E m and n E p respectively, so that, continuing our precept, the sines bear certain definite ratios one with the other wherever the incident light striking E comes from; that is, the ratio between o m and n p, which is about 4 to 3, holds good, whether the ray starts from m or m'. It is quite evident now that we can calculate where the ray will strike A D, after starting from any given point in B C. For example, let m strike E to make an angle m E o, say, of 45°. It is required to find the angle n E p, so that we can draw n E correctly. We take out of the tables the sine of 45°, and find, roughly speaking, it is 0.7, and multiply that by 3 and divide by 4, which gives us 0.5. Resorting to our book again, we find 0.5 is the sine of 30°, so that 30° must be marked off from D to find the line n E. Although, simply put, this is the maxim which mainly pervades the optician's mind in constructing new lenses. As a matter of fact, the details become operose in real calculations, as different colours are refracted at different angles, and the problem, where many lenses are concerned, becomes intensely intricate. But the law underlying the calculations is the same from beginning to end. The same law reversed of course equally holds good when rays pass from the water into air, and when passing from one glass to another, although then with certain modifications.

One more remark on the subject yet remains to be said. Seeing that n' passing to E becomes refracted to m', what happens to a ray starting about x? It will pass into the air and graze along E. C. If this be true what will take place if one starts still nearer A, say at z? This ray cannot get out of the water at all and is said to suffer "total reflexion" at E, for it appears again at z'. There is one angle then it is very evident, which is the last, that allows a ray to get out; this is called the critical or "limiting angle," and is known for all kinds of glass.

Let us now see how these remarks apply to our subject. Con-

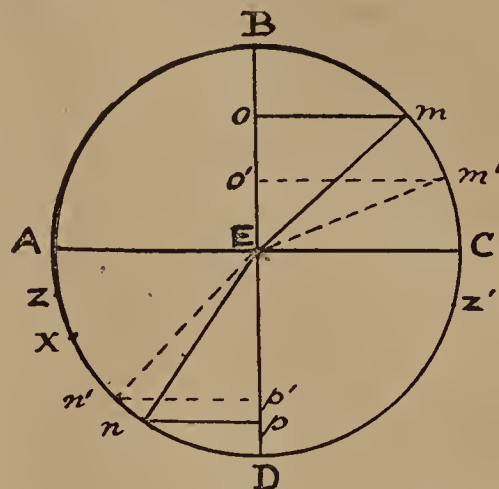


FIG. 1.

sider Fig. 2. Let *c* be the cover-glass, having a refractive index of about 1.5, and *L* the front lens of the objective. Also consider *A B* an incident ray upon the cover-glass at *B*. As it enters a denser medium than air, according to our precept it must be refracted towards the normal *B N* and follow the path shown as *B D*. When it arrives at *D* (as in the case of what happens when using a dry lens) it passes into air again—a rarer medium so is bent away from the normal *D N'* as much as it had been bent towards *B N* the previous normal on entering the glass, thus continuing its course along *D E* to *E*; *D E*, therefore, is of course parallel to *A B*. It will now be readily understood, without much consideration, that any rays lying between *D E* and the edge of the objective (where *D E'* touches it in the diagram) will be lost to the microscope, as they have no chance of entering the front lens of the objective.

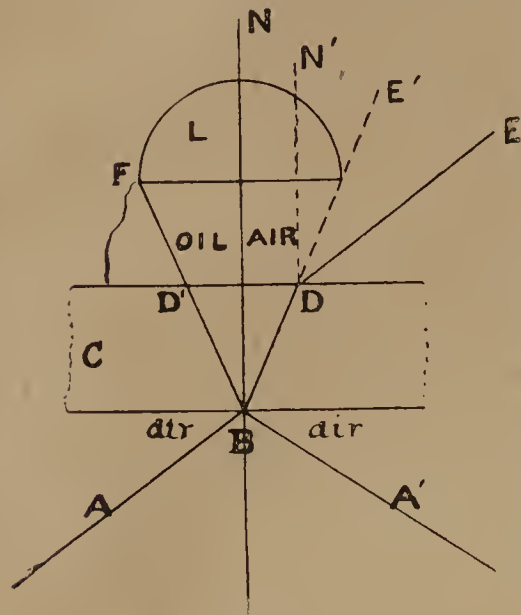


FIG. 2.

But let us consider what happens if we place between the lens and the cover-glass a drop of fluid, say, cedar oil, which has the same refractive index as the cover-glass itself, viz., 1.5. Follow the diagram, commencing at the right hand, and consider the ray starting from *A'*. Arriving at *B*, it will be refracted to *D'* just the same and for similar reasons as *A B* was refracted to *D*. But notice now what happens. As the emerging ray at *D'* enters a fluid of the same refractive index as the substance it has left, it continues its path uninterruptedly in a straight line to *F*, which enables the object-glass to gather up the whole of the rays that were lost when the ray entered air, as shown on the other side of the diagram instead of the oil. It is obvious, then, why immersion lenses give so much more light.

The same class of reasoning holds good with the mounting media of specimens. If they are mounted dry, which means in air, many diffractive beams which pass from the object, all of which, theoretically, if it were possible, should be caught up by the objective, are lost; whereas, if mounted in Canada balsam (refractive index, 1.5), many more may be caught. This will be referred to later, and explained properly, when speaking of mounting materials.

It is very obvious, then, that, theoretically, dry objectives cannot pass so much light as immersion ones, and this is practically found to be correct. What is more to the point, the argument also shows that the limit of dry objectives is *N. A.* 1.0, because all the outside rays will be lost without the interposition of some homogeneous substance to optically join up the gap between the objective and the cover-glass. It is for this reason that immersion lenses are often called homogeneous systems.

Another point not to be forgotten is that the cover-glasses vary in thickness and density, so the bending of *B D* may vary in direct accordance; and it is to obviate this that dry lenses of high *N. A.* are provided with a "cover-glass adjustment," which so regulates the performance of the objective as to accommodate it to the differences in question. To practise the user to arrange the adjustment, as well as for other reasons, the firm of Zeiss sell a

slip upon which several cover-glasses of known thickness are placed, and as the firm mark the adjustments for different thickness of cover-glass on the objective itself, it enables the beginner to practise over and over again the art of getting his adjustment correctly by sight, and then proving his result, until he is quite an adept, by comparing the figures on the cover-glass with those on his objective. This object lesson, which requires some patient practice and learning, is of great service, especially to the photo-micrographer, as it will be seen hereafter when speaking of depth of vision in lenses. It will then be shown a great deal of accurate vision is dependent on the accommodation of the eye—hence the greater amount of accuracy in focussing, etc., is required when photographing an object where the accommodation of the eye does not come into play, and every adjustment to improve such focussing must be employed.

Inasmuch as the presence of the cedar oil forms a homogeneous system, so it is obvious that any small variation in thickness of cover-glasses does not make any difference; hence the majority of immersion lenses have no cover-glass adjustment. Messrs. Powell and Lealand, however, still consider that, notwithstanding what has been said, the very finest of definition under certain circumstances may be only secured by a touch of a cover-glass adjuster, so they provide their immersion objectives with them. Dry lenses which are not provided with a cover-glass adjustment have to be corrected by pushing in or pulling out of the draw-tube of the microscope, which optically amounts to almost the same as the use of the cover-glass adjuster, lengthening the tube with thin glasses and shortening it with thick ones.

The careful reader will now very readily understand what is meant by modern objectives having written upon them very plainly—"For 170 Mm. tube" or perhaps "Tubuscul 250 Mm.," and so on—it is the length of tube for which the objective has been originally corrected with a given thickness of cover-glass. Each maker has his standard thickness of cover-glass, and this can be furnished on application. With low powers all these minutiae vanish to a great extent, but when dealing with high power dry objectives they become of the most paramount importance if perfection of result be aimed at.

(To be continued.)

SELECTED FORMULÆ.

WOOL-FAT PREPARATIONS.

Ihle gives the following formula for preparations of wool-fat ointments:—GREY OINTMENT: Hydrargyri, 20; adip. lanæ, 50; adip. benzoat., 10; ol. bergamot, 3. PASTA MOLLIS: Adip. lanæ, 15.0; ol. olivar, 5; zinci oxid., 10.—*Pharm. Centralh.*, xxxix., 92.

ELDER PERFUME.

Terpineol, 80; cananga oil, 60; African geranium oil, 5; tincture of musk, 5; tincture of storax, 100; alcohol, 5000; distilled water, 500.

ESSENCE OF LILY OF THE VALLEY.

Oils of lignaloe, 7.0; cananga, 60; bergamot, 10; geranium, 9; oil of melissa, tincture of storax, 60; alcohol, 5000; distilled water, 500.—*Pharm. Zeit.*, lxxii., 523.

CHRYSAROBIN OINTMENT (UNNA).

Chrysarobin, 5; ichthyol, 5; salicylic acid, 2; lanoline, 30; vaseline, to produce 100.—*Journ. Pharm. d'Anvers*, after *Oester Zeitsch. für Pharm.*

PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL.

WEDNESDAY, JULY 6, 1898.

Present :

MR. WALTER HILLS, PRESIDENT.

Messrs. Allen, Atkins, Bateson, Bottle, Carteighe, Corder, Cross, Hampson, Harrison, Johnston, Martindale, Park, Southall, Storrar, Symes, Warren, and Young.

In the absence of the Vice-President the Treasurer took the vice-chair.

The Minutes of the last Council Meeting were read and confirmed.

The PRESIDENT said, arising out of the Minutes, he had the pleasure to announce that he had received a letter from Sir James Crichton Browne, consenting to give the inaugural address at the opening of the School in October next.

ELECTION OF ASSOCIATES IN BUSINESS.

The following, having passed the Minor examination, being in business on their own account, and having tendered their subscriptions for the current year, were elected "Associates in Business" of the Society:—

Archer, George Banks W.; Dalkeith. | Buckingham, Harry; Birmingham.
Daubeny, George; Bristol.

ELECTION OF ASSOCIATES.

The following, having passed the Minor examination and tendered, or paid as "Students," their subscriptions for the current year, were elected "Associates" of the Society:—

Bamford, Harry; Stalybridge. | Freer, Arthur Harry; Uppingham.
Couldery, George Etches; Reading. | Hampton, Peter; Arbroath.
Douglas, James Forrest Reid; Dundee. | Hitchon, Peter; Padiham.

ELECTION OF STUDENTS.

The following, having passed the First examination and tendered their subscriptions for the current year, were elected "Students" of the Society:—

Jones, William Brittain; Brynmawr. | Tillott, John Booty; London,
Tildesley, Robert William; Rotherham. | Waddell, Robert Arthur; Sunderland.

RESTORATION TO THE REGISTER.

Robert Joseph Rastrick, of 13, Marco Road, Hammersmith, having made the required declarations, and paid a fine of one guinea, were restored to the Register of Pharmaceutical Chemists.

Several persons were restored to their former status in the Society upon payment of the current year's subscription and a nominal restoration fee of one shilling.

REPORT OF THE FINANCE COMMITTEE.

The report of this Committee, which was read by the SECRETARY, contained the usual recommendations for the payment of sundry accounts.

The PRESIDENT, in moving the adoption of the report, said the payments and receipts were much of the usual character, therefore he would not detain the Council by making any remarks with respect to them.

The resolution passed unanimously.

HILLS ORPHAN FUND.

It was resolved that the Treasurer be instructed to pay to the Watford Orphan Asylum the sum of £12 10s., being the last half-yearly payment on account of the maintenance of the Hills orphan.

The PRESIDENT said a letter had been received from the Secretary of the Asylum saying the Manager could not retain the lad after December next. He would then be 15, and if any member

knew of an opening for a well-educated lad of that age, he hoped they would bear him in mind.

Mr. HAMPSON said he had always taken a great interest in this Fund, and was especially glad that the Council, in administering it, did not put candidates to the trouble and expense of an election.

REPORT OF THE BENEVOLENT FUND COMMITTEE.

The report of this Committee included a recommendation of grants to the amount of £33 in the following cases:—

The widow (64) of a chemist and druggist, who had three grants previous to his death in May, 1893. Applicant has supported herself by keeping a lodging-house. (Gravesend.)

The widow (78) of a chemist and druggist who died in 1888. She had a grant last year. (Durham.)

The widow (41) of a chemist and druggist member whose application was adjourned in May last for further information. (Coventry.)

One application was deferred.

Mr. HAMPSON moved the adoption of the report and recommendations of the Committee.

Mr. BOTTLE, in seconding the motion, said he should like to make a remark with reference to the Hills Orphan Fund. They had just heard of one lad who was about to leave the Watford Asylum, and he must say he was surprised that there were not more applicants for the benefits of this Fund, which, he thought, could only arise from the conditions not being generally known. The Fund was available for the orphan children of Members and Associates who had contributed to the Benevolent Fund for not less than three years. He could not help thinking that there must be a considerable number of their friends who would avail themselves of the advantage offered if their attention were called to it.

The PRESIDENT in moving the adoption of the report, said he should also like to say, with reference to the remarks made by Mr. Bottle, that he also felt it was a great pity that there were not more candidates for the Orphan Fund, although it was to be hoped that this arose from the fact that there were not many requiring assistance of this character. He agreed that the conditions and the existence of the Fund were not sufficiently known. Not only had they sufficient money invested to pay for one orphan, but he felt quite sure that there were many persons who did not at present subscribe who would be glad to subscribe annually if the money was required for an orphan. If they had the orphans he believed they would be able to find the money for their maintenance and education.

The resolution passed unanimously.

LIBRARY, MUSEUM, SCHOOL, AND HOUSE COMMITTEE.

The report of this Committee stated that the report of the Librarian had been received, including the following particulars:—

	Attendance.	Total.	Highest.	Lowest.	Average
May	{ Day.....	318	24	1	13
	{ Evening	113	10	1	5
	Circulation of Books.	Total.	Town.	Country.	Carriage paid.
May.....	170	88	82		16s. 3d.

Several donations had been received (*Ph. J.*, June 18, p. 581), and the Committee had directed that the usual letters of thanks be sent to the respective donors.

The Committee had recommended that the undermentioned books be purchased:—

For the Library in London:—

Dixon Mann's Forensic Medicine, 2nd Edition, 1898.

For the Library in Edinburgh:—

Encyclopædia Britannica, in half Morocco.

Caspari's Pharmacy.

Pharmacopœa Japonica, 1891.

The Committee had ordered that the Library and Museum should not be open in the evening from July 18 to September 30, inclusive.

The Curator's report had also been received, and included the following particulars:—

	Attendance.	Total.	Highest.	Lowest.	Average.
May	{ Day	512	28	8	20
	{ Evening	65	6	1	3

Several donations had been received (*Ph. J.*, June 18, p. 581), and the Committee directed that the usual letters of thanks be sent to the respective donors.

The Committee recommended that Mr. T. Tickle be nominated for the Salters Research Fellowship for another year.

The Council Prizes.

The Committee recommended that the date of the competition for the Council Examination Prizes be altered from July to April, and that the applications for the Redwood Scholarship and the Burroughs Scholarship close on April 25 instead of July 25, the election to take place at the Council meeting in May.

Bye-laws.

A Sub-Committee was appointed to draft such alterations in the Bye-laws, Regulations, etc., as may be deemed necessary, in view of the probable enactment of the Pharmacy Acts Amendment Bill during the present session.

The PRESIDENT, in moving the adoption of the report, said there were one or two points to which he might direct attention. It was proposed to close the Library and Museum in the evening a fortnight earlier than usual this year, and the Committee had also resolved to consider at its October meeting whether the hours during which the Library and Museum were opened in the evening could not be curtailed. There was rather a diminishing number of persons attending in the evening in both the Library and Museum, and it was a question which might well be considered whether it was advisable to keep the staff on night after night when so few of their associates and students found it convenient to attend. The Committee also recommended that the time for the holding of the competition for the Council Examination Prizes be altered from July to April, and that the application for the Redwood and Burroughs Scholarships close on April 25, instead of July 25. At the present time the Major course finished about the end of March or the beginning of April, and it was found that those who had gone through that course and had obtained their qualification naturally were looking about to find some occupation, and they did not always find it easy to come up again in July to compete for these Prizes. While they were encouraging men to take the advanced course, that system would be more or less recognised by other schools, and they thought it would be more convenient not only to those in their own School, but generally, that the competition for the prizes should take place in April, and by that means they had every reason to believe that they would get a larger number of candidates. With regard to the Sub-Committee to consider any alteration which might be required in the Bye-laws and regulations, the appointment of this Committee was a necessary step in view of the probable passing of the Pharmacy Bill.

As stated in the report, the letter which had been received from the Spectacle Makers' Company had been replied to by the President, in which he thanked that Honourable Company for their consideration in bringing the matter before them and making the offer which they did, but it was considered that, on the whole, bearing in mind their duty in respect to examination and the granting of diplomas, it would be undesirable for the Society to associate themselves with them in the way suggested.

Mr. CARTEIGHE, in further elucidation of the matter last referred to by the President, said the Committee had simply decided that it was not wise for the Council to be associated officially with the carrying on of the scheme. It did not mean that any pharmacist who desired to have the certificate of the Spectacle Makers' Company would be ineligible; on the contrary, it would be open to them all, and no doubt many chemists and druggists would think it desirable to obtain it. Those who wished to do so would have to become Freemen of the Company, which they could do on payment of a reduced fee, and they would get a good commercial *quid pro quo* for their trouble.

Mr. BATESON asked if an examination would have to be passed.

Mr. CARTEIGHE said Yes, there would be an examination in optics, but it would not be a difficult one.

The resolution was then passed unanimously.

APPOINTMENT OF PROFESSORS.

The following appointments in the School of the Society for the ensuing session were made:—

Botany.—Professor J. Reynolds Green.

Chemistry.—Professor J. Norman Collie.

Materia Medica.—Professor H. G. Greenish.

Assistant Lecturer in Chemistry.—Dr. A. Lapworth.

THE POISONOUS SUBSTANCES BILL.

The SECRETARY read the report of the Law and Parliamentary Committee, which had held two meetings to consider the Bill recently introduced, intitled an Act to Regulate the Sale of Certain Poisonous

Substances. The Committee recommended that all necessary steps be taken to oppose the Bill, and that the President be authorised to issue a circular to every person on the Register, requesting him to endeavour to obtain the assistance of his representative in Parliament in opposing the further progress of the Bill.

The PRESIDENT said he felt it his duty to say a few words with reference to this Bill, which had now passed the House of Lords. In the first place he wished to make it quite clear that the Council had not been idle in the matter. The Bill did not see the light until after the last meeting of the Council, being introduced by the Duke of Devonshire on June 13. The Law and Parliamentary Committee at once began to consider it, and there had also been two meetings of the Watch Committee, so that the most careful attention had been given to the matter. They were beginning to receive communications from their friends in different parts of the country, and he found that they spoke with one voice in opposition to the principle of the Bill. The Cambridge Pharmaceutical Association had met and passed a resolution that the attention of the Pharmaceutical Council be called to Clauses 1 and 2 of the Bill, and suggesting that the Act might be so amended as to provide that no person other than those qualified or registered under the Act of 1868 should sell any poison scheduled to that Act, and that the proposed new Schedule should be added to Part 2 of the Schedule to the Act of 1868. The Association also urged an amendment of the Companies Acts, by inserting a clause protecting personal professional qualification. The North-East Lancashire Association regarded the Bill as inadequate for its purpose and ambiguous in its details, and was of opinion that the Bill constituted a dangerous departure from the principles of the Pharmacy Act of 1868. The same meeting expressed an opinion that an agitation ought to be organised having for its object the extension of Part 2 of the Schedule and the abolition of company pharmacy. The Manchester Pharmaceutical Association disapproved of the Bill, and relied on the Council taking steps to prevent its passing. Some members of the Executive of the North British Branch had also held a private meeting, and were decidedly opposed to the Bill. Several other communications had been received from individuals urging opposition to the Bill, and only that morning letters had been received from the chemists at Bolton, Bristol, and Liverpool, urging opposition on the grounds mentioned in the Cambridge resolution. He felt that it was a serious matter to oppose a Bill of this description, introduced as it was by the Lord President of Council, but the Committee felt that not only was it impracticable in many of its details, but the principle underlying the Bill was one to which they must offer a strenuous opposition. The principle was not that of the Act of 1868, under which a certain body of persons was registered who should have charge of the retail sale of all poisons, and he thought it might be said that since that Act was passed the public had received a corresponding advantage. That principle had been completely disregarded in the present Bill, and, therefore, without going into details they thought it should be opposed, both from the point of view of the public safety and having regard to the interests of those who, by submitting to examinations conducted under the ægis of the Privy Council, had proved themselves to be competent. It might be possible in Committee of the House of Commons to make the Bill a little less unworkable if it were thought advisable so to do, but the Committee had come to the conclusion that the Bill was wrong in principle, and should be opposed *in toto*. They thought that in the framing of such a Bill it was desirable that the Government should in some way take into consultation the body which was most competent to give practical advice on matters connected with the retail sale of poisonous articles. Clause 2 of the Bill was really an amendment of the Pharmacy Act of 1868, though no reference was made to that fact in the title. His views on that matter were expressed at the annual meeting in May, and he had every reason to believe that the majority of the Council were in favour of passing the regulations with regard to the keeping of poisons such as were referred to in the Act of 1868, and he hoped before long the Society would pass such regulations. He would now content himself with moving that the report and recommendations of the Committee be adopted.

Mr. HAMPSON said it seemed a marvellous thing that after the long and intimate relationship between the Society and the Privy Council that the Council had not been consulted in the first place with regard to the introduction of a Bill of such a character as the one then under discussion. It was a distinctly bad Bill, and was not worthy of being knocked into shape; therefore he was delighted

that it had been unanimously decided to oppose it. He was still the sinner that his colleagues thought him to be some years ago with regard to the necessity of making it compulsory to do certain things with regard to the storage of poisons, and he was of opinion that after a period of more stringent and complete education there was already a body of chemists in the country well able, from their intelligence, to look after the public safety. If the Council and the Society were content that the regulations should be carried out let it be done; they were the people who knew more about the matter than anybody else, and personally he felt affronted when he found that in a Bill which was to deal with the sale of mineral acids their Pharmacy Act should be ridden over roughshod.

Mr. MARTINDALE said this was such a serious matter that he could hardly give a silent vote. He quite agreed that they were the people who, in the interests of the public safety, should have the regulation both of the sale and storage of poisons. The Bill before them was solely in the interests of large manufacturers and consumers, and was brought forward with the suggestion that that Society had not done its duty, but he claimed that they were not so much to blame as the Privy Council themselves. The Society had made repeated applications to the Privy Council to have carbolic acid placed in the Schedule. The Act of 1868 had worked well for the public, and not unfairly to their interests, but the failure with regard to it was the omission from the Schedule of the one poison which had caused more deaths than any other. It would be an indignity for them to be placed under the control of the Privy Council in the way suggested in the Bill without their having a voice in the drawing up of the regulations. By their apprenticeship and expert and scientific training they were certainly the persons who were best able to know how the storage and sale of poisons should be carried on. The provisions of the Act, 1868, often acted in the direction of restricting them in the sale of poisons, but the class of sellers brought into competition with them by this Bill would be under no such restriction, as they would be entitled to sell largely and no questions asked. He was present in the House of Lords when the Bill was read a second time, and was then told that they possessed virtually a trade monopoly. It was true that they had this monopoly for about a dozen poisons, and from an estimate he had made he found that the value of this monopoly was very small indeed. He would ask who wanted to sell poisons, and what profit did it bring them? The sale of poisons by this Bill would be very much increased, and probably with much greater danger to the public, by enabling the public to buy retail of unqualified and ignorant sellers. Could it be said that they had a monopoly in the sale of poisons when seven unqualified persons could sell what one unqualified person could not do? In France the sale of poisons was restricted entirely to the pharmacists. Even in Shakespeare's time there were poison regulations, for in one of his plays he said, if any man needed a poison, which it was death to sell, there lived a caitiff wretch who would supply it. But were they such caitiff wretches that this Bill should be forced upon them? They considered themselves respectable people, and it had not been proved that they had been careless in the storage of their drugs. The Privy Council had treated them badly by bringing forward this Bill without consulting them, and if it were withdrawn probably something might be done to aid in restricting the sale of carbolic acid.

Mr. CARTEIGHE said it was not policy or indeed profitable to go into detail on the subject of the poison laws generally. The whole question was in an unprofessional position, and not very dignified for the educated pharmacist. When the Bills were promoted in 1852 and 1868 they went upon the principle that education was the qualification, and that the question of how a poison should be kept and sold was one that should be left to the intelligence of the educated man who sold it. They were met by their own brethren with opposition to those general principles, and had to accept a Poisons Bill instead of a Pharmacy Bill. It was like putting police measures into a small University Bill; therefore, it was very injudicious for them to lay down any strong views on the practice of selling poisons. In the legislation which was agreed to as the result of a Select Committee in the House of Commons many years ago, a kind of a hybrid Bill was passed through the House, and they had done their best to work that Bill. Of course, they would be always in possible danger of there being a cry for greater security in certain directions with regard to the sale of poisons, and they must be prepared as citizens, as well as pharmacists, not to give reasons that would not hold

water. The main point with regard to the Bill was that the Privy Council had again laid down the doctrine that for such a substance as carbolic acid, to say nothing of other things, the safety of the public could be secured by a purely mechanical regulation. In the Act of 1868 they were made first to accept the 17th Clause, and then they were made to promise to make poison regulations in addition; but now it was proposed to dispose of the official part, and in regard to the sale of carbolic acid mere restrictions were suggested. Why was that? If any person sold a poison very largely, no matter for what purpose, and called himself a manufacturer, great alarm was felt at any possible interference with free trade, but that was the only way in which legislation could be carried on. Carbolic acid could be put into their Schedule with perfect safety to the public, and without anything more than nominal damage to the manufacturer, and without inconvenience to public authorities and medical officers of health who wanted to use it for disinfecting purposes. There was in their Act a provision for wholesale dealing in certain poisons, and the Council, in the exercise of its functions as a prosecuting body, always took care not to interfere with the free trade of the manufacturer. The free trade they had to guard against was the free trade of selling small quantities of toxic drugs to the public. If the Lord President of the Council would take the trouble to consult some member of their body who knew the Pharmacy Act of 1868, he would be able to show his Lordship that they only had a monopoly of the sale of poisons, which was also, to a certain extent, a restriction of their business. The Privy Council is too easily frightened by the manufacturers of carbolic acid, and the cry of free trade is a very influential one, but carbolic acid and the mineral acids could be put into the Schedule to the Act of 1868. It could all be worked if the Privy Council would go into the matter patiently and carefully, and not be frightened of the large manufacturers. In his opinion the proposed Bill was an impossible and impracticable one. He had maintained all his life his own disappointment with the Pharmacy Act. The chemists and druggists of this country wanted no Section 17 to carry on their business. That was imposed upon them by a set of men who were of opinion that mechanical things were required at that time as well as education. The Society had to give way because many of their body had not been examined, but after thirty years' experience it was quite obvious that with examination and training every one of their men was a much better judge of the best way to sell a poison than any Privy Council. The Law and Parliamentary Committee in considering this Bill had had to be politic in its movements, because there was nothing at all to prevent any troublesome Member of the House of Lords moving that the Bill brought in by the Duke of Devonshire on the part of the Government, and the Bill which had come from the Commons, should be referred to a Select Committee of the House. He did not want any Select Committee. They knew how to fight, and did not want any help from outside, or suggestions from trade journals as to the best way of amending or killing a Bill.

Mr. ATKINS believed there had been no lack of promptitude and industry in dealing with this measure, although he knew that correspondence had been received in the office hinting at there being supineness. As a provincial member he had had his share in discussing this matter on the Committees, and he knew that the Watch Committee, which consisted of London members, had been very prompt in their action. He held most strongly the conviction that in anything that was done with regard to poison legislation the Pharmaceutical Society of Great Britain ought to be consulted. He felt intensely indignant at the fact that they who were so much interested in the matter, and who had the special knowledge which had come to them as the result of their training, had not been consulted.

The PRESIDENT, in putting the resolution, said he would only repeat what was said in the introduction to the Calendar of the Pharmaceutical Society: "the education of the vendor is the only safe foundation for a poison Bill." That was, broadly speaking, the ground of their opposition to the Bill now before the House of Lords.

The resolution passed unanimously.

BRITISH PHARMACEUTICAL CONFERENCE.

The following were appointed delegates to the British Pharmaceutical Conference at Belfast:—The President, Vice-President, and Messrs. Atkins, Bateson, Grose, Johnston, Martindale, Park, Symes, Warren, and Young.

Dr. SYMES made a special appeal to his colleagues to attend the

Belfast meeting if they could possibly arrange it. He knew from several sources that their friends in Belfast were exceedingly enthusiastic and desirous of giving the Conference as hearty a welcome as it received in Scotland, and, if possible, of making it a record meeting. Both the pharmaceutical chemists and chemists and druggists were joining heartily in the movement, sinking any differences they might have between themselves for this occasion. He hoped, therefore, there would be a very large attendance.

LEGACY TO THE BENEVOLENT FUND.

The PRESIDENT announced that one of their old members and friends, Mr. John Cripps, of Turnham Green, who recently died, had bequeathed £2000 to the Benevolent Fund on certain conditions, which were easily complied with. It was very satisfactory to find that the good work of the Benevolent Fund was appreciated and encouraged in this way.

CORRESPONDENCE.

The PRESIDENT read a letter from the Assistant-Secretary in Scotland, enclosing a list of the members of the Executive of the North British Branch, which has already been published. He had also received from Mr. Welford a letter with a copy of a petition presented to the Asylums Committee of the London County Council, with reference to the position of dispensers. He suggested that it be referred to the Library Committee, and that was agreed to.

The Decimal System.

The PRESIDENT said a letter had been received from the Secretary of the Decimal Association enclosing a petition in favour of certain facilities being granted by the Post Office, Custom House and other Government Departments for the concurrent use of metric weights and measures, and asking for the Council's approval and signature of the petition. He would suggest that this also be referred to the Library Committee.

Mr. CARTEIGHE suggested that the Council might authorise the Committee to affix the seal of the Society to the petition if it thought fit. He understood the petition was to be presented at an early date, and if it were delayed for another month it might be useless.

Some conversation ensued as to the purport of the petition, and it being stated that it did not ask for the compulsory introduction of the metric system, but merely for its use in certain statistics, side by side with the Imperial weights and measures, with the view of educating the public and making the metric system known, it was resolved that the letter and memorial be referred to the Library Committee, and that the Committee be authorised to request the President to affix the seal of the Society to the petition if they thought fit.

Examination of Colonial Plants and Drugs.

The PRESIDENT said he had received a letter from the Under-Secretary of the Colonial Office, conveying the thanks of Mr. Chamberlain for the report which had been furnished on certain plants forwarded by the Governor of the Windward Islands. He might remind the Council that these things were sent to them a short time ago by the Colonial Office, with a request that they should be examined and reported upon. Dr. Paul kindly undertook the work, and his report having been forwarded to the Colonial Office, had now been acknowledged. Unfortunately, the quantities placed at Dr. Paul's disposal were too small to allow of thoroughly exhaustive reports being made, but so far as they went they would no doubt be interesting and useful. Their thanks were due to Dr. Paul for the trouble he had taken.

The PRESIDENT had also received another letter from the Colonial Office, accompanying a parcel of palm kernels, also sent from the Governor of the Windward Islands, requesting that an analysis might be made of them. It seemed to be rather a large package, and he suggested that the matter be referred to the Library Committee. This was agreed to.

Colonial Pharmacy Reports.

The PRESIDENT further announced the receipt, through the Colonial Office, of the Report of the Pharmacy Board of the Cape of Good Hope for 1897. Also the Report of the Pharmacy Board of Victoria.

REPORT OF THE GENERAL PURPOSES COMMITTEE.

The report of this Committee included reports from the professors as to the Prize Examinations, in accordance with which the Committee recommended the award of the following prizes:—

Botany.

- Bronze Medal Thos. Edward Wallis.
- Certificate of Honour John Evans.

Practical Chemistry.

- Bronze Medal Thos. Wooldridge.
- Certificate of Honour { Alf. Wm. Turner
John Evans.

Chemistry.

- Bronze Medal Thos. Edward Wallis.
- Certificates of Honour { Wm. Jas. Spurway.
Herbert Payne.

Materia Medica.

- Bronze Medal Thos. Edward Wallis.
- Certificates of Honour { Wm. Lockwood Nundy.
Herbert Payne.

Pharmacy.

- Silver Medal Herbert Payne.

The PRESIDENT, in moving the award of the foregoing prizes, alluded to the fact that Mr. Wallis, whose name appeared so often on the list, was the son of one of the Divisional Secretaries for London.

The resolution was carried unanimously.

Herbarium Competition.

The SECRETARY then read the report of Professor Green on the Herbarium Competition, in accordance with which the Committee recommended that the following awards be made:—

- Silver Medal Wm. W. Hellyer Plymouth.
- Bronze Medal John Geo. Hawksworth Sheffield.
- Certificate of Honour Herbert J. Reynolds .. Plymouth.

THE PRESIDENT, in moving the adoption of this portion of the Committee's recommendation, remarked on the fact that two of the successful competitors belonged to Plymouth.

Mr. ALLEN said he thought one of the things on which the Council might congratulate itself was the fatherly interest it took in the young men who distinguished themselves in pharmacy, and if anyone doubted the wisdom of encouraging young men by the bestowal of these prizes they had only to look at the list of prize winners in years gone by, and they would see how many of these young men had distinguished themselves in later life. As a West of England man, he was very pleased to hear Professor Green's report on the Herbarium Competition, a subject which the Council had always had at heart. Any young man who could earn the appreciation of so enthusiastic a botanist as Professor Green must have acquired an amount of knowledge which would be very valuable to him hereafter, and he was very pleased to find that two of the successful competitors came from Plymouth. They were both apprentices in that town, and he thought they might congratulate Mr. Reade, of the Naval Hospital, who had taught these young men, on their success. He was a most enthusiastic teacher, and had no doubt contributed largely to their success. At any rate, he knew that he helped as far as lay in his power all the young men connected with the Plymouth Association. That Association was in some respects unique, as it had a junior section as well as a senior, and it was interesting to know that on some occasions both sections met at the same time and place for friendly intercourse.

Dr. SYMES said it was very gratifying to find that on this occasion there were so many competitors for the Herbarium Prize.

Mr. PARK said the young men of Plymouth were much indebted to the Council for allowing Mr. Holmes, the Curator, to go down there and address them. He was quite sure that what he said to them was a great stimulus to them in their studies.

The resolution was adopted unanimously.

The Council then went into committee to consider the legal portion of the Report of the General Purposes Committee, which included the usual letter from the solicitor.

On resuming the report and recommendations were received and adopted, and special resolutions were passed authorising the Registrar to take proceedings against the person named.

Deaths by Poison in 1895 and 1896.

THE reference made by the Duke of Devonshire to accidental deaths caused by poisons, included in the Schedule to the Pharmacy Act, and the implied suggestion that those deaths were the result of neglecting the precautionary measures prescribed by the Act, gives such especial interest and importance to the reports of the Registrar-General, that it is considered desirable to reproduce, in a classified form, the data given in the reports for the period referred to by the Duke of

Devonshire. From those data it will be seen that the recommendation of the Pharmaceutical Council to add carbolic acid to the Schedule of the Act has been amply supported by subsequent experience, since that article stands out conspicuously as the cause of more deaths than any other kind of poison. It surely cannot be contended in the face of these returns that sanitation requires the terrible sacrifice of human life which is year by year a consequence of the unrestricted sale of carbolic acid.

Statistics of Poisoning according to the Returns of the Registrar-General for the Years 1895 and 1896.

Description of Poison.	1895.				1896.				Total Deaths by Accident and Suicide in the Two Years.
	Accident.		Suicide.		Accident.		Suicide.		
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	
Arsenic	2	1	3	1	1	3	3	2	16
Mercury.....	3	1	1	—	1	3	2	1	12
Oxalic Acid	1	2	25	21	1	1	15	9	75
Potassium Oxalate	—	—	—	1	—	—	—	—	1
Salt of Lemons.....	—	—	1	5	—	—	—	4	10
Opium, Laudanum, Morphine, etc.	63	40	48	20	41	48	39	17	316
Soothing Syrup and other Narcotics	2	—	1	—	4	4	—	—	11
Chlorodyne	9	3	4	1	10	3	6	4	40
Chloroform	43	25	1	1	28	23	—	3	124
Chloroform and Ether	—	—	—	—	1	—	—	—	1
Chloral	8	2	3	—	4	2	1	—	20
Cocaine	1	1	—	—	—	—	—	—	2
Belladonna Atropine	7	3	1	3	6	3	2	1	26
Prussic Acid & Oil of Bitter Almonds	3	—	36	1	3	1	24	4	72
Cyanide of Potassium	—	—	18	5	2	—	18	1	44
Aconite	3	1	4	1	3	—	1	—	13
Strychnine and Nux Vomica	3	—	16	15	4	2	12	12	64
Easton's Syrup	—	—	—	—	—	—	1	—	1
Ergot of Rye	—	2	—	—	—	—	—	—	2
Vermin Killer	—	—	1	4	—	—	1	3	9
Weed Killer	—	—	—	—	1	—	1	—	2
Total Deaths caused by Scheduled Articles ...	148	81	163	79	110	93	126	61	861
Carbolic Acid	11	23	114	110	25	9	88	75	455
Sulphuric ,,	5	2	3	4	2	—	4	1	21
Nitric ,,	1	1	5	1	4	—	4	1	17
Hydrochloric Acid	5	3	19	6	12	3	18	11	77
Corrosive Acid (kind not stated)...	—	—	—	—	—	—	1	—	1
Butter of Antimony	—	—	—	—	—	—	—	—	—
Chloride of Zinc	—	—	—	2	2	—	—	2	6
Sugar of Lead	—	—	—	—	—	—	1	—	1
Total Deaths caused by Unscheduled Articles, the "Poisonous Substances" of the Government Bill ...	22	29	141	123	45	12	116	90	578
Deaths caused by { Accident. } Miscellaneous and { Suicide... }	219	99	—	—	248	111	—	—	677
Undescribed Poisons { } { } { }	—	—	43	31	—	—	37	42	153
Total Number of Poisonings by Accident and Suicide	389	209	347	233	403	216	279	193	2269



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PHARMACY AND POISON.

THERE is much reason for regretting that, in this country, pharmaceutical legislation has been based so much upon the conception of poison as a danger to be guarded against, rather than designed with regard to the wider requisites of a qualification for the practice of pharmacy, such as the Pharmaceutical Society has endeavoured to establish by its educational work during the past fifty years. In the dispensing and compounding of medicine, technical knowledge, skill, and care are necessary for public safety, not only in regard to poisons within the meaning of the Pharmacy Act, but quite as much in regard to other, harmless or comparatively innocuous, articles. Since both have to be handled simultaneously, the exercise of the business requires to be limited to those possessing certified qualification for the performance of the work; not indeed for their particular benefit, but because such a limitation is expedient for the safety of the public. The Society's object in that respect was only partially supported by the State in the Act of 1852, and by further deviation from that object under the influence of temporary acute apprehension of danger from poison, the more comprehensive Act of 1868 was adapted rather for preventing that danger by mechanical contrivances and regulations than for regulating the practice of pharmacy on the more rational basis of educational qualification.

But still it can be stated with confidence that under the operation of those two Statutes the practice of pharmacy properly so-called has for many years been conducted in such a manner that deaths due to accident or negligence in compounding or dispensing of medicine have been almost, if not quite, unknown. Very noticeable, therefore, is the circumstance that when moving the second reading of the Poisonous Substances Bill, the Lord President of the Council should have made a statement apparently in direct opposition to the indisputable fact above mentioned. On that occasion the DUKE OF DEVONSHIRE spoke of the Pharmacy Act, 1868, as not having been "altogether effectual in preventing accidental deaths from the use of poisons included in the Schedule of that Act." This alleged experience was put forward as the reason for proposing Clause 2 of the Bill, involving a sort of oblique amendment of the Pharmacy Act in

regard to the power of making regulations for the keeping and dispensing of poisons. The evidence adduced by his Grace, in support of that position, was statistically correct, so far as information can be obtained from the Reports of the Registrar-General; but it has no kind of reference to the compounding or dispensing of medicine; neither does it furnish any support to the proposition to amend the Pharmacy Act so that the Privy Council may be enabled to make regulations in those respects.

In describing that provision in Clause 2 of the Government Bill, his Grace spoke of it having been proposed because the Pharmaceutical Society has neglected to exercise the power of regulation vested in it. That explanation being coupled with mention of the accidental deaths caused by scheduled poisons, obviously suggested that those deaths had been the result of the alleged neglect. Those imputations are too serious to be ignored, and though it is not intended to enter into consideration of the thorny question whether the permissive power entrusted to the Pharmaceutical Society was accompanied by the acceptance—authorised or not—of an obligation to make compulsory regulations, there is, at least, necessity for pointing out that regulations were drawn up by the Council, and that the members of the Pharmaceutical Society—entrusted with the power of making regulations compulsory, cognisant of the requirements of their business and of their responsibilities in connection with it—deliberately decided that such regulations were not requisite. That is really the most important fact to be considered, and the justice of the decision, then arrived at, has been fully demonstrated by the subsequent experience already mentioned, that the occurrence of deaths from accident or negligence in compounding or dispensing medicine is almost unknown. There is not in the Registrar-General's returns for the period referred to by the DUKE OF DEVONSHIRE, a single instance in which death is stated to have been so caused. In fact, all the evidence available in regard to the practice of pharmacy points in the same direction: it distinctly negatives the assumption that within the ranks of registered chemists there is any need for compulsory regulation of their business. In the absence of any evidence to the contrary, there is no excuse for the proposed Legislative interference. It would only be a means of exciting the intense repugnance with which compulsion in any shape is regarded by most people in this country, and therefore, as recently pointed out by the MARQUIS OF LANSDOWNE in reference to another legislative proposal, a thing eminently undesirable.

In regard to the retail sale of poisons within the meaning of the Pharmacy Act, it must be remembered that specific regulations are prescribed, in the Act itself, observance of which can be enforced by any public authority under the 17th Section. That power might have been more effectually exercised in the public interest than it has been. Instances sometimes occur of those regulations being neglected by registered persons, but they are very infrequent, and are generally to be accounted for by the fact that, though the status and qualification of chemists and druggists have been very considerably improved, there is still some residuum of the conditions prevailing before the Act was passed. Among the large number of persons registered in virtue of having been in business before that time, there may still be a few who are not sufficiently mindful of the obligations imposed upon them in regard to the public and to the craft to which they

belong. Generally, however, the evidence is that the regulations of the Act are carefully observed by chemists and applied even in the sale of articles that are not included in the Schedule. Moreover, the circumstances attending accidental poisoning often show that disaster is caused by negligence in the use of poisonous articles after they have been supplied in full conformity with statutory regulations. Lastly, it is necessary to point out that cases of accidental poisoning form but a small proportion of the total number of deaths by accident. Those caused by poison of all kinds amount to less than 3.5 per cent., and those caused by scheduled poisons amount to 1.25 per cent. of the deaths by accident.

The general conclusion to be drawn from the foregoing considerations is that neither in regard to the dispensing of medicines by registered chemists and druggists, nor in regard to the sale of poisons under the regulations of the Pharmacy Act, is there any reasonable ground for proposing alterations of the kind suggested in the Government Bill, either for the safety of the public or for preventing undue restriction of the trade in poisonous articles.

THE COUNCIL MEETING.

At the opening of the proceedings, the PRESIDENT announced that SIR JAMES CRICHTON BROWNE has consented to deliver the inaugural address at the commencement of the session in October.

The additions to the Society comprised nine Associates and four Students.

The report of the Finance Committee was adopted without comment and the Treasurer was instructed to pay on account of the Hills Orphan Fund the final half yearly sum for the maintenance of an orphan in the Watford Asylum.

On the recommendation of the Benevolent Fund Committee, three grants amounting to thirty-three pounds were ordered to be paid.

The report of the Library, Museum, School, and House Committee recommended an alteration of the competition for prizes from July to April, and that applications for the Redwood and Burroughs Scholarships should close on April 25, the elections to take place in May.

The alteration of the Bye-laws, etc., rendered requisite by the provision of the Pharmacy Act Amendment Bill, has been entrusted to a Sub-Committee, and the consideration of the resolution of the Executive of the North British Branch of the Society has been deferred relating to appointment of Local Secretaries. A reply has been sent to the Spectacle Makers' Company to the effect that the Council, while thanking the Company for its offer, was of opinion that it could not be accepted consistently with the Society's duty in respect to examination and the granting of diplomas.

Mr. CARTEIGHE further explained that the Committee had decided it would not be wise for the Council to be associated officially in the scheme suggested, but that pharmacists who desired to obtain the qualification of the Spectacle Makers' Company would no doubt derive advantage from it.

The Professors of the School of Pharmacy were re-appointed: Botany, Professor GREEN; Chemistry, Professor NORMAN COLLIE; Materia Medica, Professor H. G. GREENISH; and Dr. A. LAPWORTH was appointed Assistant, Lecturer on Chemistry.

The Report of the Law and Parliamentary Committee relating to the Government Bill for Regulating the Sale of

Poisonous Substances, recommended that all necessary steps should be taken to oppose the further progress of the Bill, and that a circular letter should be sent from the PRESIDENT to every person on the Register, requesting that the assistance of all Parliamentary representatives should be obtained for that purpose.

In reference to this report the PRESIDENT said the Council had not been inert in this matter, and that the Bill had been considered at several Committee meetings since its introduction. The communications received from several parts of the country expressed a unanimous decision to oppose the principle of the Bill. He felt that to oppose a Bill of this description, introduced by the Lord President of the Council, was a serious matter, but the Committee also felt that the Bill was impracticable in its details, while the principle underlying it required their most strenuous opposition as being directly contrary to that of the Pharmacy Act, 1868, under the operation of which the public has derived advantage from the establishment of a body of qualified persons charged with the retail sale of poisons. From both points of view the Bill ought to be opposed. In framing a Bill of this nature it is indispensable that the Government should consult the body most competent to give practical advice on matters connected with the retailing of poisonous articles. Clause 2 was mentioned as particularly objectionable, as proposing to effect a change that would really stultify the Act by which the practice of pharmacy and the qualification of chemists and druggists has been regulated for thirty years under control of the Privy Council.

Mr. HAMFSON expressed surprise that the long and intimate relations between the Society and the Privy Council had not led to the Council of the Society being consulted before a Bill of this kind was introduced. In regard to the matter of compulsory regulations he admitted being unconverted and still the sinner some of his colleagues had considered him. In view of the educational improvement effected among chemists and druggists within the past thirty years, he believed that they knew more than anyone else about the conditions under which the storage and sale of poisons should be managed for the safety of the public, and that it was an affront to have such matters dealt with in a Bill of the kind now in question.

Mr. MARINDALE supported the views expressed in regard to the Bill, which he thought was of too much importance to allow of a silent vote against it.

Mr. CARTEIGHE deprecated detailed discussion of the poison laws as neither politic nor profitable for the educated pharmacist. The Bills promoted by the Society in 1852 and 1868 were upon the principle that educational qualification best enabled pharmacists to decide how poison should be kept or sold. The Society, instead of being supported in the application of that general principle, was opposed by members of the craft, and consequently had to accept a Poisons Act instead of a Pharmacy Act. The Society had done its best with that inadequate measure, but it would always be in danger of a cry being raised for greater security, and its members should be prepared both as citizens and as pharmacists to defend their position on reasonable grounds. The main point of the Bill was that the Privy Council again asserted the doctrine that in the sale of such an article as carbolic acid the safety of the public would be sufficiently provided for by purely mechanical regulation. He suggested that the restrictions suggested in the Bill had been made from fear of interference

with free trade. But carbolic acid could be put into the Schedule of the Pharmacy Act without any damage to large manufacturers, with safety to the public and without inconvenience to public authorities or medical officers of health, since there is in the Act a provision for wholesale dealing. Moreover, the Council, in exercising its functions as a prosecuting body, always takes care not to interfere with the free trade of manufacturers. The danger to be guarded against is the free trade in small quantities of toxic articles supplied to the public affording too easy access to poison. If the Lord President of the Council would consult some members of the Society they would be able to show his Grace that the alleged monopoly of the sale of poison was also to a certain extent a restriction of their business. The chemists and druggists of this country want no 17th Section to control their business. That was imposed upon them by men who believed mechanical regulations were required as well as education, and the Society had to give way because many of the body were not then examined, but now, after thirty years, every one of them was a better judge of the way to sell poison than the Privy Council can possibly be.

Mr. ATKINS supported the remark of the PRESIDENT that there has not been any lack of promptitude in dealing with the Bill. He also held that in anything done to regulate the sale of poisons the Pharmaceutical Society should be consulted.

In moving the resolution the PRESIDENT said he would only recall the passage in the introduction to the Society's Calendar that the education of the vendor is the only safe foundation for a Poison Bill. That would be the ground of the Society's opposition to the Government Bill now coming before the House of Commons.

Messrs. ATKINS, BATESON, GROSE, JOHNSTON, MARTINDALE, PARK, SYMES, WARREN, and RYMER YOUNG were appointed delegates to the approaching meeting of the British Pharmaceutical Conference at Belfast, where Dr. SYMES said that the local pharmaceutical chemists and chemists and druggists had heartily joined in preparing a welcome to visitors on that occasion.

The correspondence referred to the Executive of the North British Branch, to a petition in favour of granting facilities for concurrent use of metric weights and measures, to a report on drugs examined for the Colonial Office by request of Mr. CHAMBERLAIN, and to a request for a similar examination of palm kernels sent by the Governor of the Windward Islands.

The report of the General Purposes Committee gave particulars of the award of prizes (see p. 33).

After consideration of the legal portion of the report, resolutions were passed authorising the Registrar to take proceedings for enforcing the provisions of the Pharmacy Act.

PHARMACY ACTS AMENDMENT BILL.

At the moment of going to press we learn that the second reading of this Bill, brought up from the Commons on June 9, was moved on Thursday afternoon in the House of Lords by the EARL OF HARDWICKE and agreed to without discussion. Arrangements which have been made for dealing with the Bill in its subsequent stages will probably secure its further passage through the House within the next few days.

ANNOTATIONS.

THE "BRITISH MEDICAL JOURNAL" has hitherto generally been rational and, at least, well informed in regard to the regulation of the sale of poisons as a matter affecting the safety of the public. But the article on that subject, which appeared in its pages last week, manifests such an extraordinary inversion of the position formerly taken by our contemporary, as to excite profound astonishment. This circumstance is the more to be regretted since the public is greatly indebted to the late Mr. Ernest Hart for the strenuous persistency with which he urged upon the Government authorities that it was their duty to give effect to the salutary provisions of the Pharmacy Act in regard to the sale of poisons. In place of maintaining the position then taken, concerning the sale of carbolic acid, the *British Medical Journal* now regards the Bill introduced by the Duke of Devonshire as a measure calculated to effect the reform, in that respect, which has so long been ineffectually pressed upon the Government as urgently necessary in the interests of public safety. It does not seem to have been perceived by the writer of the article now referred to, that the Government Bill really accepts, as inevitable, all the dangerous conditions hitherto prevailing and merely proposes that they shall be supplemented by the use of a poison label, while admitting that such a provision cannot be expected to have much efficacy in preventing the frightful mortality that has been caused by carbolic acid during the last twenty years.

To SUPPOSE THAT by merely requiring a poison label to be placed upon a ginger-beer bottle, teacup, or any other domestic utensil in which such an article as carbolic acid is supplied, a real provision would be made for preventing accident or misuse, or that by such a legislative measure any adequate response is made to the urgent remonstrations put forward by the *British Medical Journal* on this subject, is scarcely conceivable. But that is the purport of the article which appeared last week in the pages of our contemporary. There is, however, another important matter which is overlooked by our contemporary, viz., the abandonment of the principle—established under the Pharmacy Act, 1868—that the supply of articles dangerous by reason of their poisonous characters requires to be restricted to persons of adequate knowledge and skill. That principle accepted, under the pressure of popular opinion, as the basis of the Pharmacy Act, 1868, is merely a limited expression of the wider principle which the Pharmaceutical Society has so long striven to establish, that the practice of pharmacy necessarily demands thorough scientific and technical qualification of the persons engaged in that occupation. That a journal representing a profession seeking recognition of a similar principle should fail to perceive the imperative necessity of its maintenance in a closely cognate occupation is matter for surprise and regret. The alleged objection to placing carbolic acid on the list of poisons within the meaning of the Pharmacy Act, on the ground that labelling medicines for internal use with the word "poison" would unnecessarily alarm the public mind, is a purely imaginary objection, since there is no occasion for labelling such medicines with the word "poison" if the provisions of the Act in regard to them are observed. Moreover, butter of antimony and chloride of zinc are not used as medicines for internal administration. But the most startling statement made by our medical contemporary in reference to chemists and druggists is that "deplorable laxity in complying with the regulations of the Act has been shown to have occurred in a very large number of instances."

THE POISONOUS SUBSTANCES BILL is also the subject of criticism in the *Medical Press*, which has "clamoured for years for a reform of the laws regulating the sale of poisons, and for the better enforcement of those laws," but is of opinion that the only effect the new Bill is likely to have will be to make matters worse than ever. The Duke of Devonshire is referred to as having introduced the Bill in a light and airy manner, "seemingly oblivious of the fact that the subject is one which affects the life and health of thousands of Her Majesty's lieges." Moreover, he is alleged to have proceeded on the assumption that legislation can do little or nothing to prevent accidental poisonings, and that it is unreasonable to interfere with suicides by poisons. It is urged that the popular view of the absolute necessity of carbolic acid should be "knocked on the head," as, whilst it is an extremely poisonous substance, it is practically useless for general disinfection. The inadequate nature of the protection afforded by labels alone is insisted upon by our contemporary, which is strongly in favour of the exclusive use for violent poisons, such as carbolic and mineral acids, of bottles of a particular and distinctive shape. But much more to the point is the suggestion that the alleged but unproved inaction of the Pharmaceutical Society affords no valid reason for relaxing the safeguards already provided. Not, of course, that any such relaxation has been actually proposed, but there is little reason to doubt that the present proposals of the Privy Council would naturally lead in time to partial abrogation of the much stricter provisions of the Pharmacy Act, 1868.

MISCONCEPTIONS PREVAIL to a greater or less degree in nearly all the newspaper comments on the Bill introduced by the Duke of Devonshire. Even the *Times* has gone astray, though deriving its information from a member of the Legislature, for in its Political Notes last Saturday, it was gravely declared that the friends of sanitation in the poorer parts of London had become alarmed by the measure, and had asked metropolitan members to oppose the Bill when it reached the Commons. The provision to which especial objection was taken was stated to be that compelling the seller of any disinfectant which contains more than 10 per cent. of any of the scheduled poisons to label it as poison and "requiring the vendor and purchaser to comply with the provisions of the Pharmacy Act of 1868." An attempt to remove that misconception was courteously referred by the Editor of the *Times* to the member of Parliament who supplied the information upon which the *Times* paragraph was based, evoking from him a reply which serves to reveal how ignorant members of Parliament can be concerning measures under their consideration. For he contends that the placing of carbolic acid in the Schedule of the Pharmacy Act "would probably necessitate the registration of the name and address of the purchaser of the smallest quantity of carbolic acid." This is nothing less than a gross absurdity, even more stupid in its way than the supposition that regulation of the "sale" of poisons could in any way interfere with gratuitous distribution of disinfectants, as suggested by some would-be smart leader writers.

"AN ACT IN RESTRAINT OF SANITATION" is the title suggested by the *Hackney and Kingsland Gazette* for the Poisonous Substances Bill. In this instance we again find how easy it is to write nonsense about a Bill one has never seen. That is evidently the position of the Hackney and Kingsland scribe, who asserts that the much-abused Bill provides that carbolic acid and other poisonous substances must in future be sold "under the Pharmacy Act" if not labelled "Poison," and with the name and address of the seller. He then proceeds most sapiently to remark that as local authorities

in London and other large towns are constantly using and giving away disinfectants for use among the poor, it will be impossible to proceed with this most necessary and useful work. It is almost bewildering to attempt to understand what can be the frame of mind of an individual who writes in such a fashion, but if once the secret of his peculiar system of logic is mastered, it may not be difficult to agree with him in his assertion that, whilst it has been very hard to make the use of disinfectants general and popular, the Duke of Devonshire's Bill will now make their use well-nigh impossible (*sic*). The *Sun* raves on almost identical lines, beginning by sagely remarking that everyone who has had any experience of sanitary requirements in any part of the Metropolitan area will realise that if all well-known disinfectants are only to be sold under the provisions of the Pharmacy Act it will be impossible to induce the poor to register their names and addresses in the chemist's book !!!

IT MIGHT BE THOUGHT that, after this brilliant logical display, some attempt would be made to render the meaning of the writer's argument clear. But no, he only proceeds to explain that the Schedule to the Poisonous Substances Bill provides that in the case of "preparations of carbolic or cresylic acid or their homologues used as disinfectants, and containing more than ten per cent. of any of them," they cannot be sold unless the box, vessel, or package in which the substance is contained, and also any external wrapper or cover, are distinctly labelled with the word "Poison," and with the name and address of the person selling the substance. What all this has to do with the Pharmacy Act or the registration of the names and addresses of the poor does not appear; doubtless at the early hour in the morning when this was written the writer had got himself inextricably entangled in the network of his own verbiage. If this Bill becomes law, he continues, the smallest trader in a back street must practically print labels of his own, and where local authorities are endeavouring to enforce sanitation by the distribution of Jeyes' Fluid, Sanitas, and other similar compounds, they will find that they are handicapped by the Duke of Devonshire's Bill, which even includes the ordinary (*sic*) carbolic acid. As the Vestries do not sell, but freely distribute these disinfectants, it would hardly appear to a sane person that any difficulty could arise in that connection, but the genius of the *Sun* thinks the effect of the Bill becoming law would be to render it necessary for London and other great centres of population to abandon the use of disinfectants entirely for the want of proper labels. "In the country vermin and insects will have a close time because 'Substances sold for the purpose of poisoning insects or vermin' will have to come under the provisions of the Pharmacy Act." And so the frothy nonsense is poured out in the daily press all over the country, the general effect produced being to cause one to wonder if the Duke of Devonshire really knows what his Poisonous Substances Bill is intended to do.

OPPOSITION TO THE BILL has already been proposed by several local Pharmaceutical Associations, but many others have been waiting for inspiration from headquarters. As will be gathered from our report of the Council meeting this week (see page 31) that is now forthcoming, and no time should be lost in bringing all available pressure to bear upon Members of Parliament, in order that they may oppose the Bill in the House of Commons. A circular letter will shortly be sent to every registered chemist, embodying the objections to the proposed legislation from the point of view of the Pharmaceutical Council, and the arguments therein stated ought to be submitted to every Member of Parliament in Great Britain. Meetings of registered chemists may also be held with advantage in every large centre, and the resolutions

passed at those meetings should emphasise the fact that inasmuch as the chief protection of the public in connection with the sale of poisonous substances is the special qualification of the seller, any attempt to modify the restrictions imposed by the Pharmacy Act, 1868, in regard to the sale of poisons, would be detrimental to the public interest, and a violation of the conditions imposed upon chemists and druggists by the Act. The text of the resolutions in the district, accompanied with an explanatory letter if necessary, and a request to oppose the Bill when it is brought forward. If this be done universally, little doubt need be entertained regarding the fate of the Bill, but it is important that no stone should be left unturned in the endeavour to prevent so mischievous a measure finding a place on the Statute book.

A GREAT MISTAKE is sometimes made by registered chemists, in regard to their position under the Pharmacy Act, by laying claim to any rights or privileges beyond the right to carry on the business of a chemist and druggist. The sale of poisons within the meaning of the Act is by no means a privilege conferred upon them in return for having passed a qualifying examination. The statutory restriction of the sale of poison is, on the contrary, imposed solely out of consideration for the public safety. Any advantage that registered chemists may derive from it, is incidentally consequent upon the restriction which is established for the sake of the public, but not for the benefit of the chemist. It is especially important that this view of the matter should not be overlooked when so many unreasonable remarks are being made about the chemist's monopoly and his interference with the business of other tradesmen. Nothing is more desirable for the maintenance of the chemist's position in regard to the trade in poison, than to avoid giving any pretext for its restriction being regarded as established for the chemist's benefit, or partaking in any degree of the semblance of a monopoly. That view has been so constantly urged in this Journal that repetition of it would be a platitude if it were not that, in some recent letters, a contrary argument has been put forward.

THE VICTORIAN POISONS ACT has been rendered practically inoperative by the decision in the "Pink Pills" case, a report of which recently appeared in the Journal (see last vol., p. 564e). Such, at least, is the opinion of the Pharmacy Board of Victoria, as expressed in its report for the past year. A prosecution was undertaken by the Board against a suburban grocer for having sold pills containing arsenic, but it was argued for the defence that the quantity of the poison was infinitesimal, and that the article named was a proprietary medicine, and as such, came within the exceptions of the section. Moreover, it was contended that the words of the last paragraph of the section—"Provided that all such sales shall be entered in a book and that the bottle or other vessel, wrapper or cover, box or case immediately containing the poison be labelled as required by the Act"—referred to sales by wholesale dealers only. As to the contention that where the poison sold was "an infinitesimal quantity," a prosecution would not be justified, the Court upheld the Board's contention that no matter what might be the quantity of the poison sold, such sale was subject to the Act. The judges ruled, however, that proprietary medicines were expressly exempted from the injunction of the section that sales of the same should be entered in a book and that poison should be labelled as such, the injunction being only applicable to sales by wholesale dealers! The effect of this decision is said to leave the Board powerless to restrict the sale of other than crude poisons,

and to allow of the general and indiscriminate distribution of such common means of suicide and murder as "Rough on Rats," "Battle's Vermin Killer," and similar cheap deadly poisonous admixtures. "Facilities for homicide and self-destruction have always been lamentably easy of access, and stronger powers than were believed to have been possessed under the Act were long desired. But the legal dictum takes away the only and inadequate restraining power which it was thought the Act reposed in the Board, leaving it practically impotent to give effect to the expressed intention of the Legislature as contained in the preamble of the Act—to restrict the sale of poisons for the safety of the public, and to lessen the frequency of fatal accidents through crime and careless custody." The Board makes no doubt that this matter of vital importance to the community will receive attention from the Government, and that such an amendment of the Act will be promptly urged upon Parliament as will place the Board in a position to discharge its responsible duties to the public with efficiency.

THE CONCLUSIVE DEMONSTRATION afforded by the Registrar-General's returns that carbolic acid is the cause of more deaths by accident and suicide than any other poisonous article, and that its unregulated sale is a serious source of danger to human life, acquires additional force when the records of murder by poison are added to those of poisoning by accident and suicide, as in the following summarised statement for the years 1895 and 1896:—

	Scheduled Articles.	Unscheduled Articles (in Schedule of Bill).	Miscellaneous.	Carbolic Acid Alone.
Accident ...	432	108	677	68
Suicide	429	470	153	387
Murder	2	4	1	3
	863	582	831	458
Total Deaths by Poison	2276			

Out of the seven murders in which death is attributed to poison, carbolic acid was the cause in three instances, and a scheduled poison only in two instances. The fact that the deaths caused by carbolic acid exceed those caused by accident with all scheduled poisons ought to be a cogent proof of the utility of restriction.

THE POISONOUS SUBSTANCES BILL was again before the House of Lords on Friday, July 1, when the Duke of Devonshire moved the third reading of the measure. Lord Herschell said he did not know whether the noble Duke was aware that the Bill would prove so stringent as to interfere with the sale of disinfectants. Articles of that kind were very much used at the present time, and their use would be checked by this Bill. He did not know whether that point had been considered. The Duke of Devonshire, in reply, said it was with regard to that matter he was about to move an amendment intended to meet the point. Communications had been made to the Privy Council that the Bill as drawn would interfere with the sale of disinfecting powders extensively used, and he therefore proposed to insert the word "liquid" before "preparations" in the Schedule. The amendment was put and agreed to, and the Bill was then read a third time and passed.

A SCHOOL OF HYGIENE was opened at Liverpool by the Lord Mayor of that city, on Monday last, the new institution being in connection with the University College. Ashton Hall, as the new school is named, is a large building, with well-lighted museum, laboratories, and lecture room, the latter fitted with an electric arc lamp. The museum is well fitted, and stocked with numerous useful exhibits. The building was presented by the late Mr. Holt, whose wish was that it should be devoted to some branch of medicine having for its object the promotion of public health, and the medical faculty of the College thought it would best be giving effect to his wishes by using the building for a museum and school of instruction in public health matters and for research in subjects connected therewith. The school is well equipped for the investigation of advanced sanitary problems, such as purification of water and sewage, the action of disinfectants, and so forth, and meets a pressing need.

A "CURE" FOR YELLOW FEVER mentioned by a correspondent of the *Standard* is an extremely simple one, in fact its very simplicity is said to have often been the cause of its non-adoption, but that, of course, should in no wise prejudice people against its use. According to this writer no fatal result need ever be feared in a case of yellow fever provided the person attacked, as soon as the symptoms make their appearance, takes a tumblerful of olive oil with the juice of a lime squeezed into it, repeating the dose till vomiting and purging ensue. This combination is claimed to be infallible in checking the virulence of the complaint, and a speedy convalescence "invariably follows." The writer of the letter says he has not only proved its efficacy personally, but he has witnessed its complete success in dozens of cases, both in Cuba and South Africa.

THE BRITISH PHARMACEUTICAL CONFERENCE begins its annual proceedings at Belfast on Tuesday, August 9, when the members will be officially welcomed at 10 a.m. by the Right Hon. the Lord Mayor of Belfast, on behalf of the citizens, and the Rev. Thos. Hamilton, D.D., President of the Queen's College, on behalf of the College. The Sessions of Conference will be held in the Library of the Queen's College, and will last from 10 a.m. to 4 p.m., with the usual interval for luncheon, whilst at 4.15 p.m. there will be a drive to Giant's Ring, Purdysburn, Ormeau Park, etc. The Reception and Conversazione will be held in Queen's College at 8 p.m. On Wednesday, August 10, the Sessions of Conference will be followed at 4 p.m. by a garden party in the Botanic Gardens Park, by invitation of the Right Hon. the Lord Mayor and Lady Mayoress, whilst at 8 p.m. the ladies' drawing-room concert and a smoking concert will be held in the Grand Central Hotel. The excursion on Thursday, August 11, will be round the coast of Antrim by coach, *via* Larne, Garron Tower, and Glenariff to Parkmore. The return journey from Parkmore will be by train. The arrangements made for Friday, August 12, include visits to Messrs. Harland and Wolff's ship-building yard, the York Street spinning mills, the Belfast rope works, and Messrs. Gallaher and Co.'s tobacco factory. Those who would like to visit Portrush and the Giant's Causeway will be able to secure tickets at reduced fares. The Conference books of tickets are ten shillings and sixpence each. No. 1 will admit to the meetings, luncheon on Tuesday and Wednesday, the drive, garden party and concerts; No. 2 book will cover the coach and railway fares on Thursday, as well as luncheon and tea. Applications for tickets should be sent at once to the Hon. Local Secretary, Mr. R. W. McKnight, 1, Carlisle Circus, Belfast, who will also secure rooms if asked to do so. The Grand Central Hotel, Royal Avenue, will be the headquarters of

the Conference, and guide books will be distributed to the members free.

THE DIRECTORSHIP OF THE NATURAL HISTORY MUSEUM is at present vacant in consequence of the resignation of Sir William Flower, on the ground of ill-health, and the trustees of the British Museum have been for some time occupied with the arrangements to be made in regard to his successor. The *Times* reports that a committee of the trustees is rumoured to be in favour of the practical abolition of the independent post held by Sir William Flower, and a return to the old plan of the official subordination of the Natural History Museum to the Principal Librarian (or Director as he is now entitled). In connection with this alteration in the character of the post held by the late Director, it is also proposed to treat it now and in future as a part of the ordinary official promotion in the Natural History Museum. A memorial to the trustees has been drawn up and is being circulated for signature, in which it is urged that the post held by Sir William Flower was considered to be a great step gained for the interests of science in the official world, and that it should not now be abolished. It is urged that both Owen and Flower were appointed from the outer world to the headship of the Natural History Museum, and have rendered great public service of a kind which could not necessarily be obtained from the regular museum staff, and that, in any case, the high character of the post should be maintained.

SILVER MEDALS have been issued for centuries in this country with the tables or flat surfaces smooth and mirror-like, while a more or less frosted texture has been given to the portions in relief, but, as is well known, medals with polished surfaces rapidly tarnish and even blacken by exposure to the ordinary atmospheric influences. In France a different system has long been in use, unpolished dies being employed and care taken to impart to the medals struck from them a dead or frosted surface by rubbing them with fine pumice. According to the annual report of the Deputy-Master of the Mint, medals have recently been subjected to "sand blasting" at the French Mint, the effect being to cause the surface of the medal to become minutely granular or frosted. The surface is then darkened by exposure to an aqueous solution of a sulphide, followed by rubbing with very fine pumice, which removes the dark layer of sulphide from the portions in high relief and leaves dark lines in the more deeply-cut recesses. It is, however, preferable to cover the medal with a layer of platinum by immersing it in an alcoholic solution of platinum chloride until a blackened surface is produced. Subsequent rubbing with a brush and very fine pumice changes the blackened surface to a delicate grey, and if this operation is conducted skilfully graduated shadows may be left wherever the artist considers their presence to be desirable. A medal with a frosted platinised surface has a great advantage over one with a polished table, as the platinised medal is merely deepened in tone by exposure to the atmosphere, and, unlike medals which have been struck in the ordinary way, does not become disfigured by blotches of tarnish. The frosted platinised medal may be restored to almost its original freshness by careful rubbing with a soft leather, while a polished silver one cannot be so renovated, as the tarnish attacks the surface and destroys the polish. During the past year, for the first time in the history of the British Mint, silver medals have been issued with frosted and platinised surfaces, more than twenty-seven thousand medals having been platinised by a slight modification of the above method.

NOTICES OF BOOKS.

THE 'TEXT-BOOK OF ZOOLOGY' by H. G. Wells and A. M. Davies (London: W. B. Clive. Pp. 366. Price 6s. 6d.), is one of the most serviceable books of its kind for students preparing for the degree examinations in science of the University of London. It is in reality a new book, for but little is retained of Wells' 'Text-Book of Biology,' published some five years ago, beyond the general plan of the work. The four parts of the book treat respectively of the rabbit, the lower vertebrata, the development of vertebrata, and invertebrata. The advantages and dangers of the "type-system" have both been borne in mind in writing the work, and great pains have been taken throughout to avoid even the semblance of want of clearness. The diagrams have been drawn specially for the book, and they are "labelled" as fully and completely as the most critical and fastidious student could desire.

'BABY FEEDING,' by A Doctor (Bristol: John Wright and Co. Pp. 62. Price 4d.), is a slight production, intended for free distribution, and obtainable in packets at reduced rates for that purpose. The pamphlet is dedicated "in sincere sympathy" to the many children who, through the ignorance or wilfulness of their mothers, have been destined to "a life of ill-health, misery, and poverty."

'FOOD AND DRINK,' by Dr. Thomas Dutton (London: Henry Kimpton. Third edition. Pp. 124. Price 2s.), has previously been noticed in these pages, and the fact that it has been found necessary to reissue it should suffice to prove that the book has been found useful. Both the medical profession and the general public have evinced much interest in the work, and anyone who is in doubt what to eat or drink will find it a safe guide.

'THE EXTRA PHARMACOPŒIA,' by W. Martindale and W. Wynn-Westcott, M.B. (London: H. K. Lewis. Ninth edition. Pp. 626. Price 10s. 6d.), has been in such great demand that it has been necessary to reprint the new edition within less than a month of its original issue. Such errors as crept into the earlier copies have been corrected in the reprint, and the reader who never makes a mistake himself has accordingly been deprived of one more cause for grumbling.

'MATERIA MEDICA, PHARMACY, PHARMACOLOGY, AND THERAPEUTICS,' by Dr. W. Hale White (London: J. and A. Churchill. Third edition. Pp. 621. Price 2s. 6d.), is a work more especially intended for medical students, but it is also very suitable for use by pharmacists who desire to improve their acquaintance with the action of drugs. This edition has been thoroughly revised since the publication of the new British Pharmacopœia, and the preface is devoted to a summary of the more important changes in the national medicine book. In addition several hundreds of alterations and additions have been made in the body of the work, which now embodies the very latest information regarding official medicaments.

THE 'CHEMIST'S COMPENDIUM,' by C. J. S. Thompson (London: Whittaker and Co. Second Edition. Pp. 313. Price 3s. 6d. net), has now virtually become a pocket B.P., for more than half of the daintily-bound volume is devoted to a synopsis of the formulæ and processes of the British Pharmacopœia, 1898, and as the official monographs appear to have been transferred almost bodily, the text is practically identical with that of the less handy and much

more expensive book. The B.P.C. 'Unofficial Formulary' is likewise reprinted *in extenso* by Mr. Thompson, together with selected formulæ from foreign pharmacopœias, and a great variety of miscellaneous information, the importance and accuracy of which is somewhat variable. The same eccentricities are displayed in enumerating the active principles of drugs as in the first edition, and the chemical nomenclature adopted in the photographic section is still sadly in need of revision. These and other minor errors detract considerably from the value of this pretty little book.

'MOUNTS AND FRAMES,' by Rev. F. C. Lambert, M.A. (London: Hazell, Watson and Viney, Ltd. Pp. 146. Price 1s.), is a practical work on the making of those indispensable aids to the picture framer. Amateur photographers in particular should find the book extremely useful. The author explains the use and object of mounts, specifies the most suitable sizes and proportions, and gives advice regarding texture and surface, tone and tint. The mounting of tinted papers, "cut" mounts, and the preparation of prints receive equally careful attention, after which all that is essential is told regarding the making of picture frames.

'BORON FOOD PRESERVATIVES AND THEIR INFLUENCE ON THE HUMAN ORGANISM' (London: Perkins, Bacon, and Co., Ltd., Fleet Street, Pp. 63. Price 6d.) is a collection of medical and scientific data on the subject of which it treats, which may prove useful to those of our readers who are required, at times, to answer questions on the alleged injurious effects of boric acid and borax in articles of food and drink. A number of tables are included.

'THE PEOPLE'S GUIDE TO THE WORKMAN'S COMPENSATION ACT' by R. M. Minton-Senhouse and G. F. Emery, L.L.M. (London: Bemrose and Sons, Ltd. Pp. 32. Price 1d.), is a handy little condensation of the provisions of the Workman's Compensation Act, 1897. Information on this subject is of value to both employers of labour and of employes.

THE 'TOURIST-GUIDE TO THE CONTINENT,' by Percy Lindley (London: 80, Fleet Street. Pp. 158, illustrated, and with maps. Price 6d.), is an annual publication which has proved serviceable to innumerable travellers seeking rest or recreation on the Continent, *viâ* Harwich, during the past eighteen years. The nineteenth annual issue is in no degree behind its predecessors in interest. Among the fresh features are particulars of the new express service to Norway, Denmark and Sweden, *viâ* the Royal Mail Harwich Hook of Holland Route; a series of continental maps, a chapter upon cycling routes in Holland, Belgium and Germany, and a chapter, "Dull Useful Information," giving particulars as to the cost of continental travel.

'PRACTICAL ORGANIC CHEMISTRY,' by Samuel Rideal, D.Sc. (London: H. K. Lewis. Second edition. Pp. 172. Price 2s. 6d.), is a collection of the more important tests and reactions of the common organic compounds, arranged in a very compact form. As in the previous edition, the first half of the book is occupied by descriptions of the organic acids, together with the tests for their purity. The carbohydrates, organic bases, and neutral substances are dealt with in later sections of the book, and the volume has been specially revised to bring it into line with the new B.P. Particulars are also included regarding several organic substances which have recently been included in the schedule for various examinations, and of a few other compounds of general interest. The introduction treats of the detection of organic carbon and nitrogen, halogens and other elements in organic bodies, whilst a brief scheme of analysis is given at the end.

PHARMACEUTICAL SOCIETY.

MAJOR EXAMINATION QUESTIONS.

PHYSICS.

June 30.—Time allowed, Three Hours.

[Not more than six questions to be attempted.]

1. Explain the phenomena of reflection and refraction by the wave theory of light.
2. Describe methods for determining the lengths of waves of light.
3. Describe the processes employed for the liquefaction of gases. What recent advances have been made?
4. Calculate the vapour density referred to hydrogen as 1 of a volatile liquid determined by Victor Meyer's method. The quantity of substance taken was 1.008 gramme, and the vapour was heated to 100° C. The volume of air expelled was 22 C.c. measured at 16.5° C., with the barometer standing at 707.5 Mm. Pressure of aqueous vapour at 16.5° C. = 14.0 Mm. of mercury.
5. What is meant by thermo electricity? Describe some uses that have been made of the phenomenon.
6. What is Ohm's law? Describe some experiments in illustration of the truth of the law.
7. Describe the process of dialysis, and mention cases in which it is used.
8. Mention some freezing mixtures, and describe the principles on which they depend.
9. Show the connection between electricity and magnetism, and describe experiments by which one of these manifestations of energy can produce the other.

CHEMISTRY.

June 30.—Time allowed, Three Hours.

[Not more than six questions to be attempted.]

1. Give the names and formulæ of the hydrides of nitrogen, phosphorus and arsenic; compare and contrast the properties of these compounds.
2. Describe the preparation, properties and uses of potassium dichromate. Starting from this salt, how would you prepare crystallised specimens of (a) chromic acid, (b) potassium chromate, (c) chrome alum, (d) potassium sulphate?
3. 0.7 gramme of pyrolusite is heated with hydrochloric acid, the evolved gas passed into a solution of potassium iodide, and the iodine titrated with $\frac{N}{10}$ sodium thiosulphate. Assuming that the pyrolusite contains 67 per cent. of available manganese dioxide, what volume of the thiosulphate would be required?
4. When the elements are arranged according to the natural system they fall into octaves or periods. Point out any gradual or regular variations in the properties of the members of one of these periods.
5. How would you test a sample of water suspected to be contaminated with sewage? What conclusions would be drawn from the analytical results?
6. How are alcohols classified, and what are the characteristics of the members of each class? What reactions are common to all alcohols?
7. Write an account of the methods you would use for the preparation of ethyl ether or of ethyl acetate (acetic ether) and sketch the apparatus employed.
8. Describe five important general reactions which are employed in dealing with aromatic compounds, and give examples of their application.
9. Give the graphic or constitutional formulæ of the compounds having the molecular formula $C_3H_6O_2$, and describe the properties of the various compounds.

BOTANY AND MATERIA MEDICA (A paper).

July 1.—Time allowed, Three Hours.

BOTANY.

1. Give a careful description of the means by which a plant absorbs food from the ground, gets rid of waste products, stores up reserve food, and prevents excessive transpiration.
2. Briefly describe the following fruits, and mention in each case the method by which the dispersal of the seeds is probably effected: Rose, Cherry, Clematis, Raspberry, Galium aparine (Cleavers), Impatiens noli-me-tangere (Touch-me-not).
3. Describe the difference observable between an ordinary primary root and a primary shoot under the headings (a) external form, (b) internal structure. What explanation can you give of the differences?

MATERIA MEDICA.

1. How would you estimate the value of the following drugs: (a) Jalap, (b) Cloves, (c) Scammony?
2. In what official products do the following bodies occur: (a) Salicine, (b) Eugenol, (c) Menthol? But what tests would you proceed to establish the identity of each?

PRACTICAL BOTANY AND MATERIA MEDICA (A Paper).

July 1.—Time allowed, Three Hours.

BOTANY.

1. Make preparations from the flower A to illustrate the structure of the ovary and ovules. Mount your sections in dilute glycerin and leave not more than two slides for examination, with explanatory diagrams.
2. Give a description of the external morphological features of the specimen B. Refer the plants C and D to their natural orders, giving reasons for your reference.

MATERIA MEDICA.

1. Prepare and leave for inspection not more than two slides showing the histological structure of the leaf provided. Describe and sketch your preparations, calling attention to any important features.
2. Is the "Powdered Digitalis" a genuine sample or not? State the grounds on which your opinion is based.

BOTANY AND MATERIA MEDICA (B Paper).

July 1.—Time allowed, Three Hours.

BOTANY.

1. What is the essential difference between sexual and asexual reproduction? Describe a few examples of asexual reproduction afforded by common plants.
2. Describe the structure of a fern prothallus. Contrast the early stages in the development of a fern embryo with those in the development of a dicotyledonous embryo.
3. Describe the flower and fruit of any six of the following—Beech, Oak, Poppy, Iris, Dandelion, Campanula, Shepherd's Purse, Geum.

MATERIA MEDICA.

1. How would you proceed to ascertain the relative value, for pharmaceutical use, of a number of samples of the following: (a) Balsam of Tolu, (b) Saffron, (c) Aniseed, (d) Ginger?
2. Name the fixed oils official in the B.P. What are their chief points of difference in chemical and physical properties?

PRACTICAL BOTANY AND MATERIA MEDICA (B Paper).

July 1.—Time allowed, Three Hours.

BOTANY.

1. Make preparations from the specimen A to illustrate (1) the structure of the primary root, (2) the origin of secondary roots. Mount your sections in dilute glycerine and leave not more than two slides for examination, with explanatory sketches.
2. Give a description of the external morphological features of the specimen B. Refer the plants C and D to their natural orders, giving reasons for your reference.

MATERIA MEDICA.

1. Prepare and leave for inspection not more than two slides showing the histological characteristics of the leaf provided. Describe and sketch your preparations, calling attention to any important features.
2. Is the sample of powdered Coca leaf genuine, or not? State the grounds on which your opinion is based.

SCHOOL OF PHARMACY PRIZE EXAMINATION QUESTIONS.

PRACTICAL CHEMISTRY.

PROFESSOR J. NORMAN COLLIE.

Thursday, June 30.—From 11 a.m. to 1 p.m.

1. The solution contains two potassium salts. Find the two acids present.
2. The bicarbonate of soda in box A is supposed to be impure. Detect the impurity.

PRACTICAL CHEMISTRY.

PROFESSOR J. NORMAN COLLIE.

Thursday, June 30.—From 2 to 5 p.m.

The solution of permanganate of potassium you are given is decinormal. Determine the percentage amount of iron present in the solution of ferric chloride in the bottle marked A.

CHEMISTRY.

PROFESSOR J. NORMAN COLLIE.

Friday, July 1.—From 10 a.m. to 1 p.m.

1. Compare the chemical and physical properties of the oxides of sulphur, chromium, and iron. Write out your answer in the form of a table.
2. Describe how you would proceed to prepare specimens of strong sulphuric acid, strong nitric acid, and strong hydrochloric acid (aqueous solution), if the only chemicals you possessed were nitre, iron pyrites, and sea water.
3. Give a description of the commercial manufacture, and state what the common impurities are, of any two of the following substances:—Potassium bichromate, hydrobromic acid, bleaching powder, calomel, bismuth subnitrate, chloral, ether.
4. State what is the action of water on prussic acid, peroxide of nitrogen, pentoxide of phosphorus; also the action of strong and dilute sulphuric acid on alcohol, zinc, cane sugar, benzene, calomel.
5. Give two different methods for the determination of the specific gravity of a liquid, using numerical examples to illustrate your answers.
6. Discuss the relative advantages of mercury and alcohol as liquids for use in thermometers.

NOTICES TO CORRESPONDENTS.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ADVERTISEMENTS AND ORDERS for copies of the 'PHARMACEUTICAL JOURNAL' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers."

ARTICLES AND REPORTS sent for the Editor's approval should be accompanied by stamped directed envelopes, otherwise no guarantee can be given that they will be returned if not found suitable.

CORRESPONDENTS should write in ink, on one side of the paper only, and must authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

DRAWINGS FOR ILLUSTRATIONS should be executed twice the desired size; clean sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

NAMES AND FORMULÆ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

QUERIES addressed to the Editor will be replied to in the Journal as early as possible after receipt, though not necessarily in the next issue. Replies cannot be sent by post, even though stamped envelopes accompany the queries.

LETTERS TO THE EDITOR.

LIQUOR STRYCHNINÆ HYDROCHLORIDI.

Sir,—I read Mr. Martindale's letter on above subject with great interest. He has begged the point. Throughout he argues on the hypothesis that strychnine hydrochloride crystallises with one and one and a half molecules of water. Why, then, does he not say that the new B.P. is wrong in stating it at two? So far as I can see, simply to throw doubt on the accuracy of my figures. This is unfair, because in the end he admits that commercial samples approximate to two molecules. He must know, as stated, that my figures and conclusions were founded on the B.P. standard, viz., that the formula is $C_{21}H_{22}N_2O_2 \cdot HCl \cdot 2H_2O$. Why should he now attempt to recall the differences of opinion as to water of crystallisation of that salt? The B.P. has, with full information, defined it as $2H_2O$, and why should Mr. Martindale, or I, or anyone take it at anything else, except we are prepared to prove that the B.P. is wrong, which he is not? Can Mr. Martindale prepare solution of strychnine hydrochloride B.P., 1898, with a salt with H_2O or $1\frac{1}{2}H_2O$? The salt from which I prepared my new solution lost 8.4 per cent. on drying at 100 C. This is almost equivalent to $2H_2O$. The residue dissolved in water readily, showing that the salt was not affected. Mr. Martindale entirely ignores the fact which I think is indisputable, that the 1885 B.P. solution contained one grain of alkaloid in nearly 108 m, and that of 1898 one grain of hydrochloride in nearly 110 m, so that 110 m of B.P. 1885 contained $1\frac{1}{4}$ grain of strychnine, consequently the present solution bears a further reduction in alkaloidal value as 110 is to 108. I calculated for clearness, on the basis of finding the exact alkaloidal equivalent of 17.5 grains of the hydrochloride, the molecular weight of alkaloid 331.75, the hydrochloride 403.7; that is, latter contains 82.17 per cent. alkaloid, then $\frac{82.17 \times 17.5}{100} = 14.379$, which gave $\frac{1920}{14.379} = 133.5$, or nearly 134 minims in which each grain is contained. Now twice the B.P., 1885, formula produced from 18 grains of alkaloid 1940 minims (this from careful experiment), and I have $\frac{1940}{18} = 107.7$, or nearly 108 minims, so that by superposing $\frac{108}{134}$ or $\frac{107.7}{133.5}$ you find in minims the comparative strychnine value of 1885 to 1898 solutions, i.e., as 80.59 or 80.5 is to 100, practically one-fifth weaker than 1885. Supposing the formula of the hydrochloride of strychnine to be $(C_{21}H_{22}N_2O_2 \cdot HCl)_2 \cdot 3H_2O$, I find that half the molecular weight is 394.76, so that it would contain 84.03 per cent. of alkaloid, and by making reduction due to $\frac{108}{110}$ I find that the alkaloidal value of solution is 82.5 per cent., that

is, as $\frac{33}{40}$ or 5.5 minims 1885 solution equal 6.66 minims 1898—

practically one-sixth weaker. But I cannot accept this as the formula of strychnine hydrochloride until Mr. Martindale, who should be one of the last to question the B.P. standard, and practically corroborates it in his letter, can prove that one and a half H_2O (or properly, three, doubling the strychnine and HCl) be substituted for two in the formula. Even as 5 is to 6 is neither "slightly weaker" nor "one tenth weaker." Sir, the statement that Mr. Martindale makes that the 1867 B.P. solution was almost similar in strength to 1898 B.P. neither agrees with the molecule of strychnine hydrochloride at $1\frac{1}{2}H_2O$ nor $2H_2O$. With the latter the following are the figures:—

B.P. 1885,	1 gr. strychnine in	108 minims.
" 1867,	1 " " "	120 " "
" 1898,	1 " " "	134 " "

The difference is almost similar between the 1885 and 1867 as between 1867 and 1898, three distinct and not approximate strengths. Tincture of nux vomica is quoted as an example of a double strong preparation, and therefore, according to Mr. Martindale, a most important alteration. If a preparation is made weaker in greater proportion of active ingredient it is to my mind just as important an alteration for physicians to know. Tincture of nux vomica contains 1/83 gr. more strychnine in ten minims. Solution of strychnine hydrochloride contains 1/55 gr. less alkaloid in each ten minims. I repeat that the exact comparative alkaloidal strength of B.P. 1898 and B.P. 1885 solutions of strychnine hydrochloride is as 80.6 is to 100 minims; i.e., 4.47 minims to 5.5, which for all practical purposes is that 4 minims 1885 equal 5, 1898. Permit me to add that I am justifying what I have published, and that alone has urged me, holding Mr. Martindale in the greatest respect, to write this letter.

Edinburgh, July 2, 1898.

GEORGE LUNAN.

SUPPOSITORIA ACIDI CARBOLICI, B.P.

Sir,—Kindly allow me, through the medium of your valuable journal, to call attention to the "Suppositoria acidi carbolic," B.P., 1898. I have made them and find that they are much too soft to leave the mould at the ordinary temperature (65°) of the summer time. They may be stiff enough in winter, but from 6 to 12 grains of wax extra are required, according to the heat of the room, to make them leave the mould easily.

Handsworth, July 5th, 1898.

W. J. FORTNAM.

ANSWERS TO QUERIES.

Special Notice.—Scientific, technical, legal, and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms, and the registered number added in each instance should be quoted in any subsequent communication on the same subject.

EXT. ERGOTÆ LIQ.—Presumably cold water should be used, as nothing is stated to the contrary. [Reply to J. W. J. T.—13/11.]

GRAMMA.—The more classical genitive termination is *-atos*, but *-atis* would not be incorrect. [Reply to J. W. J. T.—13/11.]

HERB.—It is the white horehound, *Marrubium vulgare*, a decoction of which is used for chronic asthma and coughs accompanied with abundant thick expectoration. [Reply to W. I. G.—13/12.]

STUDY OF CHEMISTRY.—Write to the Registrar of the Pharmaceutical Society, 16, Bloomsbury Square, London, W.C., for a copy of the pamphlet entitled "Advice to Students." [Reply to STUDENT.—13, 17.]

BOOKS ON BREWING.—The following will probably be useful to you:—Sykes' 'Principles and Practice of Brewing,' published at 21s.; Wright's 'Handy Book for Brewers,' 12s. 6d.; Scammell's 'Brewing and Malting,' 12s. 6d. You can obtain these books as below. [Reply to E. W. S.—12/11.]

PREPARATION FOR WATERING PLANTS.—See reply to H. W. R. in next column. [Reply to OPOPONASE.—13/24.]

SAMPLE OF INSECTICIDE.—This consists of an alcoholic solution of crude nicotine and a little camphor. [Reply to H. H. M.—13/8.]

METALLUM ALBUM.—The name "metallum album" is a synonym for white arsenic. [Reply to H. M. M.—12/24.]

CRUDE NICOTINE FOR INSECTICIDE.—Write to Whiffen and Sons, Howard and Sons, Morson and Sons, or any of the large makers of alkaloids. [Reply to J. S.—13/14.]

RECIPE FOR THICK SAUCE.—See reply to "R. W." at page 604 of last volume. Use the same recipe, but substitute tomatoes, 32 parts, and apples, 32, for apples, 64, as there given. [Reply to E. C.—12/26.]

STERILISATION OF MILK.—Absolute sterilisation can only be secured by heating the milk to boiling point for six hours, but for all practical purposes it suffices to fill a bottle with the milk and heat on a water bath or in a saucepan containing water, to a temperature of 70° C. Keep the milk at that temperature for half-an-hour, then close the bottle securely, and preserve in a cool place. [Reply to J. T. D.—13/22]

GLOSSY NON-INFLAMMABLE PAINT.—Probably increasing the amount of sodium silicate, or the addition of finely-powdered asbestos will do what you require. Borax certainly would not, until the paint was fused. This is a matter in which practical experiment on your part may be usefully conducted. [Reply to ANTISPASMODIC.—12/18.]

PHOSPHORUS PASTE FOR RATS.—Phosphorus, 1 oz.; carbon bisulphide, 5 ozs.; tallow, 24 ozs.; fine oatmeal, 24 ozs.; anise oil, 3 drachms; ultramarine blue, $\frac{1}{2}$ oz. Dissolve the phosphorus in the bisulphide and rub it with the fat until most of the solvent has evaporated. Then add the oatmeal, with which the ultramarine has been previously mixed, and mass intimately, adding a little more tallow if required. [Reply to ALPHA.—12/31.]

TITRATION OF MORPHINE.—The titration with standard sulphuric acid, of the morphine crystals obtained in the new Pharmacopœia method of determining morphine in opium and its preparations, is a refinement of chemical procedure introduced by the compilers of the Pharmacopœia to show that the work is up to date. More important errors are possible in the course of morphine determination by unskilled operators than the error which is likely to arise from the slight impurity in the morphine crystals that titration is intended to guard against. It is assumed in the B.P. process that the weight of pure anhydrous morphine is indicated by titration, which is not always the case. [Reply to W. J. C.—13/10.]

ASSAY OF SULPHUR IN SPENT OXIDE.—Take 1 Gm. of the well-bulked sample, and add to it, in a beaker covered with a watch-glass, 10 C.c. of bromine solution, made by dissolving 7.5 Gm. potassium bromide in 10 C.c. of water, adding 5 C.c. of bromine and water to produce 50 C.c. Mix well and stand for ten minutes in the cold. Add 10 C.c. nitric acid, mix, and allow to stand for another ten minutes. Then heat gently on water-bath and when action ceases remove the watch-glass and evaporate to dryness. Now add 10 C.c. of hydrochloric acid, cover up, and when quiet again evaporate to dryness. Add 1 C.c. hydrochloric acid and 50 C.c. hot water, digest until solution is complete, filter and wash with hot water; add ammonia in slight excess, filter out the precipitated ferric hydrate, and wash it thoroughly. To the filtrate add a slight excess of hydrochloric acid, boil and, while boiling, add excess of barium chloride (10 per cent. solution) at the rate of 1 drop per second. The ferric hydrate precipitate is redissolved in hot dilute hydrochloric acid, and 10 C.c. of barium chloride solution added to it, and allowed to stand over night. The precipitated barium sulphate from both solutions is collected on one filter, ignited, and weighed in the usual manner. The above is Gladding's process, *J. Amer. Chem.*, xvi., 398, through *J. S. C. I.*, xiv., 190. [Reply to LIGNUM.—12/27.]

BOTANICAL.—We hope to identify your specimen shortly. [Reply to W. J. W.—13/7.]

BROWN HAIR DYE.—The amount of silver nitrate is rather large; half the quantity is quite sufficient. The preparation would be improved by adding a drachm of glycerin to each fluid ounce. [Reply to W. F.—12/21.]

FREEDING GOLD CHLORIDE SOLUTION FROM IRON.—The only way to do this is to reduce the gold to the metallic state, wash it thoroughly, and again redissolve it in aqua regia. Mix the solution with an excess of oxalic acid, let it stand in bright sunlight for some hours, when the whole of the gold will be thrown down in a convenient form for washing. [Reply to TAR.—12/10.]

BOOKS ON MILK, BUTTER, ETC.—Probably 'Milk, Butter and Cheese,' by Dr. James Bell, which is Part II. of the series on 'Analysis and Adulteration of Foods,' of the South Kensington Museum Science Handbooks, published by Chapman and Hall, will suit you. For details of current methods you should refer to the volumes of the *Analyst*. [Reply to E. W. H.—12/11.]

DOBELL'S POWDER.—We are informed by Dr. Horace Dobell that he has often been applied to about "this mysterious powder," which appears to have been originated by some American who connected Dr. Dobell's name with it without authority. We have no information regarding the composition of the powder. [Reply to A. McK.—12/33.]

FLASH POINT FOR PETROLEUM.—There is no simple test for the flashing point of petroleum, the results obtained by any but the Abel flash point instrument, or some modification of it, in which the flash is given in a closed, protected vessel, being of little or no use. In this country the "Abel test" is the only legal standard, and you cannot work that without using the special apparatus prescribed for its application. [Reply to HUMUS.—12/20.]

CHEMICAL MANURES FOR PLANTS.—For garden plants or flowers in pots use either of the following: (No. 1), Ammonium sulphate, 10; sodium nitrate, 15; ammonium phosphate, 30; potassium nitrate, 45. (No. 2), Bone black, 4; potassium nitrate, 2; ammonium phosphate, 2; iron sulphate 1. Suspend two teaspoonfuls of either in a gallon of water and apply once a week. No. 1 is best for most plants in bloom; No. 2 for use before flowering. [Reply to H. W. R.—12/25.]

BOOKS ON SHEEP AND CATTLE.—The following books by Armytage are suitable for an intelligent farmer about to emigrate: Armytage's 'Every Man His Own Cattle Doctor,' 21s.; the same author's 'Every Man His Own Sheep Doctor,' 10s. 6d.; and his 'Cattle and Sheep,' 2s. 6d. You can purchase all these books, less 25 per cent. discount, of H. H. Grattan, Tabard Book Store, Borough High Street, S.E. [Reply to J. J. T.—12/28.]

COMPOSITION OF HEADACHE POWDER.—The active ingredient of the headache powder is acetanilide. [Reply to HEADACHE.—13/18.]

LOTION FOR HORSE'S BROKEN KNEES.—This contains lead acetate in quantity, a little zinc oxide, some alcohol, and oil of turpentine. Probably the lead was originally added as soluble basic lead acetate, and the zinc as calamine, but the stuff has evidently been made a very long time. [Reply to FEMINA.—12/23.]

ANONYMOUS QUERIES.

J. L. J. (Ironbridge), and J. L. F. (Birkenhead), are referred to our rule with regard to anonymous queries.

OBITUARY.

CORY.—On May 30, Francis Albert Cory, Chemist and Druggist, Newport, Isle of Wight. Aged 40. Mr. Cory was an Associate of the Pharmaceutical Society.

BLIDBERG.—On June 25, Anders Sven Frederic Blidberg, Chemist and Druggist, late of Forest Gate. Aged 39.

CRANSTON.—On June 28, John Cranston, Chemist and Druggist, Darlington. Aged 69.

PARLIAMENTARY NOTES.

PHARMACY ACTS AMENDMENT BILL.—In the House of Lords on Thursday, The Earl of Hardwicke rose to move the second reading of the Pharmacy Acts Amendment Bill. He said: "My Lords, the objects of this Bill are, I think, so clearly and fully set forth in the memorandum accompanying the Bill, that I need do no more than move that it be read a second time." The Bill was then read a second time, without discussion.

THE HONOURABLE BARONETS associated with measures for the earlier closing of shops—to wit, Sir John Lubbock and Sir Charles Di'ke—have recognised that "What fates oppose, that men must needs abide," and they have consequently dropped the responsibilities involved in watching and hoping for a second reading which never comes. In short, they have thrown over early closing for the Session. It is a curious illustration of the change in Parliamentary procedure, or one might almost say fashion, that the old "this-day-six-months" motion is falling into disuse. The Shops Bills have at no period of their sessional career this year been obstructed by the "block" direct, but the indirect method of stopping nominally unopposed Bills by crying "I object," or "No," whenever they are reached in the House, has proved quite as efficacious, and it allows honourable gentlemen to be obstructive without publicity—a no inconsiderable advantage to the representative of a peppery constituency.

"SENT TO THE COMMONS" is the legend tacked on to the House of Lords Poisons Bill, but that much-discussed measure has not yet appeared in the Lower House. Possibly the angry murmur of approaching opposition may have penetrated the calm of the Privy Council Office, and disturbed that species of divinity that hedges a Government Department. At any rate, the Bill will scarcely be able to rank with non-contentious business, and as the Session has little more than four weeks to run, Ministers may quite reasonably shirk the responsibility of taking up such a prickly piece of legislation. As far as it is at present known, the opposition of the Pharmaceutical Society, with 15,000 chemists at its back, will be supplemented by the political efforts of the Pharmaceutical Society of Ireland, and the possibly more powerful pressure of the manufacturers of the poisonous substances scheduled in the Bill. Moreover, vestries are growing alarmed at a fancied interference with their paternal right to distribute carbolic disinfectants without regulation or restraint; hence it may be assumed that protests may be hurled at the Government by the Parochial and City Fathers throughout Great Britain. Add to these considerations the wrath of Mr. Alexander Cross, whose disinterested desire to protect the seed-selling public has been officially ignored, and the least observant of mortals will see that the elements of a very pretty discord lie handy for mixing.

MR. MONK (Gloucester) on June 30 betrayed a desire to place phosphorus matches on a Home Office "Index Expurgatorius." He asked whether the sale of such poisonous articles should not be made unlawful, on the ground that they are dangerous to the operatives who make them, as well as to those who use them. The Home Secretary did not follow the precedent set in "another place," and talk of monopoly or restriction of trade, but he told his honourable friend to await the result of inquiries which the Department was prosecuting, both at home and abroad, in relation to the use of phosphorus. He added that certain methods have been devised by which it is claimed that the use of phosphorus, both white and yellow, can be rendered harmless. There seems to be a possibility of further scope for the exercise of Departmental ingenuity in the way of regulations.

THE LONDON UNIVERSITY BILL is one of the measures which the Government has set its mind on passing this Session. It is awaiting second reading, but Vaccination claims first consideration. Opposers of the University Scheme saw in this position an opportunity not to be neglected, and they endeavoured to prolong the proceedings in the Committee stage of the Vaccination Bill in the hope of hindering their own pet aversion. Mr. Chaplin, however, met the move by a checkmate by obtaining leave to suspend the ordinary rules as to the adjournment of the Standing Committee, with the result that the business had to proceed to a finish, and one more bar to the consideration of the University Bill has been removed.

MR. JEFFREYS is again worrying the President of the Local Government Board to produce his Adulteration Bill, though what practical purpose the introduction of such a Bill at this late period of the Session would serve is hard to discover. Mr. Chaplin has already told the House that he was not prepared to introduce the measure unless he had a reasonable prospect of making progress with it.

ON THE IRISH SIDE of the St. George's Channel they manage some things better than they do here. Some time ago, at an inquest in a poisoning case, it came out in evidence that a scheduled poison had been sold to the deceased by a limited company in an unlawful manner, that is to say, the statutory requirements as to knowledge of the purchase and entry in the poison-book had not been complied with. The Pharmaceutical Society of Ireland very properly handed the matter over to the police, but the police declined to take it up. Similar instances in England and in Scotland are not uncommon. But the powers in Dublin have not taken the refusal quite so mildly as we are apt to do in Great Britain, for Mr. Field has given notice that he will call attention to the case in the House on Monday, July 11, and will be glad to know why the police did not prosecute, and why the law was not carried out.

MEDICAL JOTTINGS.

THE LATE MR. ERNEST HART'S COLLECTION of Japanese colour prints has been sold during this week by Messrs. Sotheby, Wilkinson and Hodge, at Wellington Street, Strand.

THE REMAINS OF HAHNEMANN, the apostle of homœopathy, have been transferred from the Montparnasse Cemetery, Paris, to Père-Lachaise. Hahnemann died in Paris in 1843.

MR. ARTHUR J. BALFOUR, M.P., and Sir Samuel Wilks, President of the Royal College of Physicians, have been elected to the Corporation of Guy's Hospital.

THE WORKMEN'S COMPENSATION ACT, which came into force on the 1st inst., has caused the disbandment of several firms' accident societies, with the result that in Lancashire a federation of doctors has been formed. The medical men of Pendlebury, Swinton, Pendleton, Walkden, Littlehalton, Farnworth, and Atherton have joined the Association, and decided to make a uniform charge of fifteen shillings for advising upon accident cases brought under the new Act.

COMPRESSED DRUGS.—A doctor, writing to a medical contemporary, states that he had occasion to prescribe for a patient with nervous headache, coupled with vomiting, compressed tablets of phenacetin, gr. iv; caffeine, gr. j. These were made up locally by chemists. Three months ago the tablets from one maker gave relief, though occasionally vomited unchanged three or four hours after administration. They were not noticed in the stools. More recently similar tablets from another maker gave no relief whatever. They were increased up to ten daily without producing any physiological action on the patient. These tablets were sometimes vomited many hours after administration, and were passed in the stools quite unchanged. Antipyrin gr. x. in water was then prescribed, with the most happy results.

PUMICE STONE is recommended for use in the desquamating stage of scarlatina. The soles of the feet and the palms of the hand are rubbed with it frequently in order to remove the hard dead epidermis, the presence of which would otherwise often prevent a case from being released from quarantine till long after the rest of the body had freely desquamated and the orthodox period of six weeks' isolation had expired.

THE FOLLOWING EXTRACTS are taken from 'Collections and Recollections' by "One who has kept a Diary." This volume, which though issued at 16s. a few weeks since, has already run into a third edition and created quite an unusual interest. It is an open secret that the diarist is Mr. G. W. E. Russell, ex-M.P., author of one of the best known biographies of Mr. Gladstone:—"The humour which underlies the roughness of country speech is not only genuine

but subtle. I have heard a story of a young labourer who, on his way to his day's work, called at the Registrar's office to register his father's death. When the official asked the date of the event, the son replied: 'He ain't dead yet, but he'll be dead before night, so I thought it would save me another journey if you could put it down now.' 'Oh, that won't do at all,' said the Registrar, 'Perhaps your father will live till to-morrow.' 'Well, I don't know, sir; the doctor says as he won't, and he knows what he has given him.'"

THE ART OF ADVERTISING is commented on by the Author, who says:—"I cannot quit the subject of advertisements without saying a word about the medical branch of this fine art, and knowing the enormous fortunes which have often been made out of a casual prescription for acne or alopecia, I freely place at the disposal of any aspiring young chemist who reads this paper the following tale of enterprise and success. A few years ago, according to the information before me, a London doctor had a young lady patient who complained of an incessant neuralgia in her face and jaw. The doctor could detect nothing amiss, but exhausted his skill, his patience and his remedies in trying to comfort the complainant, who, however, refused to be comforted. At length, being convinced that the case was one of pure hypochondria, he wrote to the afflicted lady, saying that he did not feel justified in any longer taking her money for a case which was evidently beyond his powers, but recommended her to try a change of air, to live in the country, and to trust for her cure to the *edax rerum* which sooner or later cures all human ills. The lady departed in sorrow, but in faith, obeyed her doctor's instructions to the letter, and established herself not a hundred miles from the good city of Newcastle. Once established there, her first care was to seek the local chemist and to place the doctor's letter in his hands. A smart young assistant was presiding at the counter. He read the doctor's letter, and promptly made up a bottle, which he labelled "Edax Rerum: to be taken twice a day before meals," and for which he demanded 7s. 6d. The lady rejoicingly paid, and requested that a similar bottle might be sent to her every week until further notice. She continued to use and pay for this specific for a year and a half, and then, finding her neuralgia considerably abated, she came to London for a week's amusement. Full of gratitude, she called on her former doctor, and said that though she had felt hurt at the abrupt manner in which he had dismissed so old a patient, still she could not forbear to tell him that his last prescription had done her far more good than any of its predecessors, and that indeed she now regarded herself as practically cured. Explanations followed; inquiries were set on foot; the chemist's assistant sailed for South Africa, and "Edax Rerum" is now largely in demand among the unlettered heroes who bear the banner of the Chartered Company.

EXTRACTS FROM CONSULAR REPORTS.

THE TOTAL NUMBER OF CHEMICAL WORKS registered in all parts of Germany, according to the latest trustworthy statistics, is 6144, the total number of persons employed by them being 125,440. Amongst the industries of the Hamburg Consular district which have attained to the greatest importance are those for manufacturing various chemical products, such as nitrates, sulphuric and nitric acid, sulphates, boracic acid, artificial manures, pharmaceutical products, dyeing and tanning extracts, essences, and more particularly different kinds of explosives. The factories in that district now employ altogether some 4000 workmen as compared with about 1300 ten years ago, thus demonstrating the rapid strides made through Germany by most branches of chemical industry during recent years.

THE MANUFACTURE OF MARGARINE is said to be responsible for the increasing business of Bremen oil manufactories, which make a specialty of sweet oil, one of the ingredients of margarine. The manufacturing of linoleum, in which linseed oil and varnish are used, is another cause for the prosperity of the oil business in Bremen.

THE GREATEST IMPORTER OF RESIN on the Continent, according to recent statistics, is the town of Harburg, a position it has held for many years.

THE ADULTERATION OF SUMACH AND ESSENCE OF LEMON in Sicily was the subject of a decree issued by the authorities during 1897, by which the exporter of these articles of commerce was compelled to mark on the packages, invoices, etc., the quality and quantity, if any, of the adulterant used. This law, however, according to Consul Pigott, has not been put into force, and the general opinion is that it will remain a dead letter.

WITH REGARD TO SUMACH-GROWING, there appears to be a danger of the industry dying out, inasmuch as the grinders of sumach have formed themselves into a syndicate and have fixed the price to be paid to the growers, for first quality leaf, at so low a figure that it barely covers the cost of cultivation, rent and government. Consequently some of the growers are cultivating the crops only twice annually instead of three times, and others have commenced to cultivate wheat and barley where formerly sumach was grown.

OLIVE-TREE NURSERIES in the Vilayet of Tripoli are reported by Consul-General Jago to be practically unknown, the creation of new plantations being impossible on account of a Government tax, which is levied alike on old and young trees, irrespective of their oil-bearing powers. The peasants are unable to pay the tax on young unproductive trees during the years required to attain maturity; consequently few young trees are planted. About eight years ago a Governor of Khoms obtained permission from the Porte to plant some 30,000 young trees to be exempt from taxation for ten years, but since his removal from the post nothing further has been done in that direction.

THE RUSSIAN GOVERNMENT has a monopoly of the sale of spirituous liquors, and heavy penalties are exacted for infringements of the regulations. Special provision is made for the sale of either raw or rectified spirits to chemists and those engaged in scientific work, etc., at a price determined by the Minister of Finance. A very interesting report on this Government spirit monopoly has been prepared by Mr. Carnegie, Second Secretary to Her Majesty's Embassy at St. Petersburg, giving a brief history of the drink question in Russia.

THE CULTIVATION OF VANILLA at Tahiti during 1897 was stimulated by the continued demand and the high prices ruling at the end of the previous year. The growers consequently exercised greater care, and this has led to an increase in the export of the article of 16,606 lbs., valued at £19,351, the total quantity being 75,740 lbs., value £35,408. The price paid for vanilla in January, 1897, was about £1 per kilo, gradually rising in value until £1 16s. per kilo. was reached. Ultimately, however, a reaction commenced, and the price declined to 16s., with little prospect of an immediate improvement.

THE EXPERIMENT OF REFINING NATIVE CHINESE OPIUM at Swatow, so as to give it the smell and taste of the drug imported from India and Persia, is still being persevered in. The enterprising individual who is conducting the refinery estimates that he will be able to produce about 1000 balls of 6 lbs. each per month, and expects to sell it at a profit at less than half the cost of the foreign drug. None of the refined article has so far appeared in the market, and the foreign drug continues to find favour amongst the opium smoking Chinese. The total import of foreign opium into Swatow in 1897 was 4228.29 piculs of 133½ lbs. each (563,772 lbs.), valued at £317,846, being an increase of 486 piculs over the import of 1896, and of 106 piculs over that of 1895.

FLOWER GROWING has made great progress of late years in Germany, and the gardeners are gradually conquering the powerful competition of the flower growers of the Riviera and Upper Italy, notwithstanding the disadvantages of the German winter. It is reported that now imported flowers are only occasionally sold in the streets of the large cities, while in the first-class shops, German cut flowers are almost exclusively used.

A FRESH USE FOR SEAWEED is claimed to have been discovered by a Norwegian engineer, who exhibited an invention at the Stockholm Exhibition for producing paper-glue, dressing-gum, and soap from seaweed. The first establishment for this branch of manufactory was, according to his statement, to be erected in the district of Stavanger, but Vice-Consul Berensten reports that up to the present nothing has been done in this direction.

PHARMACEUTICAL TRANSACTIONS.

WESTERN CHEMISTS' ASSOCIATION (OF LONDON).

A well-attended meeting of this Association was held at the Westbourne Restaurant, Craven Road, W., on Wednesday, July 6, the chief business being to discuss the Poisonous Substances Bill.—The President, Mr. J. H. MATHEWS, occupied the chair.—After the minutes of the previous meeting had been read and confirmed, the PRESIDENT proposed that Mr. Richard Bremridge be elected an honorary member of the Association, also that Mr. J. C. Umney, Divisional Secretary for Southwark, and Mr. William Harvey, Divisional Secretary for one of the Eastern Divisions of London, be elected members.—Mr. G. S. TAYLOR seconded the proposals, which were carried.—The PRESIDENT next intimated that he had received letters apologising for absence from Mr. William Warren and Mr. J. W. Taplin, the ex-President, the latter notifying his decided opposition to the Poisons Bill now occupying the attention of the Legislature. The President then went on to say that he thought the Poisonous Substances Bill lately introduced in the House of Lords by the Duke of Devonshire would injuriously affect the whole country in a greater or less degree, but especially country chemists. In his opinion the Bill had been ill-conceived, introduced at a most inappropriate time, and if passed into law would to a great extent nullify the Pharmacy Act now in existence. There was no formal resolution before the meeting, but he would ask Mr. R. H. Parker to introduce a discussion on the subject.—Mr. PARKER said

THE POISONOUS SUBSTANCES BILL

brought forward by the Privy Council, involves two principles of very great importance. First, as to who is to sell poisons; and second, as to who is to frame regulations for storing, selling, and dispensing them. At the outset he might say that he thought it a great pity the Privy Council has such an objection to consulting with the Pharmaceutical Society with regard to the regulations for the sale of poisons. The members of that body seemed to be of opinion that the main object of the chemist was to sell as much poison as possible. This was a distinct libel on the community. There was no body of men more desirous that the sale of poisons should be conducted in a rational and satisfactory manner than the members of the Pharmaceutical Society. But here they had the Privy Council taking upon itself the entire responsibility of regulating the sale of poisonous substances, about which its members knew very little, and ignoring altogether the men whose training had given them a thorough knowledge of their dangerous properties, and had specially qualified them to handle those substances. In his opinion the only rational *modus operandi* would be for the Privy Council to ask the Pharmaceutical Society to frame practical regulations. Coming to the question as to the sale of poisons, Mr. Parker asked: Did chemists as a body wish to have the sale of poisons monopolised to themselves? He did not think so; as a matter of fact, he knew that a great many chemists would rather be relieved of the sale of poisons, and wash their hands of the whole business. For chemists to monopolise the sale of poisons would be, he believed, to a great extent impracticable. It seemed to him, therefore, that the most satisfactory thing would be for regulations to be made dealing only with those poisonous substances which menace the safety of the public, and those should only be sold by qualified men. There was a certain class of poisons which did not endanger the safety of the public. For instance, there was no need for chromate of lead to be placed in the Schedule; he did not know of any case in which anyone had attempted to commit suicide with that substance. But on the other hand there was carbolic acid which, all would agree, should be placed in the Schedule. Whenever a poison showed itself to be a danger to the public, such as was the case with carbolic acid, so long should its

SALE BE RESTRICTED TO THE TRAINED CHEMIST.

He looked upon the remark of the Duke of Devonshire, with regard to the sale of poisons being a monopoly, as an insult to chemists. Mr. Parker then went on to deal with the difficulty of framing workable regulations. He thought the Pharmacy Act of 1868 would meet all requirements with certain additions to the Schedule. But with regard to the Poisonous Substances Bill, it has many points which render it entirely unworkable. He proceeded to give instances

where, if a literal construction were put upon the Act when passed into law, in dispensing weak solutions of carbolic acid or sulphuric acid, unless prescribed according to the B.P., it would be necessary to label them "poison," or "to be used with caution." Spirit of camphor would also come within the meaning of the Act. Such a state of things as that almost made one laugh at the incapacity of the Privy Council. He was of opinion that as chemists they ought to make it distinctly understood that as they are required to be specially educated and trained for dispensing, they ought to be allowed to use their discretion in the dispensing of prescriptions. It was his experience that very often the physician when prescribing a medicine containing poison did not wish his patients to know the nature of what they were taking, and gave special instructions to the chemist to that effect. But if the Bill passed it would be necessary to label all such medicines. He believed that chemists generally exercised the greatest care in labelling medicines without any special regulations being compulsory. He therefore begged to move—

That this meeting is of opinion that the Privy Council's Poison Bill is altogether opposed to the principle of the Pharmacy Act, 1868, and considers that the sale of all poisonous substances which menace the safety of the public should be in the hands of trained vendors only.

—Mr. H. CRACKNELL, Hon. Secretary, formally seconded the motion.—Mr. J. A. BARNETT said the sale of poisons was a very vexed question, but whatever legislation was brought forward by the Government there was bound to be about the same amount of poisoning cases. He considered it a great anomaly that a person can purchase large quantities of poison from wholesale houses without any restriction, while if a few grains are obtained from a chemist certain objectionable formalities have to be complied with. He thought chemists ought to have better representation in Parliament.—Mr. J. C. HYSLOP thought the Poisons Bill as drafted showed great want of common sense. It was a Bill which ran contrary to the principle embodied in the Pharmacy Act already in existence. The principle underlying it was also contrary to the Duke of Devonshire's own Bill—the University Commission Bill—which aimed at the better education and culture of the citizens of London. There was a danger of that Bill being stamped out simply on the ground of trade interest. Chemists must not oppose the Poisonous Substances Bill on the ground of trade interest, but because there is already an Act of Parliament in existence which can be made to meet the exigencies of the case.—Mr. F. ANDREWS thought that the chemists and druggists of this country, after passing a most stringent examination, are fully qualified to perform the duties of their calling, and that no evidence whatever has been adduced to show any negligence in the performance of those duties. The requirements of their calling vary so much in different localities as to make it impossible to carry out a rigid rule for every occasion and in all places, and therefore any interference in their arrangements, especially by anyone not fully acquainted with the requirements of the business, is not only totally unnecessary and uncalled for, but likely to be productive of much difficulty and even danger to the public.—Mr. JOHN HICK considered that the reason why the Privy Council had brought forward this Bill, and also why it has so persistently refused to place carbolic acid in the Schedule of the Pharmacy Act, 1868, was because certain promises made by the late Mr. Sandford to the Government respecting regulations as to the sale of poison have not been carried out. He thought, however, that by going the right way about the matter the Bill might be so amended as to be of benefit to chemists.—Mr. D. T. DAVIES thought it would relieve chemists of much responsibility if persons requiring poison in any large quantity should first be obliged to obtain an order from the police. He believed that had to be done in Germany.—Mr. G. S. TAYLOR was of opinion that any opposition to the Bill must be made in the House of Commons, therefore he suggested that they as an Association should approach the members of Parliament for the various divisions represented.—Mr. C. A. TILY thought an appeal should be made to the Government by the Pharmaceutical Society, pointing out that chemists generally have invariably carried out all necessary precautions in the sale of poisons, and that the cases of poisoning which have occurred have largely been in cases where the poison has been obtained from other sources than from chemists.

Dr. B. H. PAUL, although not a member of the Association, was by the courtesy of the meeting requested to make a few remarks. He said the Bill which has passed the third reading in the House of Lords is a Bill which deals with two essentially distinct matters,

One is a matter of pure trade. A proposal is made in the Bill to regulate the sale of articles now outside the operations of the Pharmacy Act. They are sold at the present time by anyone, and the intention of the Bill is that the sale should be made so as to ensure the safety of the public. One of those articles is

CARBOLIC ACID,

and the record of poisoning by carbolic acid is such that it stands far above any other substance or class of substances, the number of deaths during 1895 and 1896 from carbolic acid poisoning alone being 455. Therefore, it is very evident that there is great need for something to be done for the protection of the public against the sale of this article. The Bill has been brought in, apparently, in response to the appeal made when the Pharmacy Acts Amendment Bill was before the House of Lords. The appeal was made to the Home Secretary for a Bill to protect the public, and he thought this Bill had been rushed forward in response to that appeal. The mere trade object can easily be fulfilled by placing carbolic acid on the Schedule of the Pharmacy Act, and restricting its sale to chemists. As there is a sufficiency of qualified men throughout the country, that would not interfere with the convenience of the public. In country places chemists have to deal in rough articles as well as the finer preparations of their calling, and many are to all intents and purposes druggists. A man of that class, of superior education, was, he thought, the best man to deal with that class of article for the safety of the public. The other object of the Bill is a perfectly distinct one. It proposes to give the Privy Council power to make regulations for the storing, dispensing, and sale of poisons, which is a matter entirely for the Pharmaceutical Society. The regulations of the sale of poisons contemplated when the Pharmacy Act was passed are embodied in the Act. Those regulations can be enforced by the police or anybody, and were not left to the Pharmaceutical Society. These regulations were intended to apply altogether to the sale of poisons. The statement that the Pharmaceutical Society has failed to carry out a promise alleged to have been made at the time—there is no proof that any such promise was made—is a matter of opinion, and, on the other hand, it has been asserted that

IF ANY PROMISE WAS MADE,

it was made without authority. It is the Society which is to make the regulations and not the Council. The Council did draw up regulations, but the Society refused to adopt them. At that time there were several thousand men who were in the business before the passing of the Act, some thoroughly respectable and competent men, others, however, quite the reverse, and it was upon that fact that the demand was made for the regulations. The Society met, and it was decided that those regulations should not be made compulsory for the conducting of the business of a chemist and druggist. That was thirty years ago, and they did not stand in the same position now. Essentially the requirements of those regulations are observed by all chemists associated with the Pharmaceutical Society. Conditions have altered since then, and although there are still 4,000 men who were registered before the passing of the Pharmacy Act, they are a class of men rapidly passing away. It is reasonable, therefore, for chemists to feel an affront at the proposal, which is an absolute reversal of the principle of the Act of 1868. That Act was not asked for by chemists, but was forced upon them by Parliament for the safety of the public. There was opposition to the Act from a certain class who did not want regulations for the practice of pharmacy, and consequently the Bill degenerated into a mere Poisons Bill. There is another important point. Clause 2 of the Poisonous Substances Bill proposes that the Privy Council shall have powers to make further regulations for the storing and sale of poisons. Now, if the Registrar-General's Report giving the records of deaths from accident and suicide is consulted, it will be seen that not a single accident has been caused in the dispensing of medicine. The reason for regulations that existed thirty years ago is gradually dying out, and in time will entirely cease to exist. With regard to what is to be done in the opposing of this Bill on the ground that the education of the vendor is the best safeguard for the public, the best mode of dealing with this is for the Pharmaceutical Society to act, and throughout the country the members should inspire the Pharmaceutical Council what to do on their behalf.—The PRESIDENT said they were all deeply grateful for the remarks of Dr. Paul, as he had certainly put the

matter in an entirely new light. Continuing, he said that with Mr. Parker's approval he would put this motion in an amended form, viz :—

That this meeting is of opinion that the Privy Council's Poisons Bill is altogether opposed to the principles of the Pharmacy Act of 1868, and such an interference with the arrangements now in force by those not fully acquainted with the requirements of the business is not only totally uncalled for, but is likely to be productive of much difficulty and even danger to the public.

—Mr. W. P. ROBINSON seconded the amended motion, which was carried unanimously, and it was agreed that copies of the resolution should be sent to the Council of the Pharmaceutical Society, to the Privy Council, and to the members of Parliament for the district. It was also agreed that a deputation should wait upon local Parliamentary representatives.—Mr. ANDREWS then moved—

That this meeting of the Western Chemists' Association of London requests the Council of the Pharmaceutical Society to call a meeting of the whole trade with the object of organising opposition to, or amending, the Poisonous Substances Bill now before the Legislature.

—Mr. MATHEWS seconded this, and it was carried, but several members did not vote on the motion.

BOLTON CHEMISTS' ASSOCIATION.

The members of this Association held a special meeting on July 4 to consider the action to take in the matter of the new Poisonous Substances Bill introduced into the House of Lords, and the following resolution was unanimously adopted :—

That this meeting of Bolton chemists and druggists, whilst of opinion that it is necessary to provide some regulations as to the sale of the articles named in the Government Poisonous Substances Bill, regards that Bill as inadequate for the purpose and ambiguous in its details. This meeting is also of opinion that the Bill constitutes a dangerous departure from the principles of the Pharmacy Act of 1868, and calls upon the Council of the Pharmaceutical Society to strongly oppose the Bill, and to endeavour to obtain such an amendment of the law as will be in harmony with the Pharmacy Acts and secure the safety of the public.

SCHOOL OF PHARMACY.

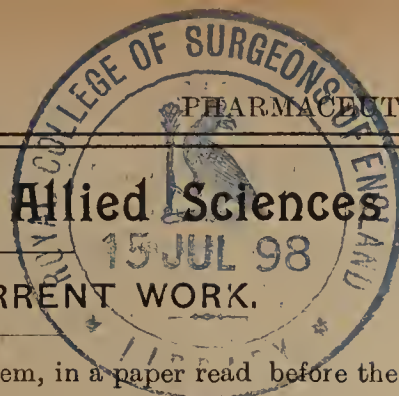
On Friday, July 1, the end of the session at the School of Pharmacy was marked by a presentation to Mr. Wilson, the Pharmacy Demonstrator, on the occasion of his departure from the School. The presentation was made by Mr. T. E. Lescher, who in presenting a handsomely fitted dressing case on behalf of the students, said that they all appreciated Mr. Wilson's efforts to assist them in every possible way, and that they all regretted his departure from their midst, and wished him every success in his new work.—Mr. WILSON, in acknowledging the present, thanked the students for their kind wishes, and said that as a student and demonstrator his reminiscences of the "Square" would always be happy ones. In conclusion he wished them all success at the coming examination.

IMPERIAL COLLEGE OF CHEMISTRY AND PHARMACY.

On Monday, July 4, the last of the visits of the present term to places of interest to pharmaceutical students was made, under the direction of Mr. Frederick Davis, to the Science Galleries, South Kensington. Great interest was shown by the students in the models representing the various natural orders and in the diagrams explanatory of transpiration and the physiological functions of plants. The explanation of the models representing the making of sulphuric acid and sodium bicarbonate occupied more than an hour. A vote of thanks was proposed to Mr. Davis, which was carried unanimously.

MIDLAND PHARMACEUTICAL ASSOCIATION.

At a special meeting of the Council of this Association, held at Mason University College, it was resolved that all prescriptions written on and after July 1, 1898, should be dispensed in accordance with the requirements of the 1898 Pharmacopœia, unless otherwise specified, and it was deemed advisable to notify the medical profession of this important resolution. A circular to that effect has been issued, also drawing the attention of medical men to the alteration in the strength of several important preparations, and asking them to render the Association all possible assistance in the matter by specifying on all prescriptions when 1885 preparations are required.



Pharmacy and the Allied Sciences

A REVIEW OF CURRENT WORK.

Acetic Acid as a Solvent. F. W. E. Stedem, in a paper read before the Pennsylvania Pharmaceutical Association, on "Cheaper Solvents," gave the results of experiments on the exhaustion of drugs with acetic acid. The following table summarises the results obtained with 40 per cent. acetic acid:—

Name of Drug.	Weight Used.	Menstruum Used.	Extract Obtained.
Ergot.....	250 Gm.	500 C.c.	100 Gm.
Gent'an	500 Gm.	1200 C.c.	380 Gm.
Belladonna	500 Gm.	1000 C.c.	210 Gm.
Cascara.....	500 Gm.	1000 C.c.	250 Gm.

—*Am. Journ. Pharm.*, lxx., 365.

Bacteria Counter. W. P. Mason describes the "Miller-McPherson" apparatus for determining the number of colonies of bacteria developing in culture media. A ruled glass plate is fixed horizontally at the top of a wooden stand, being inserted in grooves on two sides, and under this a "Petri" dish rests upon a movable ebonite plate, which can be raised or lowered by a wheel beneath it, actuating a hollow screw. The dish may thus be kept firmly against the ruled plate, with no chance of slipping, and it will always be in focus. If a "Miquel" flask be preferred to a "Petri" dish, the neck of the inverted flask is passed through a hole in the ebonite plate into the hollow screw, and the bottom of the flask can then be raised against the ruled plate by means of the wheel, the same as when a "Petri" dish is employed.—*Journ. Am. Chem. Soc.*, xx., 507.

Chemistry of Cascara. A. R. L. Dohme and H. Engelhardt have investigated the constituents of the bark of cascara sagrada gathered in Oregon, and somewhat less than one year old. It was in thin quills with a light grey cork layer outside a yellowish-brown layer of cortical parenchyma, and was markedly bitter when chewed for a few minutes. The powder was yellowish-brown, and after being air-dried and carefully heated in an air-bath at 110° C. to constant weight, it was found to contain 8.3 per cent. of moisture, whilst the ash determinations varied from 6.9 to 7.05 per cent. Extraction with chloroform yielded 7.5 per cent. of a dark greenish-brown oil of pronounced odour resembling that of the bark. From this was obtained a small quantity of an extremely volatile yellowish-green oil, to which the odour of the bark appears to be due. The fixed oil is probably a mixture of dodecyl palmitate and stearate. Subsequent treatment of the residue from the chloroform extract with 80 per cent. alcohol resulted in the separation of 27 per cent. of a hard, brown, bitter mass which contained a glucoside named "purshianin." Hot water extracted inert starch, sugar, etc., equivalent to 12.3 per cent. of the weight of the original air-dried powder, and 0.5 per cent. caustic potash solution extracted 21.3 per cent. of colouring matter. The result of the analysis is summed up thus:—

Moisture	8.3 per cent.
Soluble in chloroform	7.5 "
" " alcohol (80 per cent.) ..	27.5 "
" " hot water.....	12.3 "
" " dilute alkali	21.3 "
Cellulose	16.1 "
By difference, starch, etc.....	7.0 "

Total 100.0

Buckthorn bark has previously been shown to contain a glucoside, frangulin, which splits up into emodin (trioxymethylantraquinone), and a sugar—rhamnose or isodulcitol, whilst cascara bark has been shown to contain emodin but not frangulin. The glucoside purshianin has now been separated in the form of dark brown-red crystals, melting at 237° C., and found to yield emodin and a dextro-rotatory, non-fermentable sugar. In doses of one-fifth of a grain purshianin produces the same effects upon the bowels as cascara bark. It is tasteless, odourless, and soluble in alcohol, ethyl acetate, acetone, alkalies, and hot water. Whether frangulin and purshianin are identical remains to be proved.—*Journ. Am. Chem. Soc.*, xx., 534.

Arsenic in Wool. J. H. Pearse raises the question of disadvantage or injury likely to arise from the use of woollen apparel and other goods containing traces of arsenic. In Sweden, he points out, there is a law against the sale of material containing appreciable quantities of arsenic, the sale of yarn being prohibited if it contains 0.0009 per cent. of arsenic, whilst a heavy carpet has been condemned because it contained one grain of arsenic, possibly in a completely non-volatile form, in a piece ten feet square. It appears, however, that it is practically impossible to buy any sheep's wool of home or foreign growth which does not contain arsenic in larger quantity than that allowed by the Swedish Government. The reason of this is the fact that sheep growers are obliged at certain seasons to dip their sheep, and in most cases the dip contains arsenic. One firm alone claims that it supplies sufficient arsenical dip each year for one-fourth the sheep in the world, and probably half the woollen fabrics worn in England are made from wools that have been treated with that firm's preparation. The arsenic clings so tenaciously to the wool fibres that it is difficult, if not impossible, to get rid of all traces of the poison. It is now desired to gather information for the use of spinners and manufacturers, as to whether injury is likely to result from the use of woollen materials containing arsenic, and if so what is the maximum amount that may be allowed, without injury to health, in a given weight or size of cloth.—*Lancet*, 3906, 107.

Purity of Milk Sugar. One of the U.S.P. tests for the purity of milk sugar requires that no brownish or blackish colour shall develop within thirty minutes when the sugar is sprinkled over the surface of sulphuric acid. C. H. la Wall and R. C. Pursel point out that occasionally a sample is found which does not respond satisfactorily to this test, though it may polarise as well as a sample that produces no coloration. The cause of this is found to be the presence of thread or string upon which the crystals of sugar are allowed to form; clean crystals from the outer side of the string produced no coloration after being powdered, whilst in the case of a section across the entire string the coloration was directly proportional to the thickness of the crystalline mass, that is, to the quantity of thread which had been powdered with the sugar. Polarisation, therefore, is recommended as the safest test of purity, and it is suggested that manufacturers might well substitute some less carbonisable fibre for that used at present.—*Am. Journ. Pharm.*, lxx., 343.

Java Quinine. J. B. Nagelvoort has examined a sample of Java quinine, and finds it contains 14 per cent. of water of crystallisation when fresh. He describes the process of assay he followed, and concludes by asserting that this new Dutch product is an article of unusual excellence, much purer than United States' pharmacists are accustomed to.—*Am. Journ. Pharm.*, lxx., 345.

Alkannin J. B. S. Norton has had occasion to examine a specimen of a plant collected in Grant County, New Mexico, which he identified as *Plagiobothrys arizonicus*, Greene. He was told that sheep feeding on the plant have their heads coloured red, and the letter containing the specimen was stained violet purple. The colouring matter present appeared to be alkannin, and an examination of specimens of the plant and of kindred species in the Missouri Botanical Garden herbarium revealed the fact that many of them had stained the paper on which they were mounted with the same substance. It exists chiefly in the roots, and was found in *Echium vulgare*, *Eritrichium glomeratum*, *Krynitzkia barbiger* (abundant in the leaves), *K. californica* (slight), *K. maritima*, *K. micrantha*, *K. pterocarya*, *Lithospermum multiflorum*, *L. strictum*, *L. spathulatum*, *L. hirtum*, *L. canescens*, *L. angustifolium* (not abundant), *Plagiobothrys canescens* (in leaves), *P. nothofulvus* (in leaves), *P. tenellus*, *P. arizonicus* (abundant in stem, leaves, and root), *P. torreyi* (very abundant in some specimens, but hardly a trace in others). The characteristic reactions with resin and oils were obtained with the colouring matter from *Plagiobothrys*, in the same manner as that from *Alkanna tinctoria*.—*Am. Journ. Pharm.*, lxx., 346.

Aloes. In addition to the experimental results given in Dr. Tschirch's paper, G. Pedersen has investigated the resin of aloes, and finds that the resin of Barbados aloes is an ester which is split up by acids into cinnamic acid and an alcohol, aloeresinotannol, of the formula $C_{22}H_{24}O_4(OH)_2$. The resin of Cape aloes is a paracumaric acid ester of aloeresinotannol. Barbados aloes contain resin 12.65; barbaloin 12.25; emodin 0.15; amorphous substance, soluble in water, 62.7; ash 17.5, and water 10.5 per cent.—*Archiv der Pharm.*, 236, 200.

Kolanin and Caconin. C. Schweitzer claims to have isolated from the kola nut and the cocoa bean glucosides containing caffeine and theobromine. In order to obtain the glucoside kolanin, the kola nut was extracted with alcohol, and the free caffeine and theobromine, sugar and salts, removed from the spirit residue by treatment with hot water, and the insoluble glucoside obtained as free as possible from ash by repeated solution in alkaline water and re-precipitation by neutralisation. The amorphous glucoside so obtained, when quickly dried, had a reddish-brown colour. It was then hydrolysed with 5 per cent. sulphuric acid, and the amount of glucose, caffeine, and theobromine determined. The results obtained showed in the fresh seed 1.05 per cent. of the glucoside kolanin, which on hydrolysis gave 0.316 per cent. of caffeine and theobromine (79.4 per cent. caffeine, 19.7 per cent. theobromine), so that the relation of the glucose to the alkaloids was in the proportion of 3.1:1. The kola nut contained in the free state 0.613 per cent. of caffeine and theobromine (98.8 per cent. caffeine and 1.2 per cent. theobromine) which was extracted from the seeds by chloroform. The amount of kola red in the glucoside molecule could not be determined, as the kola red, which is uncombined with alkaloids, also dissolves in alcohol and alkaline water. But as, according to Knebel's formula, kola red has the composition $C_{14}H_{13}(OH)_5$ and contains five hydroxyl groups, it is probable that the glucoside, in which the proportion of glucose and caffeine is as 3:1, contains one molecule of kola red. The formula of kolanin would therefore be $C_{40}H_{53}N_4O_{21}$. In a somewhat similar manner a glucoside—caconin—was obtained from the cocoa bean after the

fat had been removed by petroleum ether. Ignoring the small proportion of caffeine, the relation of the theobromine to the glucose obtained on hydrolysis was as 1:6.03, and as, according to Lazarus, cocoa red has the formula $C_{17}H_{11}(OH)_{10}$, containing ten hydroxyl groups, the formula of the glucoside may be expressed as $C_{60}H_{86}O_{15}N_4$. Lazarus' formula, based on the combustion of the cocoa glucoside, was $C_{34}H_{48}O_{18}N_2$ or $C_{63}H_{96}O_{36}N_4$.—*Pharm. Zeit.*, xliii., 380 and 389.

Ripening of Fleshy Fruits. M. C. Gerber speaks of the chemical changes which take place in the ripening of fleshy fruits as consisting mainly in the partial using up of the vegetable acids and the production of carbohydrates. The tannin is completely oxidised without forming carbohydrates, while the starch is transformed into sugars which again partially disappear by oxidation. At certain stages in their development fleshy fruits disengage a volume of carbon dioxide greater than the volume of oxygen absorbed. This respiratory process may be due either to fermentation or to the presence of acids—citric, malic, or tartaric—which oxidise at a high temperature; this temperature is about 30° C. for fruits containing citric or tartaric acid, 15° for those containing malic acid. Fermentation takes place whenever the oxygen of the atmosphere does not reach the cells in sufficient quantity to furnish the energy necessary for vital activity. This deficiency of oxygen is due to the production of pectin.—*Annales des Sci. Nat., Bot.*, vol. iv., pp. 1-280.

Economical Product from Seaweeds. Herr A. Krefting describes the production from certain Fucaceæ of a non-nitrogenous substance, which he calls "tangic acid" (*Tangsäure*). It appears to be related to the carbohydrates, although its empirical formula $C_{13}H_{20}O_{14}$ does not indicate this. It is not dissolved by any medium with which it does not form a chemical combination. Its alkali salts are strongly viscid, forming a substance well adapted for gumming paper and other substances. It has been prepared especially from the broad-leaved Laminariaceæ.—*Chem. Industrie*, 1897; from *Bot. Centralbl.*, 1898, Beihefte, p. 519.

Calcium Malate and Malophosphate in Plants. According to M. Mirande, although malic acid, $C_4H_6O_5$, occurs most commonly in the free state in plants, it is also met with in combination with calcium as neutral calcium malate ($C_4H_5O_5)_2Ca$, or as calcium malophosphate. It may be precipitated by the action of alcohol in the form of spherocrystals of neutral calcium malate of the orthorhombic type, or in one of two forms of calcium malophosphate, the one consisting of spherocrystals of needles, with excess of phosphoric acid, the other in the form of orthorhombic prisms in which malic predominates. The quantity of malophosphate generally exceeds that of malate.—*Morot's Journ. de Bot.* vol. xii., 1898.

Oil of Eucalyptus in Headache. As long ago as 1889, Lewis and de Schweinitz called attention to the value of eucalyptus oil in the treatment of headache. It has since been found to be of great service in the treatment of frontal headache caused by cerebral congestion, and has succeeded where acetanilide, bromides, antipyrine, and other remedies have failed. It is given in doses of 5 minims every four hours. It is not so valuable for the treatment of dyspeptic headache, but is useful for those cases which are found in patients with a gouty tendency.—*Therap. Gaz.* [3], xiv., 237.

NEW DRUGS FROM THE COLONIAL OFFICE.

BY DR. B. H. PAUL AND A. J. COWNLEY.

Specimens of the root-bark of *Chione glabra* and of the leaves of *Neurolæna lobata*, two plants largely used for medicinal purposes in the Windward Islands, have been forwarded to the Pharmaceutical Society by Mr. Chamberlain, the Colonial Secretary, who, in forwarding the drugs, endorsed the request of Sir Alfred Moloney, the Governor of the Windward Islands, that they might be analysed for the information of the Colonial Government. Sir A. Moloney further desired that in order to avoid expense the specimens should be presented to the Pharmaceutical Society, who would no doubt undertake the examination of these new drugs in the interest of pharmacy and without charge.

At the request of the President of the Society we have examined these drugs, and the following results have been obtained in operating on the small quantity of material, some 250 grammes of each drug, placed at our disposal:—

CHIONE GLABRA.—The local name of this bark is "Violette." The root is stated to possess valuable properties as a tonic and also to be used as an aphrodisiac. It is also said to have recently attracted attention in the United States, although inquiries made by us have not elicited any information from America respecting this bark. The specimen received was a pale root bark having a strongly aromatic odour and a slightly astringent taste. From the aromatic odour of the bark it was conjectured that it might contain a volatile oil, and on examination with that object we succeeded in isolating a volatile oily liquid amounting to about 1.5 per cent. by weight. This volatile oil is of a pale yellow colour and has a specific gravity higher than that of water. It gave a mass of acicular crystals on being cooled to about -20°C . The oil gave no crystalline substance with sodic bisulphite, nor could evidence be obtained of méthy salicylate. It gave a semi-solid mass on treatment with a concentrated solution of caustic soda. It is readily soluble in dilute caustic soda and reprecipitated by acids apparently unaltered. It is slightly soluble in water; its aqueous solution gives a purple blue coloration with ferric chloride. The volatile oil is evidently a phenol. There are several volatile oils having somewhat similar properties to those above described, but the quantity of the oil obtained was too small to admit of the further examination which its peculiarity appears to deserve. The oil has a hot pungent taste and aromatic odour resembling that of the bark, and it is to this oil no doubt that the aromatic odour of the bark is to be attributed. Further examination of the bark was made to ascertain the presence of any other active principle. Treatment with various solvents in the presence of an alkali gave negative results for an alkaloid. Extraction with alcohol yielded a quantity of a dark coloured extractive amounting to 25 per cent. of the bark. The extract had a slightly bitter taste and contained an astringent substance resembling, in its chemical characters, tannin, and another substance of the nature of saponin, but it was not possible to obtain a definite crystalline body.

NEUROLÆNA LOBATA.—The leaves of this plant are locally known as "l'herbe à pique." They are used as a substitute for quinine, and are said to be a most valuable remedy for dysentery. The leaves have an intensely bitter taste. They contained no essential oil. On examination for alkaloids a small quantity of an uncrystallisable alkaloid was obtained amounting to 0.10 per cent. The alkaloid is intensely bitter. It readily dissolves in acid, and is reprecipitated by ammoniac hydrate. The alkaloid neutralises acids, but from the small amount of material at our disposal it was not possible to prepare crystallisable salts. The medicinal

value of the leaves is no doubt to be ascribed to the presence of this alkaloid.

Specimens of the volatile oil and bitter extractive of *Chione glabra* and of the alkaloid of *Neurolæna lobata* have been placed in the hands of the President of the Society. These new drugs are certainly worth further attention, in order to obtain a larger supply of the volatile oil of *Chione glabra* and of the alkaloid of *Neurolæna lobata*.

THE FOURTH BRITISH PHARMACOPŒIA.

BY J. C. HYSLOP,
Pharmaceutical Chemist.

"Referred back to his studies for a period of six months" is a phrase that fitly indicates the predicament of a pharmacist—old or young—into whose hands there comes a copy of the fourth British Pharmacopœia. Many, alas! are doomed to feel the chagrin that arises from a conscious ineptitude for reading, with the necessary speed and precision, their "official standard and guide" in business procedure, although it be couched in the tersest of language and is a specimen of the purest diction of their native tongue.

The cause of this evil is not far to trace; the remedy for it is equally simple. Promiscuous trade with its alluring shams and ever-varying vanities has beguiled the pharmacist from attention to his main duties—duties on the due performance of which his whole prosperity depends, and has brought him in many cases to be the easy prey of charlatans who ruin his prospects whilst pretending to further them. The publication of a new Pharmacopœia gives him a fresh start and may prove to many of us the opportunity to

"rise on stepping stones of our dead selves to highest things,"

if only with sober loyalty to pharmacy as an avocation the task be undertaken in a manly spirit and without delay.

Scarcely more than two months old, the 1898 Pharmacopœia has been subjected already to a rush of criticism—chiefly of an unfavourable nature—that seems to call for some kind of a counter-balance from one of a more optimistic frame of mind. The writer dates his pharmacy experience from the closing years of the last "Pharmacopœia Londinensis"; he has lived to behold "the hatches, matches, and dispatches" of the three British Pharmacopœias, and is now rejoicing in the appearance of a fourth, which he has reason to regard as being the best of them.

In the present work we seem to have presented to us at last a completed whole, from which future editions may be generically evolved, without any abruptness of change, as the necessities of the future may demand. The mere outline given us in the first B.P. (1864), an outcome of "the difficult task, which had previously been attempted in vain, of reducing to one standard the processes and descriptions of three different pharmacopœias, and, what was still more difficult, of reconciling the varying usages in pharmacy of the people of three countries hitherto in this respect separate and independent," was followed three years afterwards by the more succinct yet comprehensive edition of 1867.

The short preface to the first edition, composed largely in the imperative mood, speaks of all branches of the medical profession, of prescriber and dispenser, but takes no note of the pharmacist as a fellow-worker, and closes with the solemn warning to "all apothecaries and pharmaceutical chemists, that on the publication of the B.P. it will be necessary, in order to discharge safely their duties to the public, that they should duly alter or destroy all pharmaceutical preparations made according to previous and now altered formulæ." This was followed in the next edition by a preface written in a more sympathetic key. Here it is

admitted that "the object of a pharmacopœia is not so much the selection as the definition of substances which the physician prescribes, and which are required to be kept at one safe and uniform standard of strength and composition." And the closure is one of admiration instead of warning: "The Council think it right to add that the present edition of the Pharmacopœia has been prepared by Professor Redwood, of the Pharmaceutical Society, and Mr. Warrington, of Apothecaries' Hall, under the direction of a committee of the Council."

In the preface to the third edition (1885) the general tone is much the same as in that of the preceding volume. The fact is noted that in "the description of chemical substances now for the first time introduced into the Pharmacopœia . . . it has been deemed sufficient to refer to their production in general terms, while their identity is established by their characters and reactions with chemical tests." The word "pharmacist" occurs once (page x.) and once only, but this is its first appearance above the horizon, and, as events subsequently show, it came to stay. Professors Redwood, Bentley, and Atfield are mentioned as the editors.

The preface to the volume now before us presents a marked contrast for the better in several material points. There is about the diction a fresher and a freer air arising from the greater simplicity and purity of the language used, as indeed is the case all through the volume. Typographical errors must always be expected in the first edition of a work of such magnitude, but as a literary production the book seems to be perfect. For the first time the pharmacist is in the preface (pages xiv., xv., xix.) regulated to his proper duties; notes are struck which may alarm the indolent or he that suffers much from that old complaint

"Auri caecus amore,"

but which must tend to reanimate the man of duty and to greatly brighten the prospect before him, *e.g.*, page xiv: "The appended list of tests is not exhaustive, having been constructed only to meet official requirements. Nor are manipulated details set forth at length, either as regards the selection or application of the tests, the pharmacist being assumed to possess full knowledge of these and all similar points." Again, page xv., "In short, the procedure in these (volumetric estimations) and other chemical operations is now left to the skill and judgment of workers who are assumed to be duly trained." Thus it is evident that the pharmacy alumni can no longer complain of their status and qualifications being unrecognised in the national medicine book. Indeed there is presented here to the old pharmaceutical hand a rare opportunity of renewing his favourite studies by loving and gentle touches to simply bring them up to date, and to the younger members of the craft there is offered guarantee that to a patient and assiduous worker a fairer prospect of recognition and recompense is in store than his predecessors ever enjoyed—except in visionary dreams.

So in the words of the preface to the B.P. thirty-four years ago, let us "trust that no one will complain of being compelled to take up again his Pharmacopœia and study it attentively . . . after all, the inconvenience will be only temporary, and will be compensated by various new facilities. These facilities, in which the public at large will share, as well as the medical profession, are for the most part, too obvious to need mention."

The near future will doubtless show still more clearly than has hitherto been recognised the vast advantage that the individual worker has in such an art as pharmacy over any committee or possible collection of experts that may be chosen to lay down official directions or proclaim official formulæ for general acceptance. The fact that a working pharmacist who is actively engaged in the

practice of dispensing must have at hand a store to fall back upon at a moment's notice of everything that is likely to be wanted by the medical practitioner or prescribed by him, either written or verbally, for the public benefit, and that he has facilities for making the necessary experiments in a leisurely way, almost *ad infinitum*, with respect to what he knows to be the desiderata in any and every case with respect to the preparation or admixture of all the rapidly increasing number of remedies required by the actual needs of an extended civilisation, the results of research or the demands created by commercial enterprise, points him out at once as the man of the future, through whom, when his functions are properly differentiated, the national Pharmacopœia will advance to perfection. The writer himself has the very modest rôle to play of simply pointing out a few defects in the formulæ here and there throughout the book, with suggestions for their amendment; every case being that which he has himself already verified by actual practice, some of them the very faults he was expecting to meet with, and but few of which, so far as he knows, have as yet been alluded to by other workers.

(To be continued.)

OBSERVATIONS UPON MATÉ OR PARAGUAY TEA.

BY JOHN G. MCKENDRICK, M.D., F.R.S.,

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AND

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1. Maté, or Paraguay tea, consists of the dried leaves and slender stems of various species of *Ilex*, evergreen shrubs belonging to the same natural order as the common holly. These plants grow abundantly between 22° and 32° of southern latitude, especially in the districts bounded by the Paraná and Uruguay. The leaves are from 4 to 5 inches in length, and are prepared by drying and roasting, not in the manner of Chinese and Indian teas, in which each leaf is gathered separately, but branches are cut off the plants and placed on hurdles over a wood fire until sufficiently roasted or dried. The branches are then placed on a hard floor and beaten with sticks. The dried leaves are thus knocked off and reduced to a powder mixed with fragments of leaves and delicate twigs.

2. At the time of the invasion of South America by the Spaniards, maté was universally used by the Guaraní Indians, who inhabited the districts between the Paraná and Uruguay, and no doubt it had been used by these natives from time immemorial. It was soon adopted as a beverage by their conquerors. Even now maté is food and drink to the Indian who roams over the wide stretches of the Pampas, or over the heights or among the ravines of the Cordilleras. One writer says: "His only food consists at such times of a mouthful of maté taken at long intervals, which has become to him on his long wanderings a veritable hunger-killer." At the present day maté is the national beverage in the border States of La Plata, in Chili, Bolivia, a part of Peru, and in the south of Brazil. In these districts maté may be found in almost every home and at every hour of the day, and, as remarked by Messrs. Park, Davis and Co., "As one cannot conceive a Russian family without their steaming samovar, so it is impossible to think of the South Americans without maté."

3. It is a remarkable testimony to the value of the substance that, although first used by natives, it was soon adopted by European settlers in South America, and the consumption has now reached a large amount. In 1855 the amount of maté annually consumed in South America was estimated by Von Bibra at

15,000,000 lbs., and the consumption is now probably several times greater. In the Argentine Republic alone, the consumption is not less than 27,000,000 lbs., or about 13 lbs. per head, while the proportion of tea is only 2 lbs. per head, and of coffee $\frac{1}{4}$ lb per head, showing to what an extent maté is actually used instead of the beverages better known to the people of Europe. Maté is, however, steadily winning favour in Europe, as shown by the increased exportation. Thus in 1840 Brazil exported to foreign countries over 5,000,000 lbs., in 1850 over 10,000,000 lbs., in 1860 about 14,000,000 lbs., in 1870 about 20,000,000 lbs., while in 1880 the total reached nearly 30,000,000 lbs.

4. It is a remarkable fact that infusions or decoctions of various herbs should have come independently upon their own merits into use in different parts of the world, that they should be derived from plants widely apart in their botanical affinities, and from different structures in the plant, and yet that they all should be found to have similar physiological properties and dietetic value. Still more remarkable is it that they should contain the same active chemical principle. Thus the coffee beans of Arabia yielded caffeine to Runge in 1820, in 1827 Oudry found theine in the tea of China, in 1840 the same principle was found by Martius in Guarana tea, and in 1843 Stenhouse found it in Maté. The identity of caffeine and theine was established by Mulder in 1838, and now it is acknowledged that the same crystalline active principle exists in all four groups of plants. It is also present in kola nut. The amount in each varies. Thus various teas contain from 1.8 to 2.9 per cent., coffees from 0.64 to 2.21, guarana as much as 5 per cent., maté from 1 to 2 per cent., and kola nut about 2.4 per cent. Numerous analyses by various independent observers show that, on the whole, maté contains less caffeine than the other herbs.

5. The most recent chemical research on maté was published in 1893 by Professor Hermann Kuntz-Krause. It shows that an infusion of maté is a very complex fluid, holding many substances in solution. These are:—

- (1) Traces of various ethereal oils;
- (2) Traces of odorous fatty substances, giving it a peculiar smell;
- (3) Small amounts of bodies called glucosides, which in decomposition yield sugar;
- (4) Small quantities of waxy substances.
- (5) Caffeine, say between 1 and 2 per cent.
- (6) A peculiar body known as cholin (so called because first discovered by Stricker in 1868 in ox-bile) and important because we know it is derived from lecithin, a substance that plays an important part in the chemistry of animal and vegetable cells.
- (7) A sugar which reduces copper salts but does not affect polarised light.
- (8) Considerable amounts of potassium and magnesium salts, both chlorides and phosphates; and
- (9) Tannic acid of exactly the same nature as that in tea and coffee, but not to the same amount as in tea; maté has 12.5 per cent., tea between 15 and 17 per cent.

6. While the physiological action of a solution of pure caffeine prepared from tea, coffee, or maté is the same, the action of each beverage is peculiar and differs from that of the others. Thus tea contains more tannic acid than the others, and consequently is more astringent; coffee on the other hand is richer in aromatic bodies, while Maté appears to have what may be termed restorative properties developed to a high degree. None of these substances is nutritive in the strict sense of the word, but all are adjuncts to nutrition. All three appease the sense of hunger, and remove feelings of fatigue. They encourage appetite and in moderation allay nervous excitement. They have all an influence on nutrition, as

shown by the fact that they influence the amount of waste substances thrown out of the body.

7. Experience has shown that maté has several peculiarities entitling it to a trial in Europe on a more extensive scale than it has hitherto enjoyed. These are:—

- (1) It removes feelings of fatigue to a remarkable degree; in our opinion more so than either tea or coffee.
- (2) Although it contains tannic acid, infusion of maté is not so astringent as tea.
- (3) From the same leaves three successive infusions may be made of almost equal strength, so that if the price per pound were the same, maté would be more economical than tea.
- (4) Although its flavour is best developed when taken very hot, its restorative properties appear to be the same whether it be taken hot or cold, and thus it might be used as an agreeable and invigorating beverage in circumstances where it was inconvenient to prepare a warm infusion.

8. We have examined chemically the maté submitted to us by the Maté Tea Company, Limited, according to the general methods described by Kuntz-Krause, and we are able to corroborate most of his statements. For some time past we have also personally used infusion of maté as a beverage in lieu of tea and coffee, and we find it pleasant, wholesome, and restorative. Its general physiological action is similar to that of tea or coffee. When taken hot, with little or no sugar and no cream, its flavour is soon appreciated. We are of opinion that many might, after a time, prefer maté to tea or coffee, while they would find that their experience of its value agreed with that of the millions of persons who already use it in South America.

9. As to the mode of preparation of maté, we would remark that whereas boiling ordinary tea renders it most unpalatable and indigestible, ten minutes' boiling of the maté has no such effect. In other words, there is not so much difference between the infusion and the decoction of maté as there is between the similar preparations of Chinese or Indian tea. The decoction of maté is somewhat more astringent than the infusion, but this is hardly perceptible to the palate, whereas the decoction contains a larger percentage of the various constituents which can pass into solution. We believe the infusion of maté may be taken with impunity along with many articles of diet with which it is inadvisable to drink strong tea, such as fresh meat or eggs. It has been shown by many observers that strong tea interferes with digestion to an extent which may vary in different individuals. The tannic acid of maté is peculiar in that it will not tan hides, and we have found that it does not precipitate gelatin; this is another way of saying its astringency is less than ordinary tannic acid. While both ordinary tea and maté remove fatigue, we find that the latter is unaccompanied by that degree of cerebral excitement which attends the use of the more familiar beverage.

This, in all probability, explains a fact reported to us by persons taking maté for the purposes of this investigation, namely, that although drunk a short time before going to bed, it, so far from keeping one awake, tends rather to induce sleep. This agrees with what we have noticed as to its action in removing fatigue, that while it abolished the disagreeable sensations of weariness, it substituted for them an indescribable feeling of being pleasantly tired which could be easily imagined passing over, under favourable conditions, into sleepiness.

COOLING OINTMENT.—Adeps lanæ, 10.0 grammes; ol. amygdal., 7.5 grammes; sol. boracis (1:25), 75.0 grammes; ol. rosæ, gtt. 1; acid benzoic., vanillin, āā 0.5 gramme.—*Pharm. Centrallh.*, xxxix., 92.

Society of Chemical Industry.

THE annual meeting of this Society was commenced at University College, Nottingham, on Wednesday, when the President, Professor Frank Clowes, D.Sc., F.I.C., took the chair, and after the usual preliminary business, delivered the following address:—

The President's Address.

In the summer of 1890, under the distinguished presidency of Sir Lowthian Bell, and during the local chairmanship of Sir John Turney, the Society of Chemical Industry held its annual meeting in the town of Nottingham; the University College, in which we are now again assembled, being its headquarters. In acknowledging the courtesy which the Mayor and Town Council have again extended to the Society by permitting its use of the College buildings, we desire to congratulate the town of Nottingham upon having been raised since our last visit to the dignity of a city, the present Mayor of Nottingham upon having received academic distinction, and the Town Clerk upon having received the honour of knighthood. We believe that the willingness shown by Nottingham to receive our Society must be connected with the progressive and hospitable spirit which the city has always shown, and with the existence in it of a large and successful University and Technical College, and of a flourishing section of our Society of Chemical Industry.

ORIGIN AND DEVELOPMENT OF THE SOCIETY.

In acknowledging the welcome accorded to our Society, it is natural to compare our present position with our origin and past. We are informed in the report of our Council that the membership of the Society has now reached a total of over 3000, and it must be remembered that this large enrolment has been secured in a period of only seventeen years. We are yet several years removed from attaining our majority. Towards the end of June, 1881, the first General Meeting of the Society was held in London under the presidency of Sir Henry Roscoe. The Society was then only three months old, and numbered about 300 members. It was in every sense a national society, but distinguished continental chemists were willing to help the young association by taking up its membership. The first president stated that "the main object of the Society is to bring together at definite intervals those who are interested in or possess knowledge concerning the utilisation of chemical action on a large scale, and have charge of, or are connected with, those large branches of industry which are dependent upon chemical principles. To the interchange of ideas brought about by such personal contact may well be added the publication of the proceedings of our meetings, as well as of information or intelligence interesting to our members. The Society cannot fail in this way to contribute to the advancement of those important branches of national industry which are dependent on chemical principles. This we hope to do, not only by bringing forward new processes, or discussing the advantages or disadvantages of old ones, but also by acting as a bond of union hitherto non-existent between individuals engaged in cognate pursuits, giving them a personal interest in one another, and thus encouraging that good-fellowship which is not an unimportant factor in the smooth working of our social machinery."

Thus spoke in 1881 the first President of the Society; and those of us who have, with him, noted from those earliest days the development of his scheme, cannot but see how completely his intentions and predictions have been fulfilled. The Journal, referred to by Sir Henry Roscoe, has come into existence, and is one of the most complete and valuable records of technical chemistry in the world. Those interested in the advancement of applied chemistry in this country have become to a large extent united in their efforts, and therefore more successful in obtaining their objects.

The members of the Society value the organisation on account of the information brought together in their Journal. But they have further advantages afforded them by the increased opportunity of meeting together, owing to the establishment of local sections. The existence of these local sections is an important and some-

what special feature of our Society. These sections are now existent and active in London, Manchester, Liverpool, Newcastle, Nottingham, Leeds, Glasgow, and New York; and the existence of a New York section is an indication that the importance of the work of the Society is felt outside our own country; this is further proved by the very large number of foreign general members who have been enrolled.

Those who have watched the gradual rise and development of these local sections of the Society will acknowledge the very important service which has been rendered by our provincial colleges. The great importance and advantage of the movement, which has brought higher university instruction into our large provincial centres, are now universally conceded. But there is cause for congratulation, amongst those who are endeavouring to promote the advancement of applied science in this country, that the foundation of a university college in a provincial centre has not only led to the introduction of higher instruction in pure science, but has also advanced in a most important way the interest and education in applied science. One of the evidences of this gratifying result is the fact that in the centres in which our university colleges are established and successful, we find arising sections of our Association, which has for its object the advancement of applied chemistry. Leading manufacturers associate themselves with those who are promoting science educationally, and with those who have passed through the classes of the College, and together they maintain a useful section of our Society.

My lengthy experience as a chemical teacher in Nottingham leads me to lay stress upon the advantages resulting from the establishment of a local section of our Society in connection with the local college. In 1881 the Town Council of Nottingham, supported by the public spirit of its inhabitants, had responded to a challenge thrown out by an anonymous donor; and, by supplementing his handsome gift by public funds, had built the stately and convenient buildings in which we are assembled; they had also appointed a staff of teachers, amongst whom I represented the branch of chemistry and metallurgy; and they had founded a curriculum of instruction in the principles and applications of science, which was in a great measure a response to the general demand for the provision of technical instruction throughout our country. It was felt desirable that the provision of general higher-class culture should be the main object of this university college, but that instruction should also be provided which would be of value to those equipping themselves for industrial pursuits in an industrial centre. The teachers in the college have therefore always borne in mind that, whilst they teach scientific principles first and foremost as the true foundation of all industrial success, they should also in some considerable measure illustrate their teaching by pointing out the industrial applications of those principles.

What could be more suitable and advantageous than the establishment, in connection with the chemical department of a college possessed of these aims, of a section of the newly founded Society of Chemical Industry? In 1885, a little band of chemists of Nottingham and the neighbourhood started the Nottingham section of this Society. I was honoured by being its first chairman. The early existence of this section naturally depended very largely upon support from those connected with the college, either as members of the management committee or as chemical teachers and senior and past chemical students. Even from the earliest times, however, those engaged in industrial enterprise and pursuits in the town and neighbourhood rallied in rapidly increasing numbers around this original nucleus, and the section soon felt that it was fairly representative of the chemical work and industry of the district. I am glad to say that the section is now as active as at any period of its career, and its activity is shown not only by its frequent contribution of important matter to the Journal, and by its regular and frequent meetings, but by its eagerness to entertain for a second time the general Association of which it is a constituent part. There is no doubt that this section has been of advantage to those concerned in the applications of chemistry in the district. It has certainly had the effect of maintaining an interest in chemistry amongst the past students of our college, and of reminding the teachers of the college that they must con-

sider in their chemical instruction not only the paramount importance of chemical principles and of pure science, but also of chemistry in its connection with industrial applications.

I have been tempted to speak at some length of the experience of the Nottingham section—the Section with which I have had the longest experience and have been for many years personally identified—not because I desire to place it in an unduly prominent position; but rather because the origin and development of the section are, I believe, typical, and represent what has already occurred in most, if not in all, of the other sections of the Society. May I add that we hope that the Society is destined yet to see a similar rise and development of new sections in other important industrial centres of this country? And may we not further hope that the existence of a branch of the Society in New York proves that sections of this Society are destined to arise generally in the industrial English-speaking communities of the world, and to lead thus to a federation of interest in the advancement of industrial chemistry, which may even antedate that more general world-wide federation in general British interests which our politicians are desirous of fostering?

A glance down the names of those who have served the Society since its foundation shows that its interests have been promoted by men who stand prominently before the chemical world, not only as industrial chemists, but also as teachers, as investigators, and as professional chemists; and the stimulus given by such men who, whilst leading a busy life, have found time to help forward the objects of the Society, probably accounts for its continued and increasing progress. During the year which you have allowed me the honour of serving you, I have been gratified to hear of larger accessions to our membership, in the monthly list which is presented at our Council meetings, than have occurred during any recent year.

OBITUARY NOTICES.

The gratification which is naturally felt in seeing the Society thus largely increasing in numbers and in usefulness is, however, somewhat alloyed by the notification of the loss by death of no less than twenty-seven members, and we have to note with regret in the list of recently deceased members the names of such men as Sir Henry Doulton, Horace Koechlin, Dr. F. Hurter, and Charles Cochrane; whilst amongst those who are not members, but whose names are classical, are further to be noted Sir Henry Bessemer, Paul Schützenberger, and August Kekulé. It is only right that we should unitedly avow our indebtedness to men who have exerted so important an influence in furthering the objects which our Society has in view.

It is unnecessary to refer at any length to the distinguished and useful careers of these distinguished chemists who are now numbered with the majority, since our own Journal and the *Journal of the Chemical Society* record in their obituary notices and memorial lectures the principal features of their scientific and industrial work. There is some satisfaction to be derived from the fact that most of these eminent men had attained the usual limit in the span of human life, and had remained long enough amongst their fellow-men for the importance of their work to receive a fair measure of appreciation.

Ferdinand Hurter may, however, be considered to form an unfortunate exception, in that he has been removed from us in the prime of his intellectual vigour, and at a time of life when the matured experience of an active spirit is usually productive of valuable results. It is our Liverpool section which suffers the loss of the stimulating effect of the presence among them of Hurter's personality. But the whole Society will suffer the loss of his original communications, the most important of which have been printed in our Journal. An account of Hurter's career appears in a recent number of our Journal, and will serve as a permanent memorial of the affection and esteem in which he was held by those who knew him best—his fellow-members of the Liverpool section. A friend who had long been associated with him states that: "He had the advantage of a sound and wide education during his student years; but to his credit it may be said that by strenuous and unremitting effort he continued his education during his whole life. He was an intellectual athlete, and he kept himself in splendid mental training by increasing practice. The faculties of his mind were under complete control, and he possessed a most retentive memory, so that whenever occasion required he could set himself to work, bring out of his treasury things new and old, and solve technical problems with amazing rapidity and accuracy. Amongst the most marked elements of his success as a technical chemist were the ability he possessed in a remarkable degree of

devising new apparatus for new problems, and his insight into the nature of the technical and commercial problem before him. He was never lured into any side issue, however interesting from a scientific point of view; he kept but one end in sight—the solution of the problem in hand, and his grasp of the situation, both technically and commercially, was always complete and clear.

Paul Schützenberger, though not enrolled among our members, was one who largely influenced the advancement of industrial chemistry by his researches on the natural dye-stuffs and colouring matters. His original investigations, however, were extended to many other branches of our science. As a teacher his influence was also felt. Commencing as a lecturer in the Realschule and Hochschule of Mülhouse, he became subsequently Ballard's assistant at the Collège de France, then second director of the Chemical Laboratory at the Sorbonne, and Professor in the Collège de France. In 1882 he was finally appointed director of the newly-founded School of Chemical Industry and Physics. His text-book and other contributions to chemical literature are too well known to require any special mention.

It is to Schützenberger that our recently deceased member, Horace Koechlin, owed his early chemical education and inspiration. His many investigations in bleaching, dyeing, printing, and in the production of dye-stuffs indicate, not only the effect of his teacher's influence, but also the effect of his progenitors' occupation, since Horace Koechlin represented the third generation of those who had interested themselves successfully in these pursuits.

August Kekulé represents, amongst those who are no longer with us, the great master in chemistry; the man who promotes the advancement of the science, not only by his own brilliant researches and theoretical conceptions, but also by his systematic teaching and by the publication of students' literature, and more especially by the stimulating and inspiring effect which he exerts upon all those chemists who come into contact with him. I will not attempt to sketch Kekulé's career; this has been done already in the account of his scientific work by Dr. Japp, which has been published in a recent number of the *Journal of the Chemical Society*. It cannot be doubted that members of our Industrial Society will heartily appreciate and honour our great chemical masters, and accord to them the very high position which they should hold in their esteem.

The important work of Doulton and of Bessemer has been before the world so long, that it is known, not only to the chemist and metallurgist, but to the general public. The names of these creators of industry have practically become incorporated into our language, and every educated person knows the meaning of the terms "Doulton ware" and "Bessemer steel."

THE MEDALLIST: WILLIAM HENRY PERKIN.

Men of the stamp of Doulton and Bessemer are peculiarly English; it is the glory of England to have reared many such sons; and amongst them—though fortunately he is still hale and hearty, and actively working in our midst—we must certainly number the man whom your Council has this year selected for the award of its medal: I refer, of course, to William Henry Perkin.

While I am treating of the biographical part of my subject, which unfortunately has been thus far a sketch of those whose labours in this world are ended, I am sure that you will allow me to sketch in a few words the career of our distinguished medallist, to whom I shall, before we separate, have the pleasure of handing, as your representative, a permanent mark of our esteem and appreciation. You are probably all aware that, like Doulton and Bessemer, Perkin has been the founder of a great and important industry. The production of artificial colouring matters from coal-tar products owes its origin, and in large measure its development, to Perkin. As industrial chemists you will all undoubtedly be able to appreciate the great importance of this department of Perkin's work. You will also undoubtedly wish that his devotion to the interests of our Society should be acknowledged. We find him actively supporting this Society in its foundation and in the critical early years of its existence. In 1884 he was elected to serve as its President—his immediate predecessors in that office having been Walter Weldon, Sir Frederick Abel, and Sir Henry Roscoe. Of the very great services which Perkin has rendered on the Council and committees of this Society many here could join me in speaking in the highest terms. But I am sure you will wish me to add to the causes of our appreciation which I have already mentioned the very great additions to our science which have resulted from his chemical researches. On looking through the lists of chemical papers in the

catalogue of scientific papers edited by the Royal Society, Perkin's name stands very high in the honour list of indefatigable and successful investigators, and he ranks in this respect with the leading chemists of our times. It is only right to take every opportunity of emphasising this fact, since, owing to Perkin's personal modesty and retiring disposition, and to the fact that he has held no public scientific appointments, the very great importance and extent of his scientific work is apt to be lost sight of, even by members of our Society. As he has told me himself, he has almost continuously, since his early schooldays, been following scientific research as a recreation; and this was the case even during the years when he was founding and conducting a large chemical manufactory and engaging in manufacturing and mercantile pursuits.

I have referred to Perkin's schooldays. You will, I trust, pardon me if I venture to refer to my own early connection with our medallist, and say that I rank it as an honour, shared amongst others by Edward Rider Cook, John Spiller, William Thorp, F. J. M. Page, and William Garnett, to have been a schoolfellow of Perkin. We all of us owe a great debt of gratitude to the City of London School, then situated in Milk Street, Cheapside, but since removed to the Victoria Embankment. That school was then under the headmastership of the Rev. Canon Mortimer, D.D., and was the pioneer amongst the schools in giving instruction in natural science.

The science-master of those days was to most of us for a time also our form-master. Thomas Hall—still affectionately termed by us "Tommy"—was the man who gave us our early teaching in science, and who by his infectious enthusiasm led us to look upon natural science as an entrancing pursuit. To those of us who were juniors to Perkin at the school, Perkin, who had just made his discovery of "mauve," was freely held up as an illustration of what advantages might be secured by a scientific training. In fact, Thomas Hall, who otherwise does not appear amongst the discoverers of his day, may be said to have made one all-important discovery: he discovered Perkin. It was while Perkin was in Hall's form, and before he had shown special aptitude for any department of study, that his form-master discovered in him an enthusiasm for experimental chemistry, which the master wisely fostered and encouraged to the utmost. In 1851 we find young Perkin assisting in the preparation of the chemistry lectures at the school; and two years later, when he was only fifteen years old, he went by Hall's advice to the newly-instituted Royal College of Chemistry with the intention of continuing his chemical studies under Dr. A. W. Hofmann. Perkin's rapid advance is marked by the fact that two years later he was acting as assistant to Dr. Hofmann in his research laboratory. In the following March he communicated his first research to the Chemical Society; and during the Easter recess (1856), while he was attempting to produce quinine artificially, he discovered "aniline purple" or "mauve"—a discovery which laid the foundation of the extensive coal-tar industry of the present time.

And here it is only right to refer to the enthusiasm which the late Dr. Hofmann aroused, as a teacher and investigator, in the students and assistants who were so fortunate as to be associated with him; and many men who hold prominent positions in our Society owe their early instruction and impetus to this great and genial master.

Experiments made at Messrs. Pullars' dyeworks at Perth encouraged Perkin, at the early age of 18, to devote himself to the development of his discovery, and to extend the laboratory preparation of mauve to an attempt at its manufacture. The manufacture involved the preparation of various substances on the large scale, which had hitherto only been made in small quantities in the laboratory: it was further necessary to devise entirely new plant. But the scientific knowledge and inventive and practical resource of Perkin were equal to surmounting these difficulties. Working in association with his father and brother, the new dye was manufactured and actually sold to the silk dyer in 1857—the year immediately succeeding its discovery. The success achieved by Perkin in making and applying the new dye was rapidly followed by the introduction of additional coal-tar colours, to the discovery and application of which Perkin himself contributed. The credit remains to Perkin of producing Graebe and Liebermann's artificial alizarine, or madder-dye, by an improved and practicable method, which led to the artificial manufacture of the madder-dye taking the place of its preparation from the cultivated madder-root.

In 1873 Perkin retired from strictly technical pursuits, and he has since devoted himself indefatigably to scientific research, with

the most important results. He is still continuing a research on magnetic rotation, and many instalments of his results have already been published. The name of our medallist is thus associated both in the past and at the present time with the progress of chemical knowledge and industry, and we may reasonably indulge in the hope that we have yet many more important researches to receive from his laboratory in the future. We have, further, the satisfaction of knowing that when the time arrives, which we all sincerely trust may be long deferred, for this active researcher to cease to contribute to the advance of science, the family name will still figure largely in the scientific records of the time, since Perkin has sons who are fully imbued with the capacity for, and importance of, scientific research, whose names are already ranged honourably alongside of that of their father, and who will prevent the lustre of the good name from becoming dim.

It has not been possible, within the limits of a paragraph of a presidential address, to do adequate justice, even to an outline, of Perkin's work and activity. Those who wish to pursue the sketch further should refer to the Hofmann memorial lecture delivered in May, 1893, before the Chemical Society, in which much of Perkin's work is followed out in greater detail; whilst a sketch of Perkin's career appears, under "Names of Note," in the *Dyer and Calico Printer* of November 15, 1889. But a full appreciation of his researches can only be secured by studying them in detail in the *Journal of the Chemical Society* and in other scientific and industrial journals in which they have been published.

It is commonly said that the secret of the success of the English soldier in war lies in the fact that he never knows when he is beaten. One is tempted to rise from a study of Perkin's career with the impression that he pursued his work of peace in a similar spirit, and triumphed over the many difficulties which beset him as pioneer and discoverer by never acknowledging an apparent defeat. By conferring our medal on a man of this type—a man also of untiring activity and industry—we feel that we are honouring our Society in the endeavour to honour him.

While we trust that the mark of our appreciation which we to-day bestow upon Perkin will meet with his acceptance, and will be treasured as an heirloom and memorial in later days, it would not be right to overlook the fact that the institution of the award of our medal is very recent, and that the medal is now only awarded for the second time. Accordingly, it naturally occurs that we try to confer honour upon a man already laden with the honours of his fellow chemists. And in attempting to confer one more honour, it is only right to record the recognition which Perkin's work has already received.

In 1859 the "Société Industrielle" of Mülhouse awarded a silver medal, and some time afterwards a gold medal, to Perkin for his discovery of the mauve. Then we note his election to the Chemical Society (1856), the Royal Society (1866) at the early age of twenty-eight, to the Honorary Secretaryship of the Chemical Society (1869), to the Presidency of the Chemical Society (1883), to the Presidency of our own Society (1884), and to the Honorary Membership of the German Chemical Society, in the same year. Our own medal is an addition only to others already in the possession of Perkin: these include the Royal Medal of the Royal Society (1879), the Longstaff Medal of the Chemical Society (1888), the Davy Medal of the Royal Society (1889), the Albert Medal of the Society of Arts (1890), and the Birmingham Medal of the Gas Institute (1892).

Academic distinctions have also been accorded to this truly eminent man, and are evidence of the fact that his honours came from widely different sources. The University of Würzburg, well known to me as my *alma mater*, conferred the title of "Philosophiæ Doctor" (Ph.D.) upon Perkin at its centenary celebration in 1882, and the University of St. Andrews gave him the honorary degree of LL.D. in 1892.

This is a long but, I fear, still an incomplete list of the honours already conferred upon our medallist of this year.

SOME TECHNICAL MATTERS.

In concluding my address, I will now only briefly allude to some matters of applied science which have of late years been prominently under my notice.

Living for upwards of twenty years as a teacher in mining districts, my attention has been constantly directed to the improvement of scientific methods applied to coal-mining, and more especially to methods at once delicate, exact, and trustworthy, for detecting and measuring the fire-damp or methane in the air of the mine. Careful experiments, which were widely extended both in

the laboratory and in the coal-mine, led me to infer that no simple and practicable method equalled in these respects the hydrogen flame when safely and suitably applied. The "flame-cap" over the standard hydrogen flame, as it is seen in the suitably-fitted safety lamp, not only detects, but measures the fire-damp with great precision. This standard test-flame has since been adapted to the detection and measurement of coal-gas in air, and, in conjunction with Mr. Boverton Redwood, our newly-elected London chairman, I have applied it also to the detection and measurement of petroleum vapour in the air. A full summary of our work in these directions, which includes and somewhat extends our papers which have appeared in the Journal of this Society, appears as a monograph published by Messrs. Crosby Lockwood and Son under the title of the "Detection and Measurement of Inflammable Gas and Vapour in the Air."

The new illuminant, acetylene, has claimed in some measure in recent years the attention of most of us. It cannot be maintained that acetylene is a newly-discovered gas, or even that the material from which it is now produced is new to science. But it may certainly be claimed that the cheap production on the large scale of the calcium carbide, from which acetylene is most economically prepared, is a recent discovery. And it is this discovery which has brought acetylene to the front as a possible and powerful illuminant. An inspection of the flame of acetylene, when it is suitably produced from an appropriate burner, is sufficient to satisfy anyone that it is most desirable to secure the service of this brilliantly burning gas. Apparently the general adoption of acetylene for illuminating purposes is being delayed by the feeling that the gas is dangerous, and there certainly are not wanting instances of dire disaster arising from its preparation and storage.

In the liquid condition acetylene can undoubtedly, owing to its endothermic character, undergo most violent explosive decomposition, yet Raoul Pictet strongly urges that the liquid is safe if it is suitably prepared and stored. In the gaseous form we are assured by Vivian Lewes that the gas does not undergo this explosive decomposition when it is stored under a pressure less than two atmospheres. Lewes further states that this gas may be burnt in such a way, if it is properly prepared, as not to rapidly cause obstruction in the burners—a difficulty which has caused trouble in the past; he further states that while it is not of use for enriching coal-gas, it is a valuable enricher of oil-gas.

It is to be hoped that the public may ultimately receive satisfactory assurance that they can employ acetylene as an illuminant with success and safety under suitable conditions. It will be remembered that other endothermic substances, such as nitro-glycerin or dynamite, and nitro-cellulose or guncotton, have now attained this desirable condition, after having in the past worked such disaster as to cause them to be looked upon by the public as hopelessly unsafe. It must be remembered in any case that acetylene when mixed in very small proportion with air furnishes an explosive mixture, but danger arising from this cause must certainly be looked upon as preventable.

The enrichment of coal-gas, which it was hoped might have been effected by acetylene, is now usually secured by the indirect employment of water-gas. The large amount of poisonous carbon monoxide which is thus introduced into the enriched gas has naturally led to apprehension, whilst the use of carburetted water-gas has certainly given rise to serious loss of life. The substitution of a comparatively non-poisonous and highly illuminating gas, such as acetylene, for enriched coal-gas may be one of the solutions of the attempt to furnish the public with gas of high illuminating power.

Those who are interested or concerned in another important problem of applied science—the disposal of our town sewage—will watch with interest the development in recent years of the process of treatment of sewage by artificial filtration through coke or other suitable substances. This filtration is known to secure the oxidation of the putrescible matter of the sewage indirectly through the intervention of bacteria. Perhaps the nearest parallel cases are the change of sugar into alcohol and carbon dioxide under the influence of the yeast cell; followed by the production of vinegar from the alcohol of malt liquor or "must," under the influence of the *mycoderma aceti*, which has long been known to be the organism necessary to transfer the atmospheric oxygen to the alcohol. Indeed, just as it is found necessary that the saccharine liquid shall be sown with the yeast cells, and the alcoholic liquid shall become sown with the *mycoderma*, before alcoholic fermentation and acetification can take place with rapidity; so it is found that the bacterial filter for sewage must become infected with the

bacteria necessary for the liquefaction of the suspended organic matter of the sewage, and with those suited to effect the oxidation of the dissolved organic substances, before it is in a condition to purify the sewage. In experiments conducted on the small scale, a double filtration of raw London sewage through two small coke bacterial filters has in this way effected upon the raw sewage a purification of 95 per cent. It is hoped and anticipated that experimental filters of a similar kind, but on a larger scale, which are now being started, may produce a similarly successful result, and that their action may be continuous and permanent.

CONCLUSION.

And now the time is at hand when I shall delegate my duties as President to my successor. In congratulating him and assuring him of my best wishes, I take the opportunity of thanking the members of this large Association for the entirely unexpected and unsolicited honour which they conferred upon me at their annual meeting last year. I have served the Society for many years in the past, on its Council and committees in London, as well as in the important city in which we are now assembled. By electing me as your President you have conferred upon me the opportunity of higher, if not more arduous, service. No one here is conscious, as I am myself, of the extent to which the performance of these higher duties has fallen below the ideal which I have placed before me; but I trust and believe that after electing me to a position of honour which I have highly valued, you will one and all feel that I have wished and attempted to fulfil the duties which you have entrusted to me.

ANALYTICAL NOTES.

ACTION OF AMMONIUM SULPHIDE ON CHLORAL HYDRATE.—According to Joseph Lesinsky and Charles Gundlich (*Am. Chem. Journ.*), when aqueous solutions of chloral hydrate and yellow ammonium sulphide are mixed, an orange-yellow precipitate forms, which appears to be sulphur.—*Bull. de la Soc. Chim. de Paris* [3], xix.-xx., No. 11, 457.

TEST FOR SAWDUST IN STARCHES.—G. A. Le Roy has turned his attention to the detection of sawdust in the flour of barley, oat, and other grains which normally contain cellulose debris derived from the grain itself. Excellent results were obtained by the use of an alcoholic solution of phloroglucin, strongly acidified with phosphoric acid. On steeping the flour in this solution and warming slightly a deep carmine colour is developed in presence of sawdust, whilst the cellulose matter proper to the grain itself assumes, if at all, a much lighter hue. The starch grains remain colourless. By trying a blank experiment side by side under the same conditions one may colorimetrically determine approximately the proportion of the adulteration present in the starch.—*Bull. de la Soc. Chim. de Paris* [3], xix.-xx., No. 11, 478.

RAPID ASSAY OF LEAD ORES.—Cannon employs the following process for determining the amount of lead in plumbiferous material. A flux is made of sodium bicarbonate, 16; potassium carbonate, 16; anhydrous borax, 8; flour 5. Twenty grammes of this mixture and 5 grammes of the mineral, intimately mixed, are placed in a small crucible covered with another 20 grammes of flux, and heated to bright redness in a muffle for 25 to 30 minutes. As soon as fusion commences the muffle should be closed; a few iron tacks should be added to remove any sulphur; these should be carefully removed when reduction is complete. The metal is collected into a button separated from the flux and scoria, purified and weighed.—*Engineering and Mining Journal*, 1897, 604, through *Mon. Scientif.*, xii., 138.

ACIDIMETRY OR ALKALIMETRY OF DEEPLY COLOURED FLUIDS.—In the titration of fluids of such deep colour that the end-reaction cannot be easily seen with the usual indicators, Jean (*Annales de Chim. Analyt.*) proposes to employ the following methods. *Determination of alkalinity*: A known volume of the liquid is distilled with ammonium sulphate into a standard acid, the equivalent of ammonia liberated indicating the alkalinity of the liquid. *Determination of acidity*: 10 to 20 C.c. of normal alkali are added to a known volume of the liquid, and then ammonium sulphate is introduced. The solution is then distilled into 10 or 20 C.c. of normal acid. The amount of acid used up will indicate the quantity of unneutralised normal alkali present, and, therefore, by difference, the acidity of the original solution.—*Rev. de Chim. Analyt.*, vi., 32.

The Poisonous Substances Bill.

Reasons against the Bill.

The Poisonous Substances Bill was read for the third time in the House of Lords on Friday, July 1, without other than a single verbal amendment. In view, however, of its introduction into the House of Commons, active opposition to the measure was organised, and the following reasons why the Bill should not become law were given in a circular letter signed by the President of the Pharmaceutical Society and sent to every registered chemist last week :—

The law at present requires that for the public safety "poisons" shall be placed under the care of "chemists and druggists" who have been specially educated and trained, and who have demonstrated their capability to undertake the responsibility by having passed the stringent examinations required of them by Statute.

The provisions of the Poisonous Substances Bill involve the substitution of "Regulations" for personal qualification, and the abandonment of the principle which has hitherto obtained.

This is contrary to public policy, and inflicts an injustice upon those who have been ascertained, by examinations approved by the Privy Council, to possess a competent practical knowledge of potent drugs and medicaments.

The Bill, although ostensibly proposing to deal with the regulation of "poisonous substances," would actually effect the repeal of a portion of the Pharmacy Act, 1868, and would make the practice of pharmacy in Great Britain subject to departmental experiments in regulations. There is already in existence a class of persons of high technical training and scientific knowledge (chemists and druggists) specially fitted to dispense, compound, and retail potent and dangerous substances, and if there is any real desire to protect the British public from the indiscriminate distribution of carbolic acid and similar articles by thoughtless or ignorant persons, the means lie ready to hand in Section II. of the Pharmacy Act, 1868. The Privy Council has been many times urged to approve the addition of carbolic acid to the Schedule of statutory poisons, but has for some reason or other always refrained from so doing.

In Ireland, however, that article has been officially declared to be a "poison," and can only be sold by qualified persons. It is not unreasonable to contend that the people of Great Britain have a right to an equal measure of protection. There can be no justification for saying that what is a necessary safeguard in one part of the kingdom would be a "trade monopoly" in another, nor is there any more warrant for free trade in carbolic acid than there is for the untrammelled sale of arsenic.

Labelling alone is practically worthless as a safeguard against accidental poisoning, and, in fact, a too general use of the word "poison" is more likely than not to defeat its own end, and the warning it is intended to convey would probably be weakened in efficacy by too great familiarity. The safety of the public lies chiefly in the competency of the vendor, and not in the wording of a label.

The Poisonous Substances Bill does nothing to ensure real security.

NOTE.—In the House of Commons on Tuesday, the First Lord of the Treasury announced that the Poisonous Substances Bill would not be proceeded with. The opposition has therefore proved effective for the present Session of Parliament, at least.

Medical Opinions on the Bill.

"We fail to see how this Bill, the substance of which, on the occasion of its second reading on the motion of the Duke of Devonshire in the House of Lords on June 24, was given in our Parliamentary columns last week, is likely to afford much more protection to the public against the indiscriminate sale of poisons than at present obtains. It does not at any rate increase the scope of action under the Pharmacy Act which so far as it has related to the poisons placed within the Schedule has worked not with that completeness which might be desired, but still with a fair measure of success. According to the provisions of the Bill carbolic acid (and with it its homologues), which by reason of the ease with which it can be purchased at oil-shops, has been responsible for an enormous increase in the number of self-inflicted and, we need not add, most painful deaths, is still to be procured from any class of shop where the shopkeeper chooses to sell it, with, however, the restriction that the purchase is to be labelled distinctly with the word "poison" and with the name and address of the person selling the substance. Such a clause provides very well against the risks of accidental poisoning, but it does nothing for the deliberate suicide. Indeed, it only advertises the fact, it seems to us, that certain mixtures are poisonous. Surely the principle of scheduling certain substances as legally recognised poisons is a sound one to go upon if any hope at all is to be entertained of ever putting a stop to the indiscriminate sale of poisons.

"The seller should be registered and should be a person who knows exactly the nature of the commodity with which he is dealing and should possess an intelligence which will enable him to an extent to discriminate between purchasers who require the substance for a wrong or a right purpose. But it is urged that if the sale of such things as carbolic acid, disinfectants, and weed-killers, poisonous commodities which are in request every day, was restricted to persons possessing a proper qualification it would cause considerable inconvenience to the public by imposing a difficulty in the way of obtaining these extremely necessary articles, and, again, that it would mean the transfer of a source of business and profit from the ordinary shopkeeper to the druggist. In the interests of the public why should not this be so when instance upon instance is on record of an ordinary tradesman having supplied with disastrous results carbolic acid in cups, ginger-beer bottles, or any receptacle commonly used for containing beverages? The fact is that carbolic acid is a comparatively recent addition to commercial commodities, and its introduction on the market occurred some time after the passing of the Pharmacy Act, as otherwise without doubt it would have been included as a scheduled poison. We do not attach much force to the argument that such restrictions would lead to an abandonment of sanitary measures by the public owing to the *modus operandi* which would be enjoined in order to effect a purchase. There are plenty of excellent disinfectants which are comparatively non-poisonous, indeed, which would be practically free from harm; but carbolic acid is a poison of a powerful kind, and it is monstrous that its sale to the public has hitherto been as unrestricted as that of sugar. If a really protective measure is to become law the Bill introduced by the Duke of Devonshire and now read a second time in the House of Lords must be very seriously altered and amended. Otherwise the undoubted good which the present Pharmacy Act is doing will be to a great extent nullified."—*Lancet*, July 9, 1898

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THE POISONOUS SUBSTANCES BILL.

WHEN the long looked-for result of the Privy Council's consideration of the views so repeatedly expressed in regard to the dangers of carbolic acid, made its appearance somewhat suddenly in the House of Lords, the rapidity with which the Bill, dealing with that subject, passed through its several stages in that House and the absence of any comment upon it, beyond those of the Lord President at the second reading, showed that the object and provisions of the Bill were either generally approved or considered of too little importance to require discussion. We will not presume to determine by which of these alternatives the House of Lords was influenced in regard to the Bill, neither do we desire to suggest that the permanent officials of the Privy Council, in drafting a measure relating to a subject which has been for so many years pressed upon their consideration in various ways as being of great public importance, omitted to deal with that subject in the manner which appeared to them most suitable in regard to the several interests involved. Without that necessary limitation any adverse criticism of the Bill might well be regarded as evidence of mere querulous antagonism.

But holding as we do the opinion that the subject to which the Poisonous Substances Bill relates, is one of great public importance in several ways and being cognisant of the circumstances which require to be considered in regard to that subject, we cannot refrain from expressing the opinion that the Government Bill affords emphatic demonstration of the incapacity of the Privy Council, as at present advised, to frame a measure for dealing efficiently with regulation of the trade in poisonous substances. In considering the question how that regulation should be carried out in the general interest, claims of various kinds have to be recognised. Among them, those relating to trade and industrial occupations are entitled to rank according to their importance. But the predominant necessity is that the recognition of any such claims should be controlled and limited by consideration of what is requisite for public safety; for the prevention of injury to health and of undue risk to life. Leaving out of notice for the moment arguments based upon doctrinaire opinions or interested motives, public safety may be regarded as the chief point to be considered in regulating the use or supply of articles liable to cause injury.

That it is the business of the State to impose restrictions in that respect may also be assumed. If danger to life or health be the alternative to restriction, either of trade or productive industry, the lesser evil must be accepted as a necessity. The suggested prohibition of the use of white phosphorus in match-making is a case in point, and the endeavour now being made to impose restriction on the use of lead in pottery glazes will probably lead to similar results.

In various other arts poisons, within the statutory meaning of the term, or poisonous substances, are employed for purposes that are beneficial and desirable. To object to their use merely because they might be prejudicial would be unreasonable; but in any case precautions are desirable to prevent accident or misuse. Naturally the use of such substances is attended with some risk, as in the use of arsenic in operations connected with agriculture and horticulture, or for the destruction of vermin, and that risk needs to be minimised by suitable regulations. Quite on the same footing is the use of carbolic acid for purposes of sanitation, and the apprehension that regulating its sale would be an obstacle to its use in that way has no more foundation than in the case of arsenic. In regard to both these articles the danger of accident or improper use is to a great extent proportionate to the facility with which they can be obtained.

Poisoning by arsenic is now a comparatively rare occurrence; but the victims of carbolic acid are nearly thirty-fold as numerous. That difference is entirely attributable to the relatively more easy means of access to carbolic acid as compared with arsenic. The preponderance of suicides among the deaths caused by carbolic tells the same tale, and still more instructive is the fact that among the cases of accidental death caused by carbolic acid and other unscheduled articles, one-fourth of the number are children under ten years of age. Possibly these facts are not sufficiently well known; but they are conclusive evidence that carbolic acid is too readily obtainable, that it is pre-eminently an article which should be placed under statutory restriction consistently with the whole tenour of the recent discussion in the House of Commons, in order to secure the object admitted by every speaker on that occasion to be urgently required for public safety. A mere poison label would be insufficient for the purpose, and the gratuitous distribution of carbolic acid by sanitary authorities should be restricted to the supply of carbolic in the diluted form ordinarily used for disinfection. For that purpose further legislation is not required, all that is needed is approval by the Privy Council of the recommendation made by the Council of the Pharmaceutical Society that carbolic acid should be added to the Schedule of Poisons within the meaning of the Pharmacy Act. If subsequent experience should prove that the requirements of sanitation were interfered with by that arrangement, there might then be reason for sanctioning the sale or supply of the article in such a manner as to meet special conditions; but such relaxation of the law relating to this dangerous article should be under special licence, and with such control as would prevent abuse.

The fact that the ill-considered Bill will not be further proceeded with during this Session of Parliament would seem to indicate that the Privy Council has not been in earnest about the matter, and the crudeness of expression which distinguished the measure has pointed in the same direction. But, in any case, if it should be re-introduced next Session it must be strenuously opposed.

ANNOTATIONS.

“Let me play the lion too: I will roar, that I will do any man's heart good to hear me; I will roar, that I will make the Duke say—Let him roar again; Let him roar again.”

FOLLOWING THE PRECEDENT OF WORTHY BOTTOM, the amateur pretensions of a trade journal in connection with the Poisonous Substances Bill might appear to suggest the near approach of a time when management of pharmaceutical affairs should be transferred from the chosen Executive of the Pharmaceutical Society to the offices of that journal. Still, the need for apprehending such a contingency is happily even less than our young friend's professed reluctance to usurp the functions of constituted authority. Though a statement has been made that “valuable time has been lost,” the contrary statements made at the last Council Meeting by the President, Mr. Atkins, and Mr. Carteighe may safely be understood as meaning that the Council—authorised to deal with such matters in the public interest and as the representative of registered chemists and druggists, knowing its business better than any would-be advisers, aggressive or parasitic—has taken such steps as were desirable in the exercise of those functions. As an instance of advertising, which has now developed into a fine art, the ingenuity displayed in making the Poisonous Substances Bill an opening for the thin end of a trade circular may excite amused admiration in that respect. But beyond that point and inflated into a pretence of assumed leadership, by apparently spontaneous though conveniently anonymous puffs and back-stair gossip, the latest manifestation of “journalistic enterprise” is more likely to revive recollections of the infatuated frog who endeavoured, by exaggerated distension, to appear unnaturally big.

THE PHARMACY ACTS AMENDMENT BILL has so far proceeded on its way in the House of Lords unchecked. On Monday, July 11, it reached the committee stage, and as there were no amendments, the Earl of Morley (Chairman of Committees) reported the measure to the House without alteration. The report was received accordingly, and on the following day the further ordeal of the Standing Committee of the House of Lords was successfully passed. The third reading of the Bill is fixed for Monday next, and in the ordinary course it would only be necessary to obtain the Royal assent to the measure. But a question of serious importance was raised by the Lord Chancellor when the Bill came before the Standing Committee, for he directed attention to the fact that the Pharmacy Acts do not cover the case of drug stores carried on by joint-stock companies or corporations, and he urged that the common-sense view of the question requires that such bodies should be treated just in the same way as individuals. Lord Herschell supported this contention, and quoted a case which had been brought under his notice, in which a man and his family formed themselves into a company and carried on business outside the operation of the Pharmacy Acts. The Earl of Hardwicke, who was in charge of the Bill, admitted the cogency of the above reasoning, and promised to bring up, on the report stage, an amendment dealing with the point raised by the Lord Chancellor. The proceedings of the House of Lords on Monday next should therefore prove of special interest to chemists and druggists.

THE POISONOUS SUBSTANCES BILL has had a less successful career, its brief and merry life having been brought to a violent close on Tuesday night. Mr. Heywood Johnstone asked, in the House of Commons, whether it was intended to proceed with the Poisonous Substances Bill this session, having regard to the wide-spread

objection to the measure by chemists and druggists throughout the country. Mr. A. J. Balfour postponed his answer for the moment, but later in the evening, in the course of a general statement as to the course of business in the House, he said the Poisonous Substances Bill was one of the measures which there seemed no prospect of being able to pass into law during this session, and it would consequently not be proceeded with. The opposition by registered chemists may or may not have been instrumental in checking the further progress of the Bill, but there is no doubt that such opposition has been considerable and would have produced a definite effect if the measure had been introduced into the lower House. Even though it were a mere *ballon d'essai*, therefore, sent up by the permanent officials of the Privy Council to test the extent to which chemists and druggists were prepared to submit to external authority, the result is eminently satisfactory, and in view of the possibility of a similar Bill being brought before Parliament next session, it will be well for our readers to organise and improve their means of resistance. The unanimous voice of the chemists and druggists of Great Britain is not likely to be ignored by the House of Commons, and unless the lessons of history have been misunderstood, the craft is quite powerful enough to withstand much more powerful assaults than have yet been threatened.

IN THE HOUSE OF COMMONS on Monday, Mr. Field asked whether attention had been drawn to the fact that an inquest was held at Belfast, on May 18, on the body of a man named Robert Patterson, who, it was proved, was supplied with a scheduled poison at an establishment in Mill Street, owned by the Ulster Chemists, Limited. He was given the poison without the statutory requirements or knowledge by or introduction to the seller, or the signing of the book kept for the registration of such sales, contrary to the provisions of the Poisons (Ireland) Act; and it was asked why, although the Pharmaceutical Society of Ireland drew the attention of the Inspector-General of Constabulary to the matter, he had replied that it had been decided they would not undertake prosecutions of this kind? The Chief Secretary said the facts of the case mentioned in the question were fully investigated by the Government, whose advisers thought it was not one in which the Crown should institute a prosecution, and that proceedings in the case should be taken by the Pharmaceutical Society if so advised.

THE QUESTION OF UNWORKED PATENTS came up in the House of Commons a few days ago, when Mr. Cawley asked the President of the Board of Trade whether he had yet considered and come to a decision on the report of the referee appointed to inquire into the application for a licence made by an English firm to work in England a patent granted to a German firm; whether he was aware that a patent for the same discovery was refused by the German patent office; whether, seeing that the English manufacturer had been put to an expense of £1800 in bringing a test case forward at the request of the Board of Trade, they would be prepared to pay the expenses of the applicant; and whether, seeing the advantage the present Patent Law was giving to foreigners, particularly in the manufacture of aniline colours, he was prepared to propose some legislation by which English manufacturers might compete on more equal terms with their foreign competitors in the English markets. Mr. Ritchie said more than one application for an order for the granting of a licence had been before the Board of Trade. If the Hon. Member referred to the case of Levenstein and Meister Lucius and Co., he would find that the reply to the first

part of the question was in the affirmative. He was not in a position to say whether a patent for the same discovery was refused by the German Patent Office, and he declined to admit that the English Patent Law gives an advantage to foreigners. He said the Hon. Member did not state what sort of legislation he contemplated, and he could only say therefore that if it should in any respect be found necessary to amend the existing law on the subject of patents he would bring the matter before Parliament. The Board of Trade was certainly not prepared to pay the expenses of the application, and Mr. Ritchie demurred to the statement that the case was in any respect a test case brought forward at the request of the Board of Trade.

A CASE OF LAUDANUM POISONING IN LEITH affords another example of the device adopted to procure a fatal quantity of poison, which was referred to in the Journal some time ago. John Bain, a labourer, thirty-five years of age, and married, died in Leith Hospital, on Sunday, July 10, from an overdose of laudanum. On the previous night his wife, on awaking, found him lying unconscious at the side of the bed, and in his pockets were six small bottles of laudanum. He was taken to the hospital, but all efforts to restore animation were futile. It is well known to most persons who have occasion to purchase scheduled poisons that no responsible pharmacist would sell a fatal quantity of laudanum to a single purchaser without careful inquiry as to the purpose for which it was to be employed. This man, however, had bought from each of six pharmacists a small and, by itself, comparatively harmless quantity. He then combined the lot into a single draught. It is not necessary to assume that there was carelessness on the part of anyone who supplied this unfortunate man. But it was ascertained that he had been drinking heavily for some time, and he must have borne evidence of his debauch. The case illustrates the fact that pharmacists must be constantly on their guard even when only a small quantity of laudanum is asked for. It is better on the whole to refuse to supply poison than to run the risk of being mixed up in a case of the kind reported.

THE APPROACHING CONFERENCE AT BELFAST has suggested to Mr. W. W. Savage, of Brighton, the desirability of co-operation amongst dwellers in the South of England who propose to visit the North of Ireland on that occasion. The Polytechnic, which successfully organises so many co-operative and educational holiday tours every summer, is willing, we understand, to arrange a special tour in connection with the Belfast meeting if a sufficient number of persons will join the party. Mr. Savage intimates that he is willing to act in the matter, and those of our readers who are desirous of taking advantage of this opportunity should communicate with him at 109, St. James's Street, Brighton, at once. It is proposed that the party should start on the morning of Monday, August 8.

THE SOCIETY OF CHEMICAL INDUSTRY met at Nottingham on Wednesday for its Annual Meeting, and the chair was taken by Professor Frank Clowes, who delivered the address printed at page 54. Mr. George Beilby, the well-known authority on shale oil distillation, was elected President for the ensuing year. The Society's Medal was presented to Dr. W. H. Perkin, F.R.S., and a highly satisfactory report was presented on the Society's affairs. The Society now includes 3200 members, divided among eight local sections, including New York with about 600 members; it is the only British scientific society with an American Branch. By invitation of Alderman Sir John Turney, J.P., the members were entertained at a garden party on Wednesday afternoon, whilst the

Mayor of Nottingham held a reception and conversazione in the Castle during the evening. On Thursday visits were paid to several of the chief steelworks, etc., at Sheffield, and to various places of interest in Nottingham and the vicinity, the Annual Dinner being held in the Exchange Hall the same evening. The programme for Friday included an excursion to Lathkill Dale, and visits to Haddon Hall, Chatsworth, and Edensor.

SIR WILLIAM FLOWER'S RESIGNATION from the Directorship of the Natural History Museum has been followed by an expression of profound regret from the Trustees of the British Museum. They had hoped that the remaining term of years which he might have spent in their service would have enabled him to perfect the arrangements of the collections so admirably planned and so systematically developed by him during his fourteen years of office, and they state that they cannot but regard his retirement at this moment as a real misfortune to the Museum. They also record their high appreciation of his services in the following terms:—"The rare combination of wide scientific knowledge with marked administrative ability and a sympathetic appreciation of the requirements of the uninstructed public has carried you through a most difficult task. Under your hands the natural history collections of the British Museum have fallen into the lines of an orderly and instructive arrangement, which no one, whether man of science or ordinary visitor, can examine without admiration. To you, as a worthy successor of Sir Richard Owen, will attach the honour of having organised a museum of natural history which now occupies a pre-eminent position among all the museums of the civilised world. For these devoted services the Trustees thank you. In your retirement you carry with you their lasting gratitude and their sincere good wishes."

WATER GAS was the subject of a letter received by the Public Control Committee of the London County Council from the Departmental Committee of the Home Office, which is considering the questions of the manufacture and supply of that gas, and has asked the opinion of the Council on the subject. The Public Control Committee reports that, having carefully considered the matter, it has arrived at the following conclusions, which have been communicated to the Departmental Committee:—(1) That considerable danger arises from the introduction of water gas in the process of the enrichment of coal gas; (2) that non-carburetted and non-odorised water gas should not be allowed to be used under any conditions, since it is devoid of smell, which would give warning of any escape of the gas; (3) that 25 per cent. should be the maximum amount of water gas allowed to be introduced in the enrichment of coal gas, the proportion of water gas being ascertained by determining the amount of carbonic oxide in the enriched coal gas (coal gas enriched to this extent would correspond in poisonous character to the Dowson gas which is already in use for heating purposes and for gas engines, and would exclude the use of carburetted water gas); (4) that when it is proposed to supply poisonous enriched gas to houses and the interior of buildings a proper inspection be made of the service pipes by a responsible officer appointed by the local or other suitable authority, who should certify that the pipes are in a sound condition and that there is no escape of gas, and that the cost of such inspection be borne by the gas company.

THE TOTAL VALUE of drugs and medicinal preparations exported during the month ending June 30, 1898, was £97,739, as against £92,015 during the corresponding month last year. For the six months ending June 30, 1898, the value was £531,566 as against £553,437 last year.

PHARMACEUTICAL SOCIETY.

EXAMINATIONS IN EDINBURGH.

July, 1898.

MAJOR EXAMINATION.

Candidates examined	3
„ failed	2
„ passed	1

Bennison, Ernest Carr.

MINOR EXAMINATION.

Candidates examined	120
„ failed	71
„ passed	49

Adams, Robert Alexander.
Anderson, William.
Barlow, Joseph Alexander, jun.
Bertram, Alexander.
Blackwood, Robert John Smith.
Brown, Edward James.
Brown, John.
Charteris, David.
Clowes, George Daniell Kenworthy.
Cooper, George Paterson.
Cunningham, John.
Curry, George.
Dallow, Charles Ernest.
Finlay, James.
Fotheringham, William.
Hardy, Thomas.
Husband, Arthur.
Irvine, Peter.
Jackson, Charles Henry.
Kerrison, Albert Joseph.
Leggott, Harry.
Leslie, William.
Lochhead, Alexander Russell.
Macarthur, Malcolm James.

Macbride, Robert.
McHarg, Alexander.
McHattie, James Reith.
McLaren, William.
Martin, John.
Mercer, Joseph Ignatius.
Morton, Jamieson Lamont.
Owles, David Harding.
Pinkerton, William Robert.
Power, Ernest Gabriel.
Riach, David.
Ridgway, James Herbert.
Scott, Robert Baird.
Simons, William.
Smith, Alexander Nicoll.
Smith, Roderick.
Smith, Thomas Connell.
Spence, William.
Taylor, Samuel.
Thomas, Edmund Griffith.
Thomas, William Hopkins.
Thompson, Harry.
Todd, Robert Alexander McLaren.
White, James Albert.

Yates, William.

DONATIONS TO THE LIBRARY AND MUSEUM.

At a meeting of the Library, Museum, School and House Committee, on Wednesday, July 13, the Librarian and Curator presented the following reports of donations:—

To the Library (London).

Mr. W. Martindale, London:—The Extra Pharmacopœia, 9th ed., two copies.
Kaiserliche Leopoldinisch-Carolinische Deutsche Akademie der Naturforscher:—Nova Acta, Bd. 68-69; Katalog der Bibliothek, Lief 8.
University of London:—Calendar, 1898.
University of Glasgow:—Calendar, 1898.
Missouri Botanical Garden:—Ninth Annual Report.
Mr. C. J. S. Thompson, Liverpool:—The Chemists' Compendium, 2nd ed., 1898.
Students' Association of the School of Pharmacy:—Papers, vol. 23, 1896-97.

To the Museum (London).

Mr. J. G. Prebble:—Specimens of the fruit and stem of the Sarcocoll plant.
Mr. R. T. Baker, F.L.S., Technological Museum, Sydney:—Specimens of the fruits of *Rhus rhodanthema* and *Owenia cepiodora*.
Captain Burrows, Congo:—Specimen of the stems and root of *Strychnos*, *M'Boundon*.

The African Lakes Company, Glasgow:—Specimens of *Strophanthus emini* seeds, leaves and stem. Specimen of the India-rubber and stems of *Landolphia florida*, and *L. Kirkii*, and a red dye wood.

Messrs. L. Lambert and Co., London:—Specimens of a false *Podophyllum*.

To the Herbarium (London).

Professor H. H. Rusby, M.D., New York:—A series of specimens of medicinal and economic plants, including the following species not previously contained in the Herbarium:—*Acer saccharinum*, *Ainus viridis*, *Betula papyracea*, *Celastrus scandens*, *Panax quinquefolium*, *Pieris mariana*.

The Curator of the Biltmore Herbarium, Biltmore, N. Carolina:—Specimens of North American plants, including the following species not previously represented in the Herbarium:—*Amianthium muscetoxicum*, *Apocynum cannabinum*, *Belaincanda chinensis*, *Carya amara*, *Cassia marilandica*, in fruit, *Ipomea pandurata*, *Magnolia acuminata*, *Pinus Feda*, in fruit, *Prunus serotina*, *Quercus palustris*, *Quercus rubra* and *Sabal palmetto*.

FIRST EXAMINATION QUESTIONS.

July 12, 1898.

LATIN.

Time allowed—from 11 a.m. to 12.30 p.m.

I. For all Candidates. Translate into Latin:—

1. He was the seventh and the last of the Roman kings.
2. Neither I nor you have done these things.
3. Philoctetes was wounded in one foot.
4. He asked whether this was true or not.
5. The walls of Babylon were two hundred feet high and fifty feet broad.

II. Translate into English either A (Caesar) or B (Virgil).
(Candidates must not attempt both authors.)

A.—CAESAR.

1. Itaque prius, quam quicquam conaretur, Divitiacum ad se vocari jubet, et, quotidianis interpretibus remotis, per C. Valerium Procellum, principem Galliae provinciae, familiarem suum, cui summam omnium rerum fidem habebat, cum eo colloquitur: simul commonefacit, quae ipso praesente in concilio Gallorum de Dumnorige sint dicta, et ostendit, quae separatim quisque de eo apud se dixerit. Petit atque hortatur, ut sine ejus offensione animi vel ipse de eo, causa cognita, statuatur, vel civitatem statuere jubeat.

2. Postulavit deinde eadem quae legatis in mandatis dederat, ne aut Aeduis aut eorum sociis bellum inferret; obsides redderet; si nullam partem Germanorum domum remittere posset, at ne quos amplius Rhenum transire pateretur. Ariovistus ad postulata Caesaris pauca respondit, de suis virtutibus multa praedicavit.

Grammatical Questions.

(For those only who take Caesar.)

1. Decline in the singular *nullam partem*; and in the plural *suis virtutibus*. (Passage 2.)
2. Give the principal parts of all the verbs in Passage 1.
3. Write in Latin—14, 29, 11th, fifteen times, three books each, every twentieth man.
4. What is meant by an "indirect question"? Write sentences introducing some of the particles used in Latin for questioning indirectly.

B.—VIRGIL.

1. Talibus incusat, gressumque ad moenia tendit.
At Venus obscuro gradientes aere sepsit,
Et multo nebulae circum dea fudit amictu;
Cernere ne quis eos, neu quis contingere posset,
Molirive moram, aut veniendi posseere causas.
Ipsa Paphum sublimis abit, sedesque revisit
Laeta suas; ubi templum illi, centumque Sabaeo
Thure calant arae sertisque recentibus halant.
2. Jamque ibat dicto parens, et dona Cupido
Regia portabat Tyriis, duce laetus Achate.
Cum venit, aulaeis jam se regina superbis
Aurea composuit sponda, mediamque locavit.
Jam pater Aeneas, et jam Troj. na juvenus.
Convenient, stratoque super discumbitur ostro.
Dant manibus famuli lymphas, Cereremque canistris
Expediunt, tonsisque ferunt mantilia villis.

Grammatical Questions

(For those only who take Virgil.)

1. Decline in the singular *pater Aeneas*; and in the singular and plural *mantilia*. (Passage 2.)
2. Give the principal parts of all the verbs in Passage 1.
3. Write in Latin—14, 29, 11th, fifteen times, three books each, every twentieth man.
4. What is meant by an "indirect question"? Write sentences introducing some of the particles used in Latin for questioning indirectly.

ARITHMETIC.

Time allowed—from 12.30 p.m. to 2 p.m.

[The working of these questions, as well as the answers, must be written out in full.]

1. Divide 5 qrs. 6 bus. 3 pks. 2 qts. 1 pt. by 111.
2. If 480 flagstones each 5 feet square will pave a courtyard, how many will be required for a yard 8 times as large, each flagstone being 4 feet by 2 feet?
3. Find the value of $\frac{1}{2} \left(\frac{4}{7} \text{ of } 6\frac{3}{4} \right) \times \frac{3}{5} - 3\frac{1}{2} \text{ of } £182 \text{ } 7\text{s. } 5\text{d.}$
4. Multiply '003625 by 74.2; and divide '03625 by '29.
5. I mix 80 gallons of spirit costing 15s. 6d. per gallon with 96 gallons costing 17s. 1d. per gallon, and sell the mixture at 18s. per gallon. What is my gain per cent.?
6. In a certain company the total amount in shares subscribed is £80,000, of which £10,000 preference shares are to be paid a dividend of 5 per cent. The profits for the year amount to £3475: what percentage will be paid upon the ordinary shares?

The following question must be attempted by every candidate:—

7. Give approximately in yards the equivalent of 2 kilometres.
A cask with two taps holds 240 litres of water. The first tap would empty $\frac{1}{4}$ of the contents in 5 minutes, and the second would empty $\frac{1}{3}$ in 6 minutes. If the cask is filled and the two taps are turned on for 2 minutes, find approximately how many pints of water will then be left in the cask.

ENGLISH.

Time allowed—from 3 p.m. to 4.30 p.m.

1. Parse fully the following sentence:—
"Come in!" the Mayor cried, looking bigger;
And in did come the strangest figure!
2. Explain, with examples, *Noun sentence*, *Adverbial clause*.
3. Correct the following sentences, giving your reasons:—
(a) He cannot distinguish between the old and new boat.

(b) Neither she or her brother are going there to-day.

(c) The story he told you and I is too outrageous to believe.

4. In the following passage supply the necessary capital letters, and put in the stops and the inverted commas where necessary:—next day Charles burst upon me triumphant well he has shown his hand he cried I knew he would he has come to me to day with what do you think a payment of gold in quartz from the long mountain no I exclaimed yes Charles answered he says there a vein there with distinct specks of gold in it

5. Write a short composition on *one* of the following subjects:—

- (a) Recent events in China.
- (b) King Alfred.
- (c) The pernicious influence of idleness.
- (d) "Unity is strength."

JACOB BELL SCHOLARSHIPS EXAMINATION.

Tuesday, July 12, 1898.

Time allowed—three hours (11 a.m. to 2 p.m.).

**FIRST PAPER.
LATIN.**

1. Translate into English:—

Heu, nihil in vitis fas quemquam fidere divis!
Ecce trahebatur passis Priameia virgo,
Crinibus a templo Cassandra adytisque Minervae,
Ad coelum tendens ardentia lumina frustra:
Lumina, nam teneras arcebant vincula palmas.
Non tulit hanc speciem furia mente Choroebus,
Et sese medium iniecit moriturus in agmen.
Consequimur cuncti, et densis incurrimus armis.
Hic primum ex alto delubri culmine telis
Nostrorum obruimur, oriturque miserrima caedes,
Armorum facie, et Gralarum errore jubarum.
Tum Danaï gemitu, atque ereptae virginis ira,
Undique collecti invadunt: acerrimus Ajax,
Et gemini Atridae, Dolopumque exercitus omnis.
Adversis rupto cœu quondam turbine venti
Configunt, Zephyrusque, Notusque, et laetus Eois
Eurus equis: stridunt silvae, saevitque tridenti
Spumeus, atque imo Nereus ciet aequora fundo.

2. Translate in English:—

(a) Omnia medicamenta a nobis praescripta asservari debent. Quae vero locis a reliquis medicamentis seclusis asservanda sunt, venena vulgo vocantur. Talia a reliquis separanda tabula subiecitur sistens.

(b) Misce extracti Aconiti uncias quatuor cum Sacchari Lactis pulverati uncia una, et loco tepido seponere, donec mixta perfecte sicca fuerint.

Massae tritae, si pondus non exacte unciarum quatuor sit, tantum Sacchari Lactis adde, ut unciae quatuor restituantur, quae in vase optime clauso caute serventur.

3. Parse fully:—"Heu nihil in vitis fas quemquam fidere divis." (Question 1.)

4. Translate into Latin.

(a) I expect that whether he comes to Rome or remains at Naples he will not be secure. Nothing but his departure from Italy will satisfy me.

(b) After some hours of anxious suspense the day broke. The Irish, with James at their head, were now four miles from the city. A hurried council of the chiefs was held. Some of them reproached the governor to his face with treason. He had sold them, they cried, to their worst enemy, and had refused admission to the force sent to defend them.

ENGLISH.

1. Parse fully:—

"Life has passed
With me but roughly since I heard thee last."

2. Write a short Essay on *one* of the following subjects:—

- (a) The evils of obstinacy.
- (b) "Bacchus has drowned more than Neptune."
- (c) The causes of Britain's commercial greatness.

ARITHMETIC.

1. A man, having 271½ acres of land, sold ¼ of it to one man and ⅓ of it to another: what was the value of the remainder at £57½ an acre?

2. Simplify $\frac{3\cdot5-1\cdot8\bar{3}}{9\cdot7-6\cdot4} \times \frac{1}{71} \div \frac{3\cdot1 \times 10\bar{1}}{2\cdot1\bar{5}}$

3. If with 53·46 kilogrammes of thread a man can weave 231 mètres of linen 1·4 metre broad, how many kilogrammes of thread will be required to weave 196 metres of linen '95 metre broad?

**FRENCH or GERMAN.
FRENCH.**

1. Translate into English:—

En revenant, le gondolier nous fit passer par des rues d'eau que nous ne connaissions pas encore. Les villes en décadence sont comme les corps qui meurent; la vie, réfugiée au cœur, abandonne peu à peu les extrémités; des rues se dépeuplent, des quartiers deviennent solitaires, le sang n'a plus la force d'aller jusqu'au bout des veines. L'entrée de Venise, en venant de Fusine, est d'une mélancolie navrante. Quelques rares bateaux, apportant des denrées de terre ferme, glissent silencieusement sur l'eau endormie le long des maisons désertes. Des palais d'une architecture charmante n'ont plus de fenêtres, et les baies en sont fermées par des planches grossièrement placées en travers; le crépi des maisons abandonnées s'écaille, la mousse étend ses tapis verts sur les assises inférieures, les coquillages et les plantes marines s'incrument aux escaliers d'eau, que le crabe monte seul aujourd'hui.

2. Translate into French:—

Peter the Great, being at Westminster Hall in term time and seeing multitudes of people swarming about the courts of law, asked one of the persons near him who all these busy people were, and what they were about. Being answered

that they were lawyers,—“Lawyers!” returned he with great vivacity, “why I have but four in my whole kingdom, and I intend hanging two of them as soon as I return home.”

GERMAN.

1. Translate into English:—

Friedrich sass zu Prag bei der Mittagstafel, als seine Arnee an den Mauern sich für ihn niederschliessen liess. Vermuthlich hatte er an diesem Tage noch keinen Angriff erwartet, weil er eben heute ein Gastmahl bestellte. Ein Eilbote zog ihn endlich vom Tische, und von dem Wall herab zeigte sich ihm die ganze schreckliche Scene. Um einen überlegten Entschluss zu fassen, erbat er sich einen Stillstand von vierundzwanzig Stunden; acht waren alles was der Herzog ihm bewilligte. Friedrich benutzte sie, sich mit seiner Gemahlin und den Vornehmsten der Arnee des Nachts aus der Hauptstadt zu flüchten. Diese Flucht geschah mit solcher Eilfertigkeit, dass der Fürst von Anhalt seine geheimsten Papiere, und Friedrich seine Krone zurückliess. “Ich weiss nun, wer ich bin,” sagte dieser unglückliche Fürst zu denen, welche ihm Trost zusprachen. “Es gibt Tugenden, welche nur das Unglück uns lehren kann, und nur in der Widerwärtigkeit erfahren wir Fürsten, wer wir sind.”

2. Translate into German:—

In the time of Cæsar, Paris was a very small town, called Lutetia (which means a habitation in the midst of the waters). It occupied the larger of the islands formed at this place by the Seine. This island was for a long time called the city. The citizens of Paris, when attacked by Labienus, a lieutenant of Cæsar, burnt their two bridges and the town, and defended themselves with great bravery. Paris now possesses a large number of beautiful monuments and public gardens. Most of the streets are planted with trees. Paris is a fortified town, being surrounded by a line of fortifications and a double range of detached forts.

SECOND PAPER.

Time allowed, two hours (3 p.m. to 5 p.m.).

CHEMISTRY.

1. Aqueous solutions of the following substances, acidified with hydrochloric acid, are treated with sulphuretted hydrogen:—Aluminium Chloride, Bismuth Nitrate, Ferric Chloride, Mercuric Chloride, Potassium Chromate, and Sodium Arseniate. Describe whatever reactions may occur, giving equations.

2. A mixture of 5 litres of Oxygen and 20 litres of Hydrogen, measured under normal conditions of temperature and pressure, is exploded by an electric spark. What volume, if any, of gas will remain, and how would you ascertain what it is?

PHARMACY.

1. What is Dialysis? Describe minutely a Dialyser, and define Colloid and Crystalloid.

2. Describe the Pharmacopœial method of 1885 for preparing Extract of Nux Vomica, giving reasons for the various operations.

BOTANY.

1. Contrast the structure of the stem of a dicotyledonous plant and a fern.

2. Define the following botanical terms:—Cystolith, Emergences, Indusium, Meristem, Periblem.

Manchester Pharmaceutical Association Scholarship Examination.

FIRST PAPER.

Time allowed, three hours (11 a.m. to 2 p.m.).

The tests in Latin, English, Arithmetic, French and German, set in this examination, were the same as those for the Jacob Bell Scholarships Examination, except that the following was given as an alternative Latin paper:—

A.—(CAESAR.)

1. Translate into English:—

Quo proelio bellum Venetorum totiusque orae maritimae confectum est. Nam quum omnis juvenus, omnes etiam gravioris ætatis, in quibus aliquid consilii aut dignitatis fuit, eo convenerant, tum navium quod ubique fuerat in unum locum coegerant; quibus amissis, reliqui neque, quo se reciperent, neque quemadmodum oppida defenderent, habebant. Itaque se suaque omnia Caesari dederunt. In quos eo gravior Caesar vindicandum statuit, quo diligentius, in reliquum tempus, a barbaris jus legatorum conservaretur. Itaque, omni senatu necato, reliquos sub corona vendidit.

2. Parse fully:—"Itaque omni senatu necato, reliquos sub corona vendidit." (Question 1.)

SECOND PAPER.

Time allowed, two hours (3 p.m. to 5 p.m.).

CHEMISTRY.

1. Describe several methods of preparing Chlorine, giving full details and equations.

2. What weight of gas can be obtained by heating 32 grammes of Calcium Carbonate (CaCO₃)?

PHARMACY.

1. What is Evaporation? Describe the apparatus employed for evaporating liquids under reduced pressure.

2. Define Calcination, Sublimation, Elutriation, Levigation and Infusion, giving one typical example of each.

BOTANY.

1. Describe and show diagrammatically a Dichasium or False Dichotomy.

2. Define the following botanical terms:—Acropetal, Alburnum, Aleuron, Endosperm, Hairs.

PHARMACEUTICAL TRANSACTIONS.

MEETING OF MANCHESTER CHEMISTS.

A meeting called by the Manchester Pharmaceutical Defence Association was held at the rooms of the Chemical Club, Victoria Hotel, Manchester, on Thursday, July 7, for the purpose of considering

The Poisonous Substances Bill

and taking action thereon. The attendance, although not large, was a fairly representative one, and included Mr. Walter Gibbons (in the chair), Mr. G. S. Woolley, Mr. A. Blackburn, Mr. F. Pilkington Sargeant (Secretary of the Association), Mr. A. J. Pidd, Mr. W. Kirkby, Mr. C. Swinn, Mr. J. Taylor, etc.—The SECRETARY read letters of apology from Mr. Allen Smith (Sale), who regretted his inability to attend, and expressed his agreement with them as to the incompleteness of the Bill, and hoping the amendments might be carried. He also stated that Mr. H. F. Price, Lancashire County Coroner, had written stating that he could not be present, but that he thought the Bill was not sufficient.

The CHAIRMAN said that in calling that meeting it was desired to have an expression of opinion from those interested in the matter in that district as early as possible, because, as they knew, the Bill had already been read three times in the House of Lords, and only required to go before the Commons to become law. He thought they would agree with him that the Bill as it stood constituted a danger not only to themselves, but to the public at large, because it referred to dangerous substances which were to be dealt with by any dealer who chose to sell them—he meant dealt with by retail. It would create a familiarity with the word poison which would of itself be a great danger; but irrespective of that, it proposed to give to the Privy Council, a body which had no practical knowledge of the handling of poisons, power to impose regulations on a body of men who in the past had shown by their record that those regulations were unnecessary, and might become very obnoxious, and even render the business of dispensing next door to impossible. The introduction of this new series of poisons had its disadvantages, and instead of calling it a Poisons Bill they should have called it a Dangerous Substances Bill, and directed that the substances should be labelled as dangerous substances and not as poisons, because they knew well enough that concentrated mineral acids were poisonous in a sense, but only poisonous so long as they were in their concentrated form. It would not have caused people to begin to look upon "poison" as a frivolous term. One substance he wished to refer to, and that was carbolic acid. Carbolic acid had been recommended by the Pharmaceutical Society of Great Britain to the Privy Council for addition to the Schedule of the present Act, and on three occasions the Privy Council had distinctly declined to have anything to do with it. On the fourth occasion the Privy Council's reply was that they were about to bring out a regulation by which a restriction would be put upon the sale of that compound. They had not kept to their word. This was not a restriction, but a regulation, and a regulation was not a restriction, and there was a difference in the terms. On the other hand, it was not only the Pharmaceutical Society, but the whole of the chemists behind them, who considered that carbolic acid should be added to the list of poisons under the present Act, and he might say, without exception, that the whole body of coroners throughout the country were with them in that respect. He therefore asked that they would express their opinions in order that they might go to their Members of Parliament in London and assist the Pharmaceutical Society in blocking the Bill.

Mr. G. S. WOOLLEY maintained that the Bill was crude, inefficient, and unfair, and in his opinion it ought to be opposed *in toto*. He believed that was the ground the Pharmaceutical Society would take, and he believed the Pharmaceutical Council was actively engaged in organising opposition to the measure. He understood they purposed circularising every chemist in the kingdom, stating their objections to the Bill, with a view to inducing them to write to their members to oppose it. As the Chairman had pointed out, a very powerful objection was as regarded the sale of carbolic acid. That of course might be remedied by subsequent regulations, but he looked upon that as a detail. There were two principles outraged

in this Bill. In the first, the opening clause of their Act laid it down for the protection of the public that the only proper safeguard was the qualification of the vendor of poison. That principle was altogether outraged and done away with. Should this Act become law, he failed to see how the 1868 Act would be worth while carrying on. That it should be laid down as law that uneducated persons should be allowed to handle potent substances such as these, and that such a Bill should be introduced by the Chancellor of Victoria University was the most astonishing fact of all. That a noble lord, the head of a great educational Institution such as that, should advocate such a Bill, passed belief. There was another principle that was outraged here. They would remember that shortly after the passing of the 1868 Act they called upon the Pharmaceutical Society to issue regulations for the sale of poisons, and the wording of the Act certainly was that in class one regulations may from time to time be issued for the keeping of poisons, and the Pharmaceutical Council had issued such regulations in the form of recommendations as they would find in that or the previous week's Journal. He thought if anybody would look over the past thirty years to see how the chemists of this country had conducted their business, conducted it with such few accidents, it was ample proof that it was not just, nor proper, nor right that a body of men should have such regulations thrust upon them. The immunity from accidents was really wonderful; but they were an educated body; they had to pass an examination which was now a very stringent one, as shown by the large number of rejections of candidates at examinations. These gentlemen were turned out and registered as qualified to dispense and prepare poisons and to distribute them over the land; they had to do all these delicate operations, and yet they were not capable of storing their poisons on the proper shelves! Moreover than that, that clause would involve inspection. It was a most undignified position to place them in, and it was an outrage on the pharmacists of this country. That particular clause stung him more than even the first one, but it seemed to him that the first one would practically repeal the 1868 Act, and demolished the education qualification entirely by giving to oilmen and uneducated people of all descriptions the power of distributing these potent substances. It seemed to him opposed to all right-minded ideas of every description. He advocated the passing of a simple resolution on the subject, on which one could not help getting a little warm, as it affected them in a good many directions; it affected the principle of the Act, and also one's sentimental nature very considerably.

Mr. F. PILKINGTON SARGEANT agreed with Mr. Woolley and the Chairman that to every chemist on the Register this Bill was totally unfair and unjust. There did not seem any reason why such a Bill should be introduced; but whatever regulations were provided could not in any way that he could see affect the number of accidents that had happened, or, at least, the number of suicides that had taken place under the most potent Schedule poison. There might be some reason for including such things as the minor acids in such a Bill, because mineral acids, as they all knew, were very largely used by tinsmith workers and others; but carbolic acid, so far as he knew, was not used in any of the arts or manufactures to any great extent. It was largely used as a disinfectant; but as such was mostly bought in wholesale quantities, and, when bought, could be conveniently obtained from the chemist and druggist. It had been stated that, should carbolic acid be placed in the second part of the Schedule, it would raise the price very materially, but no one who knew the competition which existed between stores and chemists and druggists would think that for one moment. With regard to what Mr. Woolley had said concerning the 1868 Act it might be advisable if he read the beginning of Clause 1. It started in this way: "Whereas it is expedient for the safety of the public that persons keeping open shop for the retailing, etc., of poison, etc., should possess a competent practical knowledge of their business," and so on. If it were expedient at that time that retailers of poisons should possess a competent practical knowledge of their business, then more so would it be necessary now, because the bulk of the people were inclined to treat poisons as a light matter than they were at that time. There was no doubt that carbolic acid was as potent a poison as many others in Clause 2, and he did not see any reason why oxalic acid should be in Clause 2 and carbolic acid not, as it was the more dangerous of the two articles. He appealed to chemists, especially the younger members of the profession, to take greater interest in legislative matters, because no one would suffer so

much from what he might term obnoxious legislation as the chemist of the future, and if every young chemist after getting through his Minor would only join, if he had not already done so, the Pharmaceutical Society, and support it and take an interest in the work of the Society, it would be better for them in years to come. He hoped that the Bill would be opposed to such an extent that it would not be pressed forward, but they might welcome it from one standpoint. He thought it would bring chemists more together, and destroy the apathy to pharmaceutical politics, which seemed to be the curse of the chemist's trade.—THE CHAIRMAN having explained that the Pharmaceutical Council was sending out circulars to all chemists and druggists, and that it was the best for them to do it, Mr. WOODRUFF proceeded to say that the Privy Council sought by this Bill to annul the power which they had given them in the Act of 1868, and that it placed them in an undignified position, should be one of the chief grounds why they should oppose it. In reference to singling out carbolic acid, he thought it would be better to include all in one Schedule, and he did not think there would be any dislocation of trade by so doing. To speak as the Lord President of the Council did was a great injustice to them. He thought what had been striven for in those Acts had been the public safety, and that would be far from safeguarded by the passing of the proposed Act.—Mr. DUNCALF thought the Bill should be opposed *in toto*. It was an insult to the chemists and druggists of the United Kingdom.—Mr. C. SWINN agreed with the previous speakers that the Bill should be opposed tooth and nail, and that they should obtain its withdrawal. There was one important point that should not be lost sight of, and that was that they should get the co-operation of the coroners throughout the country. Of course, he was fully aware that the coroners of the country had been pretty well sat upon by the Privy Council when they had made reports from time to time, and they would be useful allies in opposing that Bill. He thought that not only the chemists, but the coroners should be circularised and sounded as to it. Their action in asking that the Bill should be withdrawn would be looked upon at headquarters as arising from personal motives, and would be discounted in all probability, whereas the opposition of the coroners would be looked upon as taken in the interests of the people at large.

Mr. KIRKBY said he could not help feeling—and he did not exactly say there was pleasure in the feeling—that they were possibly bound to suffer some inconvenience, notwithstanding what other speakers had said to the contrary, on account of the supineness of the Pharmaceutical Society previous to the years preceding the passing of the Act of 1868. Mr. Pidd had just reminded him that they had heard very little so far on the other side of the question. Government might have something to say, it seemed to him, with regard to the fact that all these substances had already been sold for years by men who have had no qualification whatever, and that all they were doing was simply in some way or other to put a little extra pressure in exercising more care in the distribution of them. Carbolic acid would appear to be one exception from all the other substances in that it could hardly be said to be used in the arts, but they must remember that the Government had no doubt in view the possibilities of actively diffused epidemics, which in country districts would make it inconvenient if carbolic acid could only be obtained from the chemist. This was a difficulty which could be met, and it had already been met in Australia, where it was the custom when a chemist did not reside within a certain area to grant licences to people who were not chemists to sell certain substances which might, under certain restrictions, be allowed to be sold here by persons, if a qualified chemist did not reside within a certain area. He did hope above everything that they as pharmacists while they had the opportunity would come together and make the most of it. It seemed to him that the Government was willing to do something in the way of further regulating the sale of poisons, and if they stood by the principle of the Act of 1868, they might get such an amendment of the Pharmacy Act as would be of some use to them. It had been asked how it came about that in these matters they were so much behind the sister isle. He did not think that was a very difficult question to answer. From what he knew of pharmacists, and from the experience he had had of pharmaceutical meetings, there was unfortunately a lack of that cohesion which was so marked a feature in other business associations. Above all things what they had to aim at was to concentrate their forces, and not go to individual members as though they were working on individual lines. They wished to impress on the public of this country that they were a

united body and that they intended to stand up for their rights as a body of educated men who had not betrayed the trust which had been reposed in them by the public and medical profession during the last quarter of a century. He was perfectly sure from the sentiments which were expressed in Parliament on the occasion of the third reading of the Pharmacy Bill, that members of Parliament were not disposed to sanction what Mr. John Burns, he thought, called "free trade in poisons." He did not think the public required free trade in poisons, but he thought the complaint was that there was not that uniformity among chemists in regard to poisons that there might be. This might be easily remedied if they rallied round the Pharmaceutical Society and give them to understand they were willing to abide by such regulations in reason as they thought fit to formulate. He hoped they would be prepared to go to that body and make such suggestions as would enable them to draw a better Bill. For himself he should be inclined to oppose *in toto* what had been suggested, and he would move the following:—

That this meeting pledges itself to aid the Pharmaceutical Society in every possible way to oppose or amend the Poisonous Substances Bill now before Parliament, and that copies of this resolution be sent to Members of Parliament together with a statement of the objections to the Bill.

—Mr. PIDD seconded the motion.—Mr. J. TAYLOR (Bolton) was glad the proposition had been moved. He was loth to move a resolution or to second one, for the simple reason that a fortnight ago he moved a resolution at Blackburn, and he did not want to create the impression in the minds of the trade or in the minds of anyone outside the trade that this was an agitation in which he had an interest greater than any other pharmaceutical chemist or chemist and druggist, but he supported the resolution very cordially. The two radical objections to that Bill were that it called into being practically a new set of poisons. The fact that it referred to them as poisonous substances did not alter that truth in the least degree. They would have a poison schedule composed of three parts instead of two, and the third part would contain a list of articles which might be dealt in by anyone who liked to handle them. Now Mr. Pidd pointed out that a possible objection to their action might be that Government was not interfering with any privileges that they possessed, and that it is not empowering these men for the first time to handle the articles named in the Poisonous Substances Bill. Therein lay the evil of it. It started the process of dissolution, which, in the public mind, would soon be carried to completion—the distinction between trained, qualified, and registered men and men who went into this thing merely as a matter of business would soon disappear, and the greatest injustice that Bill would do would be that Government which called them as a registered body of men into being started the process by which they would go out of existence. These two things only needed to be brought clearly before the minds of the Members of the Commons for them to get their points home. On the previous Friday he communicated with Mr. George Harwood, the Member for Bolton, giving him his reasons, that it was to himself and others a dangerous departure from the Pharmacy Act of 1868. He received from him this note:—

Dear Mr. Taylor,—I will watch the Bill you name. The grievance seems to be a real one in the public interests.
Yours faithfully,
GEORGE HARWOOD.

They only needed to let their case tell its own tale, and they would find they were well supported. He regretted that the promoters of the meeting had not seen fit to associate themselves with the Manchester Pharmaceutical Association, as that body should have been in its proper place as the head of the movement, but a second Daniel had come to judgment in the form of Mr. Sargeant, and while appealing to young chemists to promote the welfare of the trade, he (Mr. Taylor) would make another appeal, that the example of the promoters of that meeting be not followed.—THE CHAIRMAN called Mr. Taylor to order, and asked him to adhere to the point of the motion.—Mr. TAYLOR said he had travelled outside the motion, but he felt strongly on the point, and he thought it might not be amiss to lay it before them. He, however, disclaimed personal feeling, and urged that at a time like that there should be no appearance of dissension. He pointed out that in regard to inspection they had already this in such things as petroleum oil and benzine, and that the Pharmaceutical Society might go to the Privy Council and say that after thirty years' experience of the Pharmacy Act, which they had not, they might agree that the sale of these substances needed regulation, indeed, that they

needed restriction, and consequently they thought that was a case for negotiation, that they might each appoint representatives and see if between them they could not evolve a Bill which might meet the danger which the public was undoubtedly exposed to, which would do no injustice to a large and honourable body of tradesmen, and which would, above all, for that was the thing to which they must cling with all their might, perpetuate the principle underlying all previous Pharmacy Acts.—Mr. SARGEANT explained in reference to Mr. Taylor's remark that he did not ask any young chemists to join any local association or society, but suggested that after passing the Minor, their best plan was to join the Pharmaceutical Society.—Mr. WOOLLEY supported the motion, and said he would be prepared to listen to reasons which would make the Bill acceptable to the great body of chemists. At present he knew that the Pharmaceutical Council was inclined to oppose the Bill *in toto*. There was no knowing what the House of Lords would do, but he could not think the House of Commons would pass such a Bill.—The CHAIRMAN, in putting the motion, explained, in reference to the remarks of Mr. Taylor, that the first to whom notice of the intended meeting was sent were the officials of the Manchester Pharmaceutical Association. He was glad to find there was such unanimity in regard to the Bill.—The resolution was carried unanimously.—Mr. TAYLOR moved a vote of thanks to the Chairman, which was seconded by Mr. Woolley, and unanimously agreed to.—The CHAIRMAN returned thanks, and expressed his obligations to the Hon. Secretary and the members of the Manchester Pharmaceutical Association for the great assistance they had rendered in enabling the Defence Association to bring forward the resolution which had been passed.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

At a special meeting held on July 9, 1898, the following resolution was passed:—

That this meeting of the Plymouth, Devonport, Stonehouse and District Chemists' Association, while of opinion that it is necessary to provide some regulations as to the sale of the articles named in the Government's Poisonous Substances Bill, regards that Bill as inadequate for the purpose and impracticable in the working thereof. This meeting is further of opinion that the Bill constitutes a dangerous departure from the principles of the Pharmacy (Poisons) Act of 1868, and earnestly solicits your kind assistance in opposing the passing of the same. The members of this Association consider that the safety of the public will be best secured by the addition of carbolic acid and other poisonous substances to Part 2 of the Schedule of the Pharmacy (Poisons) Act of 1868, according to the repeated recommendation of the Pharmaceutical Society and of coroners throughout the country.

It was also resolved that a copy of the resolution should be forwarded to Members of Parliament throughout the district.

PHARMACEUTICAL SOCIETY OF IRELAND.

On Wednesday, the 6th instant, the monthly meeting of the Council was held at 67, Lower Mount Street, Dublin, at three o'clock, the PRESIDENT, Mr. R. J. Downes, being in the chair, and the other members who attended being the Vice-President (Mr. Beggs), Mr. Grindley (Hon. Treasurer), and Messrs. Wells, Connor, Kelly, Dr. Walsh, Dr. Merrin, Professor Titchborne, Bernard, Simpson, and Conyngham.—The PRESIDENT said that when he saw that the British Pharmacy Acts Amendment Bill had passed the House of Commons he sent a congratulatory telegram to the President of the Pharmaceutical Society of Great Britain, from whom he had received thanks by telegram.—On the motion of the VICE-PRESIDENT, seconded by Mr. WELLS, thanks were voted to the Earl of Mayo and Mr. Lecky, M.P., for having presented in the Houses of Lords and Commons respectively, petitions from the Council, praying an amendment of the Companies Acts.—The REGISTRAR read a letter from the Attorney-General for Ireland stating that a letter addressed to him by the President on the same subject would receive full consideration. That letter of the President, which was dated June 22, directed attention to the difficult position in which the Society was placed in its endeavour to enforce the law. The pharmaceutical chemists of Ireland were qualified both to compound prescriptions and sell poisons; the registered druggists of Ireland were qualified only as sellers of poisons. It had been argued that the public were sufficiently protected if the "hand that sells" was qualified; but the difficulty was to identify the illegal seller on a company's premises. He need not be the manager; and if he were anywhere on the premises, he could be made a cover for the unqualified seller. Last month in Belfast an

unqualified apprentice in one of the establishments of the recently formed Ulster Chemists, Limited, sold cyanide of potassium to a purchaser, who went home, swallowed the cyanide, and died in a few minutes. At the inquest, which was held by two magistrates, the assistant was "cautioned" to be more careful in future. The company could not be made responsible, and the Inspector-General of Constabulary had intimated that the police would not prosecute in the case. What the Council sought was not to curtail the liberty of free trade, but to secure to the public the benefits conferred by the Acts of 1870, 1875, and 1890.—A letter from the Privy Council, Whitehall, acknowledged the receipt of a letter which the President had addressed to the Duke of Devonshire, Lord President of the Council, on the subject of the Bill relating to the sale of poisonous substances. That letter pointed out that there are in Ireland 424 registered druggists, over 300 chemists and druggists, and in addition 550 pharmaceutical chemists. The first two grades had to pass a qualifying examination, and to go through a four years' apprenticeship; and the letter submitted that the sale of poisons should be left with them, and that the proper legislation would be an extension of the second part of the Poisons Schedule, and a continuance of the restrictions imposed on behalf of the public by the Acts of 1870, 1875, and 1890.—The PRESIDENT said this Bill, which had passed through the Lords since the time he wrote to the Lord President of the Council, was really in a public sense a retrograde and unreasonable measure. It allowed what were described as "poisonous substances" to be sold by everybody. On the face of it, it implied that those substances had been sold without label or caution, either because of ignorance or through a deficient sense of morality on the part of the seller, because the only thing the Bill did was to say that they were to be labelled "Poison." The Privy Council was not willing to treat them as poisons, but the public was expected to treat them as poisons. Up to 1870 every sort of poison could be sold in Ireland without registration or anything of the sort; but it should be borne in mind that the chemists and druggists who in 1870 did the poison trade of the country were men who had been trained to sell poisons and who had served five or six years' apprenticeship, because they were then at the tail of the old guild system, which required apprenticeship. At that time there was no idea of crossing trades. The grocer did not try to be a druggist nor the druggist a grocer. Yet though that was the condition of the trade at the time, the Government of the day were so alarmed that in 1868 they passed the British Pharmacy Act, which recognised the licentiates of the Pharmaceutical Society as qualified sellers of poisons. They thought it necessary to place the sale of poisons in their hands. At that time they had no such body in Ireland—they had only the Apothecaries. In 1870 the Irish Poisons Act was passed, which required that poisons should be sold in a particular way. The sale of poisons at that time was exclusively in the hands of men who had been brought up to the business and had served their time to it. This went on until 1875 when this Society was constituted; and from that time the public had the additional advantage of the sale of poisons being placed in the hands of licentiates of the Society. Owing to circumstances there remained in the country a large number of unqualified men who continued selling poisons, and they were recognised as such down to 1890. But they had not been recognised since without having passed an examination. Now, however, the Government actually wanted to revert to the state of affairs that existed prior to 1870—to go back twenty-nine years upon what experience had shown to be a good system. The Government was refusing in this Bill to recognise "poisonous substances" as poisons, whilst requiring the seller to label them as "poisons," thus actually admitting that they were such, and ought to be dealt with as such. If the Bill should pass, the "poisonous substances," such as sugar of lead, etc., would be obtainable throughout the country and in the cities at hucksters' and grocers' shops and at stores; whereas, if they wanted to get corrosive sublimate, they would have to go to another shop. The public would not understand what reason there was for making a distinction between "poisonous substances" and the poisons mentioned in the second part of the Schedule. In his mind the very fact of a person having to go, as at present, to a druggist's shop for these things was in the nature of a safeguard. He therefore thought that the Council should oppose the intended retrograde proceeding. The question was, How were they to reach their object?—Mr. CONYNGHAM: Ask them not to extend the Bill to Ireland.—Mr. BERNARD: Have not

the public every facility at present for obtaining poisons in Ireland?—The PRESIDENT: Will you draft a circular asking your licentiates and the druggists to approach their representatives on the subject.—Mr. WELLS said if the Bill should be passed as it stood now it would be a very serious matter.—Mr. KELLY said they should make a determined stand against this Bill. It was a positive injustice to the pharmaceutical chemists and druggists of Ireland. The pharmaceutical chemists had fifty votes in that division of Dublin, and they could twist the election any way they liked.—Mr. CONYNGHAM: The thing would be to try and prevent this Bill from being applied to Ireland. We do not want it here.—Mr. WELLS said the idea of the Government in promoting this Bill was simply to reward some of their followers. The idea of it had been started by a Member of Parliament who had been prosecuted for selling poisons. He was a large seedsman, and wanted facilities for selling these things in Scotland. It had not been shown that there was any want of poison sellers in England any more than in Ireland. If this Bill should pass they would have people in the country thinking that they had a right to sell scheduled poisons. It would touch the Society's licentiates seriously in the matter of compounding, for even where an eye lotion made upon a medical prescription contained a few grains of sugar of lead it would have to be labelled "Poison," not only on the bottle but on the wrapper, and as the Society were law makers they could not be law breakers. They should, therefore, make a strong stand against the Bill, and ask their licentiates and the registered druggists to speak to their local Members of Parliament about it. Their licentiates had a great deal of power in the local representation. They had two Members in Dublin, and it was the vote of the pharmaceutical chemist that put Mr. Campbell in for that division of the city. They knew that he would do what he could for them, and Mr. Field had also promised to support them. It had been argued in support of the Bill that, notwithstanding the past legislation, a large number of accidental poisonings had taken place in England; but they left out of view in how many hundred cases accidents had been prevented by poisons being properly labelled.—The PRESIDENT: The Privy Council is claiming the right to make regulations about the storage of poisons here. My impression is that the Council should not make regulations for us without our approval of them.—Mr. WELLS: If this Bill is passed as it is there will be no public prosecution. If the measure is left in the hands of the police it will be a dead letter.—Mr. CONYNGHAM suggested that a committee should be instructed to consider the Bill. There were many points in it that the Council would not be able to get altered. Finally, on the motion of the VICE-PRESIDENT, seconded by Mr. WELLS, the following resolution was passed:—

That a circular be sent to all the Irish Members of Parliament drawing their attention to the Sale of Poisonous Substances Bill, and asking them to try to prevent the Bill being passed; also to our licentiates and registered druggists, asking them to write or speak to their local "M.P.'s," and that the Law Committee take the necessary steps.

A letter was received from the Honorary General Secretaries of the approaching British Pharmaceutical Conference to be held in Belfast, asking the Council to name delegates. The President, Vice-President, and Messrs. Kelly, Connor, Dr. Walsh, Conyngnam, and Professor Tichborne were nominated.—On the reading of a letter from the Inspector General, R.I.C., stating that the police would not prosecute the case of an illegal sale of cyanide of potassium in the establishment of the "Ulster Chemists, Limited," the PRESIDENT mentioned that the man who bought it had been drinking, and when he went home his wife clided him for being drunk. He said he had a thing for that and ate the cyanide.—Mr. WELLS: When we waited on the Inspector-General, he said the police would carry out the Poisons Act, and he sent out a circular to that effect. Now you are told that they are not to carry it out.—Mr. BERNARD: Is not the alleged offence that the buyer was unknown to the seller, and did not sign a poisons book?—The PRESIDENT: It was labelled, but a book was not signed. The President added that he had requested Mr. Field, M.P., to ask a question in the House of Commons on the subject.—An election of an Examiner in Chemistry was postponed.—Other business having been disposed of, the Council adjourned.

OBITUARY.

WOODYATT.—On July 2, Richard Woodyatt, Chemist and Druggist, Macclesfield. Aged 68.

LETTERS TO THE EDITOR.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

LIQUOR STRYCHNINÆ HYDROCHLORIDI.

Sir,—Mr. Lunan strains at a gnat. The B.P., 1885, did not say the above "solution contained one grain of alkaloid in nearly 108 m." It states "the strength is about 1 in 100"—near enough.
London, W., July 9, 1898.

W. MARTINDALE.

THE POISONOUS SUBSTANCES BILL.

Sir,—It is well that the appeal to Cæsar has, at length, been reached in our controversy with the permanent officials of the Medical Department of the Privy Council. And it is also well that our own mobilisation has been effected with a promptitude that may be adequate, in spite of the perfunctory way that so thorny a question as the Poisonous Substances Bill was hurried through the House of Lords. We must not expect the official documents issued by the Council of the Pharmaceutical Society to state our case against the Privy Council officials with the blunt directness which it deserves. But we shall be much more intelligible to our parliamentary representatives, before whom we now go as a court of appeal, if making a plain historical statement on the subject. My association with the matter from a very early stage may justify me in attempting this. Our quarrel with the permanent officials of the Medical Department of the Privy Council dates from 1868, when the Pharmacy Act was passed. Soon afterwards, Sir John Simon asserted that a pledge had been given by the representatives of the Pharmaceutical Society to propose penal regulations for "keeping," etc., poisons, and in 1871 he induced the Vice-President of the Privy Council, the Rt. Hon. W. E. Forster, to bring a Bill before Parliament prescribing the methods of doing this. The scheme was found to be so crude and unworkable that it created dangers greater than those it was intended to remedy. Its inconsistency could not have been worse had it directed that the "up" line of a railway should be guarded by danger signals, and that none should be needed on the "down" line, even when worked by the same staff. The prescribed penalty for an infraction of the regulations by the chemist or by any servant was the removal of the former from the Register. But the whole trade rose in opposition to the Bill, which was withdrawn. In 1871 we alleged that the claim of a bargain was bad, that nothing was known of it by the Council of the Pharmaceutical Society, whose minutes have no such record, and that if the then President (now deceased) had been a party to any agreement it had been secret and unlawful, and was therefore *ultra vires*. The Act itself expressed no compulsion on the subject, but its terms were couched in the permissive sense. Our case must still maintain these justifications of opposition to the new Bill, linked with the very forcible contention of our Council, that the chemists and druggists of to-day are men who have been for the last thirty years drafted into their calling after giving by examinations guarantees of their fitness for its duties. Finally, the constitutional question will not escape the numerous members of our body holding prominent positions in the controlling of municipal institutions as mayors, justices of the peace, members of city and other councils, who are accustomed to negotiate delicate questions involving the civil rights and property of those whom they represent. They will regard it as a scandal that the permanent officials of a Government Department should claim that in assenting to a Bill in 1868 they had loaded it with secret conditions outside its clauses. The thirty years' interval has, on our side, served to convert our ranks almost completely into examined men, but our accusers have for so long a period nursed their wrath, and bring out the same old bogey again. His Grace the Duke of Devonshire has good cause of complaint that he should be so badly informed by those who technically guide him in this matter. That the Medical Department of the Privy Council should have introduced the Bill behind the back of the Pharmaceutical Society was bad enough, but the proposal to make penal regulations for the

"keeping, selling, and dispensing of poisons," whilst excluding every person in the kingdom qualified by experience to offer an opinion on the subject, is carrying despotism too far. The unqualified withdrawal of the Bill will alone be satisfactory.

Leeds, July 11, 1898.

RICHARD REYNOLDS.

CAMPHOR PILLS.

Sir,—One often hears the statement that castor oil is a good excipient for camphor pills, but my experience as a student with it is that it is not satisfactory, and certainly should not be recommended. I have made some camphor pills, each containing 3 grains, with castor oil as the excipient, and find that when they are left exposed to the air on a piece of paper almost all the oil evaporates and leaves the camphor on the paper in the form of an irregular contracted mass, consisting almost entirely of camphor. As far as my experience goes of the subject, glycerin of tragacanth, which has been suggested to me, is not as good as the plan that has been adopted by many experts, which is to make them up with soap, preferably curd soap. Of course it should be understood that this excipient cannot be used where such substances as ferrous sulphate, calomel, and similar compounds are present. When these are used in pills a good general excipient is, I am inclined to think, a "desideratum."

Birmingham, July 12, 1898.

LILIAN MAY HANDS.

BLAUD'S PILL.

Sir,—The pill which passes under this name is remarkable in several ways—most of all for the extent of its consumption. Any effort to gauge it by summing up the available facts conjures up before the mind's eye an endless succession of pills trundling down the public throat, like the blood corpuscles chasing each other through the veins of a frog's foot, seen under the microscope. This extraordinary popularity contrasts strongly with the scantiness of the pharmaceutical literature concerning it. Few newcomers have attained official recognition; fewer still have driven out from before them old and well-established formulæ about which so little pharmaceutical ink has been shed as over Blaud's pill. Like its predecessor, it is of Gallic origin; and Vallet is swept away by Blaud as the successive waves of barbarian invasion lapped over the decaying Roman empire. The reason of this is not easy to find. The strength of the pill now official is about 1 grain of ferrous carbonate in 5 of mass, and the patient is instructed to swallow one to three 5-grain pills three times a day. This is done by people who at other times look upon a single 5-grain compound rhubarb pill as a monstrous bolus, which they flatly refuse to attempt. The pilula ferri carbonatis, which is now expunged from the British Pharmacopœia contained 4 parts in 5 of ferri carbonas saccharata—concerning which it is stated that ferrous carbonate, or what is reckoned as such, forms one-third of the mixture. My note book, under date 1869, gives particulars of volumetric testing, showing the presence of nearly 38 per cent. But taking the lower figure, 4 grains of this preparation will contain one-third more ferrous carbonate than a 5-grain Blaud's pill, and with the substitution of tragacanth and water for the confection would make a smaller pill. Obviously, 3 grains would equal the Blaud's in strength, and be still smaller. Can it be that the presumed advance in therapeutical efficiency is due solely to more liberal dosage; and that Blaud's iron pills do more good than our old accustomed "steel" pills, for the same reason that white sheep eat more than black ones?

Dover, July 12, 1898.

J. F. BROWN.

ANALYSTS' CERTIFICATES.

Sir,—You recently reported a prosecution in regard to lime water, said to be deficient in lime, in which I was defendant. Briefly the facts are as follow:—At the first hearing of the case I took a technical objection to the validity of the analyst's certificate, but without giving a ruling on this objection the magistrate proceeded to hear the case upon its merits. He found that, whilst it was admitted that no fraud had taken place a technical offence had been committed, and he inflicted a nominal fine. So far as the justice of this case is concerned I have no fault to find with the decision. Whilst the lime water in question did not show the deficiency stated by the prosecution, there is no doubt that at the time it was sold it was below strength. Chemists who carry on business in districts where this article is sold in small quantities in customer's own vessels will know the difficulty of keeping lime water at full strength. I considered that the tech-

nical point raised by me was of sufficient importance to justify an appeal to the Courts for a mandamus. In prosecutions under the Foods and Drugs Act the analyst's certificate is of vital importance for several reasons. First, it is upon the information contained in the certificate that the local authorities decide whether to prosecute or not. If in the case of such articles as lime water and spirits of nitre, when the analysis shows a small deficiency and the analyst makes a report upon the certificate that some decomposition had taken place, the local authorities would not be likely to take action, and the chemist would be saved from unpleasant police court proceedings. Secondly, when the case is heard, the analyst's certificate is constituted by the Act complete evidence for the prosecution as to the state in which the analyst found the article. This provision was made in order to avoid the trouble and expense of bringing the analyst into court. By Section 18 of the Act, the analyst's certificate must take a certain form, and in that form the analyst receives an instruction in the following exact terms:—

In the case of a certificate regarding milk, butter, or any article liable to decomposition, the analyst shall specially report whether any change had taken place in the constitution of the article that would interfere with the analysis.

The reason for this provision seems clear. In the case of an article which is liable to decomposition, the prosecution, in fairness to the defendant, are directed to state whether or not any change had taken place in the article, and it was not intended that the onus of proving a change should be thrown upon the defendant; the certificate has to give this information. As I read the Act, it is the duty of the analyst in the case of any article liable to decomposition to state the fact clearly on the certificate, and to show whether there was evidence of decomposition or not. Even supposing that the analyst reported that though the article was liable to decomposition, no change had taken place since its purchase, the mere statement of the fact that the article was liable to change would be of assistance to the defendant in pleading in mitigation that the deficiency was due to decomposition or change; in other words that he was not guilty of a deliberate act of adulteration, but that the article had deteriorated. In the absence of any report on the analyst's certificate such a defence would be seriously prejudiced, as the magistrate would probably discount the defendant's evidence, on the ground, that if what he stated was true, the analyst would have stated so on his certificate. Thirdly, it is a matter of common knowledge that inspectors purchasing such perishable articles as spirits of nitre, etc., do not take the care they ought in seeing that the article is properly dealt with and carefully preserved until the time of analysis. If in future cases the analyst has to report upon this particular point it is only reasonable to suppose that the authorities will insist upon proper precautions being taken in dealing with perishable articles. The magistrate, in dealing with the technical objection raised, seemed to be guided by the statement made by the analyst, namely, that lime water, though it was liable to decomposition, was not liable to such decomposition as butter, and that whilst in the case of butter the decomposition would interfere with the analysis, in the case of lime water it would not. I personally fail to see the reasonableness of such a distinction. The decomposition which takes place in lime water produces an entirely different article and would, as I understand the term, most certainly interfere with the analysis. It was, however upon this magistrate's finding that the Courts decided not to grant a mandamus. My reason for calling attention to this case is that I think, for the reasons stated, the point raised is one of importance to the trade. I cannot think that it was intended to protect the trader who sells butter from being prosecuted, and perhaps convicted, in regard to a sample which had decomposed, without giving to the chemist who sold spirits of nitre or lime water similar protection. In connection with my own case, I have personally done all that was possible to get a High Court decision on this matter, and the refusal of the Courts to order the magistrate to state a case settles the question so far as my case is concerned, though it in no way disposes of the question raised. I think that in the next prosecution of a chemist in reference to either of these articles the point should again be raised and properly contested from the outset. There ought to be no difficulty in raising a small fund for the purpose, and if a sufficient number of your readers think it worth while, and will communicate with me, I shall be pleased to do what lies in my power in the direction of organising a committee for the purpose of contesting a case on the lines indicated.

Purfleet, July 13, 1898.

W. S. GLYN-JONES.

PARLIAMENTARY NOTES.

A GOVERNMENT DEFEAT is to be chronicled this week, and chemists of all shades of political complexion may unfeignedly rejoice thereat. With a display of discretion little short of remarkable, the strongest of modern Administrations has decided to abandon the Poisonous Substances Bill, owing, as a veracious reporter states, to the widespread objection of chemists and druggists throughout the country. Both in the fact and in the exciting cause chemists have reason for satisfaction. Mr. Balfour, in announcing the decision of the Government in respect of the Poisons Bill—an announcement we may add, which was received with cheers in a full house—included it in the category of those Bills which ultimately “it will be found impossible to place on the Statute Book.” These be weighty words from the leader of the House, and they convey a not unmerited snub to the Privy Council and the Lord President.

WHO KILLED THE BILL?—There can be no doubt that one of the chief factors in this justifiable slaying was the remarkable promptitude with which registered men responded to the appeal of the Pharmaceutical Society. The Council representatives can do, and did do, a deal of useful work in the lobbies, but their efforts would have fallen considerably short of success but for the practical backing accorded to them by those for whom they were working. Dangers, like adversities, have their sweet uses. One of the lessons which chemists of Great Britain may learn from the happily averted evil that so recently threatened them is that it is a good thing to have a “buffer-state” like the Society to stand between pharmacy and its enemies. And perhaps the outcome of the death of the second Government Poisons Bill may be the strengthening of the “buffer-state.”

WE MAY NOTE that Mr. Heywood Johnstone (Horsham) was the only Member of the House who publicly called the attention of the First Lord of the Treasury to the attitude of chemists in relation to the Poisons Bill. The letters of his pharmaceutical constituents must have entered his soul.

THE FOOD AND DRUGS FARCE is to be replayed at Westminster this year, for a few nights only; but with the same cast as before. Mr. Balfour has officially said that the Government measure is not to be proceeded with, but it will nevertheless appear on the notice paper, solemnly introduced by Mr. Chaplin; and members will greet its birth with derisive cheers, precisely as in 1897. Why Mr. Chaplin consents to be annually associated with this silly performance is somewhat incomprehensible, but why those who suffer under the present law relating to food and drugs patiently bear the continual exhibition of official indifference is more incomprehensible still.

THE BILLS to be proceeded with include the measures relating to Vaccination and to the London University Commission. Both will need a good deal of engineering to get through, but the latter is in a fairly good position, having only the Committee stage to pass and its third reading. The opposition, which includes Sir J. Gorst, is counting on the irregularity in procedure alleged to exist according to Mr. Healy, and will do its best, or worst (according to which view one takes of the scheme) in Committee, but there is an overwhelming majority in favour of the reconstruction of the University, and there is reasonable hope that before the House rises early in August the first step in the formation of London's Teaching University will be accomplished. After all “*c'est le premier pas qui coute.*”

COMPANIES AND THEIR SINS furnished Mr. Field (Dublin St. Patrick's), with material for a question on Tuesday. Obviously inspired by those most hit by the promotion of corporate entities, he asked the President of the Board of Trade whether any inquiry would be made respecting the promotion of companies, and whether the Public Prosecutor had any duties in this matter. “No,” replied Mr. Ritchie, “no inquiry is contemplated, and as company promoting is not an offence there have been no prosecutions.” The right honourable gentleman exactly hit it. Company promoting is not an offence, but it certainly should be made an offence to promote a corporation for the express purpose of evading a law which applies to individuals. Mr. Field's energies should be directed next session

to rescuing the Companies Bill from its *cul-de-sac* in the House of Lords.

THE PRIVY COUNCIL must beware, for Mr. Caldwell has sworn to effect economies in its administration. The Hon. Member will commence modestly, and has notified his intention of moving the reduction of the Privy Council Office Vote by £1700, being the amount of Sir C. L. Peel's salary. Mr. Caldwell thinks it a sinful waste to have a clerk and an assistant-clerk to administer a department which has less and less to do as years go on, and local Government Acts increase in number as well as in scope. Mr. T. Bayley (Chesterfield) is also anxious to pick holes in the Council Office Vote.

PATENT MEDICINE STAMPS.—Mr. Mildmay (Tiverton) thinks some improvement might be made in these profitable items of public revenue if they were perforated and gummed instead of being issued in their present inartistic form. He asked the representative of the Postmaster-General on Monday to consider the advisability of issuing the three-halfpenny stamp in the perforated and gummed variety. The Postmaster-General, however, has no disposition to undertake any such consideration. Mr. Henniker Heaton gives him quite sufficient to think about in the way of reforms. Moreover, the Post Office is not the Department charged with the administration of the Stamp Duties Acts, and knows little and cares less about the stamps issued to nostrum vendors. Somerset House will doubtless take a lot of moving before it sanctions a change such as Mr. Mildmay is led to think is desirable. It is one of those reforms for which the world may well wait a little.

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE PHARMACY ACTS.

PHARMACEUTICAL SOCIETY v. J. G. DESBOROUGH.

At the Manchester County Court on Monday, July 11, before his Honour, Judge Parry, the above case came on for hearing in the absence of the defendant. Mr. T. R. Grey instructed by Messrs. Flux, Thompson and Flux, appeared for the plaintiff Society, who, in the particulars of claim, stated that on the 18th day of April the defendant had sold a poison, to wit, morphine, forming part of the ingredients in a compound called “Kay's Compound Essence of Linseed,” contrary to the provisions of the Pharmacy Act, 1868, 31 and 32 Vic., c. 121, and they claimed the penalty of £5.

Mr. Grey said as the defendant did not appear, he should merely have to formally prove his case. The sale took place on April 18, at a shop, 35, Renshaw Street, Greenheys, Manchester, and at the time the bottle was purchased a notice was wrapped up with it to the following effect:—“Important notice.—Having purchased the business lately carried on by Messrs. Wall and Co., I hope by strict personal attention to business to receive a continuation of your patronage and support. Note the address, Desborough, Pigott Street Drug Stores, corner of Renshaw Street.” The name J. G. Desborough also appeared on the bottle, which was bought at the same time.

His Honour: If you will prove the stuff was purchased, it will be sufficient.

Mr. Grey then called Arthur Foulds, who deposed that on April 18 he went to 35, Renshaw Street and bought the bottle of Kay's essence of linseed produced. He put on a ticket to identify it and handed it to Mr. Moon for analysis.

Mr. Moon, clerk to the Registrar of the Pharmaceutical Society, deposed to receiving the packages alluded to by the last witness, and Mr. Ernest John Eastes, F.I.C., 61, Chancery Lane, London, stated he received from Mr. Moon a bottle of Kay's essence of linseed, which he analysed carefully, and found it contained both morphine and chloroform. There was nearly one sixth of a grain of morphine.

His Honour: There must be judgment for the plaintiff Society for £5 and costs.

PHARMACEUTICAL SOCIETY v. WINN.

In this case there had been three summonses for infringement of the Pharmacy Act, and it was stated by the Registrar of the Court (Mr. A. H. Atkinson) that the defendant, whose name is James Edwin Winn, of 35, Higher Ardwick, Manchester, had

signed an admission and offered to pay the penalties by instalments.

Mr. Flux, informed His Honour that in one case where such an arrangement had been made recently the defendant made an assignment, and the Society was not likely to get anything. It was simply a way of trying to get out of the arrangements.

His Honour: What do you suggest? Is he a chemist?

Mr. Flux: No, he is not, I do not know precisely what he is. It is carried on as a drug stores.

On the application of Mr. Flux, His Honour made an order for £15 with costs.

PHARMACY IN AUSTRALASIA.

[From our Melbourne Correspondent.]

THE TRIAL OF JAMES W. CHRISTOPHER, the chemist who was alleged to have caused the death of Dr. S. I. Williams by supplying him with atropine in mistake for morphia, has been concluded in the Melbourne Criminal Court, and resulted in a verdict of not guilty. Dr. Brett, who made the *post-mortem* examination, stated that death was due to asphyxia, but could not say what caused the asphyxia, and it was contended for the defence that the Crown had not proved that the deceased's death was due to atropine poisoning, or that the deceased had injected the atropine into his body. Mr. Justice Hood summed up the case to the jury very favourably. "Deceased," he said, "for some years had been the victim of a craving for morphia or cocaine, and the case for the Crown was that he injected atropine, which he had received from the accused, in mistake for morphia, and that that was the cause of his death. Was that the right conclusion, or did they think that he died from an overdose of cocaine? The symptoms prior to death helped them very little, for they were as consistent with cocaine as with atropine poisoning. It was for the jury to say which was the right conclusion. It was not proper for them to say that because the medical witnesses were unable to speak positively they (the jury) should not be asked to determine the cause of death. The doctors came there to give a skilled opinion, but if they were asked to give their opinion as men of the world, and not as skilled witnesses, it would be quite a different matter. Even if the jury found that the death was caused by atropine, the accused would not be guilty unless they were of opinion that he was grossly and culpably careless. It was always difficult to decide what degree of carelessness amounted to a crime, but a mere mistake on the part of accused would not justify them in making a criminal of him. The most careful, the most skilful man in the world might make a mistake, and it was not fair to judge a mistake by simply looking at the evil that had followed it and saying, 'Oh! I would not have done that.' What they had to do was too look at the facts as they took place. They should put themselves in accused's place and ask themselves, 'Did he act rashly, did he act recklessly and with gross carelessness?' Was the mistake made by his failing to give that attention to business which a man in his position ought to give. When Dr. Williams called at the shop he was in a great hurry; in such a hurry that he would not give the young man time to change the labels he had wrongly placed on two bottles. The accused saw his mistake in regard to the labels, but the deceased would not give him time to rectify it. The accused was skilled in his business; he was assistant to his father, and he was dealing with poisons, a business requiring special care. On the other hand, he was hustled and hurried by the unfortunate deceased. Those were the facts, and it was for the jury to say whether the mistake was due to the gross carelessness of the young man. The accused from first to last had admitted everything, and his own statement to the detectives completed the evidence against him. If they were not satisfied, first that the doctor died from a dose of atropine, and secondly that accused was to blame for his death, because of great carelessness, it was their duty to return a verdict of not guilty." The verdict, I may add, seems to meet with very general public approval.

IN NEW SOUTH WALES an effort is being made to arrange with the University of Sydney to conduct the necessary pharmaceutical classes, there being apparently little prospect of the Society being in a position to establish a college of its own. Some slight difference of opinion seems to exist in the Council as to applications for membership from a number of persons who have been admitted as pharmacists under the Section D of Pharmacy Act, 1897. It is held by some that the admission of a number of

virtually unqualified men would not add to the dignity and prestige of the Society. On the other hand it is contended that refusing admission would result in the creation of two parties among pharmacists, and that such disunion would be fatal to the interests of all. The subject is still under consideration. The following office-bearers have been appointed for the current year: President, Mr. L. P. Williams; Vice-President, Mr. Jones; Hon. Treasurer, Mr. J. R. Willows.

PHARMACY IN IRELAND.

[From our Belfast Correspondent.]

PROFESSOR WHITLA, Q.C.B., has published a new edition of his *Materia Medica*. It contains all the later additions and modifications of the new B. P.

BELFAST QUEEN'S COLLEGE SPORTS came off on Saturday, June 11, at Ormeau. This is the twenty-seventh annual meeting. Among the many and distinguished patrons are the Lord Lieutenant and the Marquis of Dufferin and Ava. Students from the various colleges of Ireland figured in the events. A tug-of-war took place between the surgery class, pharmacy class, and football teams, Q. C. B. First honours lay with the last, the pharmacy team coming second. The prizes were distributed by Mrs. Redfern, wife of Professor Redfern.

THE BELFAST RIOTS last month arising out of the absurd '98 celebration, offered the opportunity to a number of pharmacists and doctors to act the good Samaritan. One constable, whose leg was broken by a large "paver," was dressed by them; splints and bandages were improvised from broken boxes and torn blankets. There were 103 reported wounded amongst the police, though it is said some were in hospital without a scratch on them. So, what with scalp wounds and cracked and "barked" shins, Mr. Thompson's Medical Hall was the scene of a brisk business for a couple of hours.

THE MEMBERS OF THE INCORPORATED GAS INSTITUTE held their annual meeting in the Exhibition Hall, Belfast. Lord Mayor Henderson gave a few interesting facts in connection with the enormous plant of the Corporation Gasworks. There were six gasholders capable of holding six and a quarter millions of cubic feet, the largest (106 feet high) held 2,600,000 cubic feet of gas, and required 1500 tons of iron to construct it. The consumption per year had almost quadrupled since 1874, being at present fifteen hundred millions of cubic feet. Mr. Stelfox, in order to combat the great demand, started the making of carburetted water gas, not only a sufficient supply being provided, but the consumption of coals being reduced by 50,000 (fifty thousand) tons per year. The apparatus used was the Lowe double superheater, so favoured in U.S.A. The President (Mr. Jas. Stelfox) delivered his inaugural address, in which he referred to the comparative merits of gas and electric illumination, his conclusion being that electric lighting has still a long period of probation before it. He considered the regenerative burners of Frederick Siemens the best of their kind (especially serviceable in shop-lighting) until the invention of the incandescent mantle of Welsbach). The possibilities of the thorium-cerium mantle were not fully realised at first, but the genius of Welsbach has brought about a revolution *in re* incandescence. Professor Lewes, F.I.C., F.C.S., Royal Naval College, Greenwich, gave an experimental lecture on the latest developments of "Acetylene."

THE FOLLOWING, which I have word for word from witnesses, and which I can vouch for as true in every particular, is no doubt one among hundreds of similar cases:—A young girl about twenty, who worked in a Belfast factory, was dying in consumption. The overseer saw in the *Christian Advocate* an advertisement of a person who professed to cure consumption, and spoke to the girl's fellow-workers about it. They agreed to make a collection each Saturday till she was cured. The first bottle (the length of one's middle finger and the circumference of a halfpenny) cost half a sovereign; the second bottle the same. The overseer then wrote that the medicine had been all used, but that no improvement had set in, and asked for instructions. The reply was, "Send forward one guinea for the next bottle, as it contains," etc. The third bottle was to give the disease its quietus. The overseer was wiser, and the girls collected

their pence to procure a few useful necessaries for the consumptive. The girl died shortly after. Now the sheet anchor of this conscienceless Mr. — (though it is with grievous feelings I announce his decease)—his sheet anchor is the religious weekly. If he raked in the shekels from wealthy people it would not matter so much. But that the hard-earned wages of the poorer classes should be filched away and used to pay for fraudulent drugs, and part of the profits handed over to Christian papers, and part employed in building churches—this is an iniquitous conspiracy. The latest quack is Mr. H—— (a full page in both London religious weeklies). One of his testimonials declares that “Mr. C——’s and Mr. A——’s medicines did not do me the good your treatment has done.” When thieves fall out honest men get their due.

A LOCAL JOURNAL, in referring to the Duke of Devonshire’s Poisons Bill, states that carbolic acid is a “very useful disinfectant, and as it bears a resemblance to ordinary water, is very often taken in mistake for this harmless liquid.” This is misleading. The acid used for disinfection, known as crude carbolic, is not like “ordinary water,” but like ordinary porter, and this likeness is, in many instances, strengthened by persons bringing porter bottles to put the crude carbolic into, and this possesses all the requisites necessary to poison a man who has no objection to a glass of stout. The clear carbolic acid (“resembling water”) is only sold by chemists and in small quantities, and whilst the deaths from the crude variety are of frequent occurrence, no fatalities have been attributed to the use of the other; a self-evident proof for including carbolic acid amongst the scheduled poisons.

A WITTY DOCTOR remarked once, “People don’t need wisdom teeth now-a-days; they know everything.” This is like enough; every disease is now explained in rubbishy tracts; its cause and cure. A gentleman the other day asked a chemist for “a cure for te-taneus,” and the high falutin’ hieroglyphic for belladonna plaster is in Hibernian parlance “Ballymena plaster” (pron. vulgarly, Bela-main-a).

POISONOUS SUBSTANCES BILL.

DEWSBURY AND DISTRICT CHEMISTS’ ASSOCIATION.—A special meeting of this Association was held in the Town Hall, Dewsbury, on Monday, July 11, Vice-President Mr. G. Walker in the chair, and he was supported by members from Heckmondwike, Cleckheaton, Morfield, Batley, Ravensthorpe, Ossett, Thornhill, and Dewsbury. A very animated discussion took place on the Poisonous Substances Bill, and the following resolution was passed and copies of it to be sent to the various Members of Parliament in the district:—

That this meeting of the Dewsbury and District Chemists’ Association is of opinion that the Poisonous Substances Bill now before Parliament will be a dangerous and unwarranted interference with the operation of the Pharmacy Act, 1868, being retrograde in principle, ambiguous in detail, and not calculated to achieve its main purpose, namely, the safety of the public, which can be effectively secured by placing all poisonous substances which are considered dangerous to the community under the provisions of the Pharmacy Act of 1868.

It was also resolved that a deputation consisting of the President, Mr. A. Foster; Vice-President, Mr. G. Walker; and the Secretary, Mr. R. Gledhill, should wait upon the Borough Member. It was also decided to hold another special meeting as soon as the Bill came before the House of Commons.

THE NORTH-EAST LANCASHIRE CHEMISTS’ ASSOCIATION sent a deputation consisting of Messrs. W. Wells, Garland, Eatough, R. Lord Gifford, and Howarth, to wait on the senior member for Blackburn on Wednesday, in reference to the Poisons Bill. After the matter had been laid before him, Mr. Hornby promised to give it his careful attention, and expressed astonishment that the present condition of affairs had been allowed to continue so long, remarking that the fact reflected upon the members of the trade, who must have been apathetic in regard to their own interests.

THE CHEMISTS OF GREENOCK have sent to Sir Thomas Sutherland, the Member for the burgh, a letter showing the reasons why the Poisonous Substances Bill should not be passed into law. The letter was accompanied by the sheet of reasons against the Bill, drawn up by the Council of the Pharmaceutical Society.

THE EXETER CHEMISTS, at a meeting held this week, passed a resolution condemning the Poisonous Substances Bill.

PHOTOGRAPHIC NOTES.

DARK ROOM WINDOWS.—According to Stolze, chrome-orange coloured glass can be prepared as follows:—A solution is made by dissolving 10 grammes of gelatin in 150 C.c. of water, and adding 3 grammes of sugar to prevent crystallising out when drying; 50 C.c. of a saturated potassium dichromate solution are added. The glass is coated with this solution, and when completely dry, dipped into a 10 per cent. solution of lead nitrate. After the reaction is complete, the yellow layer is well washed. If not satisfactory the process may be repeated. A good red glass is obtained as follows: dissolve 10 grammes of mercuric chloride in 135 C.c. of boiling water. The solution is allowed to cool to 20° C., and a sheet of glass covered with gelatin is immersed in it for ten minutes. After drying, the sheet of glass is immersed in a solution of 13 grammes of potassium iodide and 150 C.c. of water. The formation of mercurous and mercuric iodide commences immediately, the gelatin sheet being first yellow then more and more scarlet red. After the reaction is complete, the glass is well washed. As this colour permits a little active light to pass, it is best combined with the above described chrome-orange coat. Air may be completely excluded by a coat of paraffin to ensure permanence of the colour.—*Chem. Zeit. Rept.*, xxii., 16, after *Atelier des Phot.*, 5, 4.

DEVELOPER FOR RAPID PLATES AND SNAP SHOTS.—Solution No. 1: Metol, 4, hydroquinone, 6, potassium metabisulphite, 9, potassium bromide, 2, distilled water, 450. Solution No. 2: Soda caustic, 2, sulphite of sodium, 2, water, 10. Equal parts of both solutions make an excellent developer.—*Int. Phot. Monat. f. Medizin.*, 1898, 15, after *Phot. Ctrb.*, 20, 1897.

INTENSIFYING WITH MERCURIC CHLORIDE.—I find that a diluted saccharated solution of lime is better than ammonia to reduce the metallic salts in the bleached negative. The ammonia causes frilling of the film, even to complete stripping sometimes; the lime solution does not. I have not had much experience with either, but what little I have had supports the above view.—“AMATEUR.”

AN ECONOMICAL MOUNTANT.—Soak gelatin, 1, in cold water, 4, till quite soft, then add boiling water, 6, and stand the vessel containing the gelatin in hot water until it is quite melted; finally add methylated spirit, 4. When required to use, stand the mountant in boiling water till melted. This mountant is very easy to use, strong, and beautifully clean. Should any of it dry on the edges of the mount, it may easily be removed by applying a cloth dipped in hot water.—*Photo News*.

ACID FIXING BATH.—Belitski recommends the following formula:—Sodium sulphite, 50 Gm.; water, 800 C.c. When completely dissolved, add sulphuric acid, 6 C.c., and lastly sodium hyposulphite, 200 Gm.—*Deutsche Photo. Zeitung*.

INTENSIFICATION OF PLATINUM PRINTS.—Prepare a cold saturated solution of gallic acid and a 10 per cent. silver nitrate solution, and mix them shortly before use as follows:—Gallic acid solution, 52 C.c.; silver nitrate solution, 2 C.c.; water, 52 C.c.; glacial acetic acid, 10 drops. The well-washed platinum print is immersed in this solution and is left therein, under constant motion, until the desired strength has been obtained. If the intensifier should be discoloured too much, it is replaced by a fresh quantity. The precipitate of silver has a very fine grain, and the process is finished after correct intensification by rinsing and final washing with acid water. In case such intensified picture has become a little brown in consequence of the colour of the silver, it may be turned completely black by using the following platinum bath: Platinum potassio-chloride, 1 Gm.; phosphoric acid, 15 Gm.; water, 750 C.c. After this bath the picture is washed and dried. In place of the gallic acid hydroquinone may be used as follows: (1) Hydroquinone, 2 Gm.; citric acid, 20 Gm.; water, 450 C.c. (2) Silver nitrate, 3 Gm.; water, 30 C.c. To 30 C.c. of solution 1 add 10 drops of solution 2. The solution is left to act until the required intensification has taken place.—*Photographische Chronik*, through *Photography*.

EXTRACTS FROM CONSULAR REPORTS.

THE VALUE OF MEDICINES exported from Hankow (China during) 1897 was £294,594, an increase of £121,254 over the exports of 1896. The export of nutgalls was nearly double that of the former year, the value being £125,697.

COMPETITION IN THE MANUFACTURE OF ALBUMIN at Hankow, according to Consul P. Warren, is likely to become keen. There are three firms engaged in the business, one Austrian and two German, and others are about to take it up. The probable result will be that profits will be small, and this is advanced as a reason why no British firm has seen its way to compete for the trade. Large numbers of eggs are used, one firm alone using between 30,000 and 40,000 eggs each day during the season, but as the eggs employed in the manufacture must be absolutely fresh, the season is restricted to two periods of about two months each year. It is rather a curious fact that notwithstanding the increasing demand the price of eggs remains about the same, no rise apparently being anticipated.

THE ANTI-FRICTION METAL FACTORIES of Papenburg, although otherwise prosperous, are stated to be suffering severely in their export trade with England, owing to the strict interpretation of the Merchandise Marks Acts in England. It is expected that as a consequence the exports to England in this article must, in the near future, cease entirely.

THE PRODUCTION OF COD-LIVER OIL at Bergen during 1897 was larger than in the two previous years. The exportation amounted to 49,000 barrels as against 28,000 barrels in 1896, and 33,000 barrels the previous year. In the beginning of the season the price of steam-refined medicinal oil was £4 9s. per barrel, but fell to £3 per barrel, at which price it remained during the latter part of the season.

THE KELLNER PARTINGTON PAPER PULP COMPANY, LTD., of Manchester, which a few years ago erected its mills at Sarpsborg Falls, Norway, now employ over 1000 workmen, and are about to establish a large electric-power station for the accumulation of motive power to be derived from the waterfall. The "Hafslund Aktieselskab," a new company floated chiefly by German capital, is also erecting an enormous electric-power station on the opposite bank of the falls, and has already contracted, according to Vice-Consul Thiis, for the supply of motive power to two new factories now in course of erection, one for the manufacture of aluminium and other for the production of calcium carbide.

AN IODINE MANUFACTORY, under the name of "Hillevaag Kemiske Fabriker," has been started at Stavanger. Large quantities of seaweed are found along the coast; this is burnt into kelp, from which iodine is prepared.

A RECIPE FOR PREPARING OLIVES for the table is given by Consul Finn in his report on the trade and commerce of Malaga and district. The mode of procedure is as follows:—Soak the olives in a mixture of fresh water and caustic soda. For Manzanilla olives the mixture is 3° (Beaumé's areometer), and for large olives 2½°. The olives are kept for six to nine hours in this mixture, according to the time they are intended to be kept. If they are to be consumed promptly, nine hours; if to be kept some time, six hours. Afterwards they are put in water for twenty-four hours, the water being changed three times during that period. They are then placed in casks floating in a pickle composed of sea salt and water of a consistency of 9° (Beaumé's areometer). A most essential point in this method is that the water used in all the operations must be the softest and freshest possible.

THE OLIVE OIL CROP OF 1897, in the district round about Brindisi, has been considered by those in a position to know as a failure. The failure is attributed to the *Mosca olearia*, which germinates when there has been too much rain during the season, as appears to have been the case in 1897. The crop is estimated at 9200 tons, the medium price for the year being 72 lire 40 c., prices ranging between 70 lire 83 c. and 83 lire 95 c. per quintal.

REPORT OF THE PETROLEUM COMMITTEE.

After an inquiry extending over four Sessions, the Select Committee on Petroleum has now concluded its labours, and Mr. Jesse Collings, Chairman of the Committee, has presented its Report to the House of Commons. The following is a summary of the recommendations agreed to:—

1. That the present law affecting petroleum spirit, not being adequate for public safety, should be amended in the manner specified in the Report.
2. To adopt a flash point of 100° (Abel close test) as the dividing line between petroleum oil and petroleum spirit.
3. Legislation to control the storage, transport, and sale of petroleum generally and admixtures of the same with other substances, certain heavy oils being exempted.
4. To provide for an efficient system of testing.
5. To provide for adequate supervision and administration by local authorities.
6. That official inquiries be made into the causes of accidents arising from the storage, transport, or use of inflammable liquids.
7. Statutory powers to enable the Secretary of State to issue orders affecting the manufacture and sale of lamps.
8. To spread information among the public as to the nature of petroleum and the management of petroleum lamps.

The Committee added to these recommendations the following conclusions:

"That to place such legislative restrictions on petroleum oil below 100° (Abel close test) as are placed on petroleum spirit would have the effect of preventing the use of such oil for domestic or trade purposes; that the effect of such legislation would be to materially raise the cost of petroleum to the consumer; that it is in accordance with the evidence that if immunity from accidents is to be secured it will be necessary to prevent the use of oil below 100°; that the number of lamp accidents has not increased out of proportion to the vast increase in the number of lamps used; and that if freedom from accidents is to be secured ordinary care must be exercised in the use of petroleum, whether of 73° or 100° flash point."

Partnerships Dissolved.

(From the London Gazette)

H. Geary Dyer, M.D., and C. E. Lister, Surgeons, Apothecaries, etc., Ringwood, Southampton.

J. H. Trouncer and Harry Cooper, Physicians, Surgeons, etc., Surbiton, Surrey.

Robert B. Marriott and Vernon F. Allen, Surgeons and Apothecaries, Swaffham, Norfolk.

D. MacKechnie and William Ross, Physicians and Surgeons, West Hartlepool. Debts will be received and paid by William Ross.

T. B. Winter and C. Winter (trading as T. B. Winter and Son), Opticians, 21, Grey Street, Newcastle-on-Tyne. Debts will be received and paid by C. Winter, who will continue the business under the old style.

E. J. George and Frank Fielden (trading as George and Co.), Mineral Water Manufacturers, Gillingham.

E. H. Crisp and T. A. B. Plowman, Physicians, Surgeons, etc., The Lawns, Balham Hill, and Eagle House, South Side, Clapham Common. Debts will be received and paid by E. H. Crisp.

Eliza Foster and George Brown (trading as W. Foster and Son and G. Brown and Sons), Mineral Water Manufacturers, Clare Street and Somerset Street, Northampton. Debts will be received and paid by George Brown.

Receiving Order in Bankruptcy.

(From the London Gazette.)

Hamilton W. Jolly, Surgeon's Assistant, residing at 213, Upper Parliament Street, and practising at 123, Chatsworth Street, both in Liverpool.

Pharmacy and the Allied Sciences

A REVIEW OF CURRENT WORK.

Sterilisation by Heat. There can be no doubt that the most perfect method of sterilisation where it can be applied is heat. Baking, however, is a more or less uncertain process, while boiling is destructive to many substances. Moreover, the boiling temperature is so little above that which is fatal to microbic life that a considerable length of exposure to such a temperature is necessary, if one is to be sure that the process has been effectually carried out. Frying is, however, another matter. Olive oil at a temperature of 160° to 180° C. acts very quickly and with great power. Professor Wright, of Netley, says that to obtain complete sterilisation of an instrument it suffices to dip it for an instant in the hot oil, and that in the case of syringes it is sufficient to fill them twice with oil at the temperature mentioned. The temperature of the heated oil may be determined by a thermometer; but it is often more convenient to adopt the rough and ready methods of the cook by the aid of a bit of bread-crumble. "It will be found that the bread-crumble will become brown and crisp as soon as a temperature of 160° to 180° C. is reached." For the sterilisation of syringes all that is necessary is to heat a little oil in a spoon over a spirit lamp, testing it from time to time by bits of bread-crumble, and when the proper temperature has been attained to fill the syringe twice with hot oil. All microbial infection will then have been destroyed.—*Sci. Amer.*, lxxvii., 291.

Uric Acid in Urine. Triollet and Eury discuss those methods employed for the determination of uric acid in urine which are based upon the formation of insoluble ammonium urate. The methods of Fokker, Hopkins, and Cazé are considered less simple and less accurate than that of Otto Folin, which is as follows:—Take 100 C.c. of urine, add 10 Gm. $(\text{NH}_4)_2\text{SO}_4$, and render it very slightly alkaline; shake and set aside for two hours. Collect the precipitated ammonium urate on a filter and wash with 10 per cent. solution of $(\text{NH}_4)_2\text{SO}_4$. Then dissolve the precipitate on the filter with boiling water made slightly alkaline, allow the solution to cool, and make up the volume to 100 C.c. by the addition of water. On adding 15 C.c. concentrated H_2SO_4 the temperature should rise to 55° to 60° C. This temperature is necessary for the final operation, viz., titration with standardised KMnO_4 solution. Add to the result obtained by calculation 1 Mgm., to allow for loss due to the solubility of ammonium urate.—*Rép. de Pharm.*, June 10, vi., 1898, p. 253.

Boric Acid in Wines. P. Carles points out that boric acid is present in many wines in notable proportions, and that it is found more frequently in white than in red wines. This is partly due to the fact that the clarifying agents generally employed, e.g., gelatin and isinglass, tend to putrefy unless an antiferment is present. For many years H_2SO_3 has been used for this purpose, but among its disadvantages it deprives red wines of their colour, and is readily detected by its odour. Another reason for the use of boric acid is the demand for sweet white wines, hence its addition in order to check fermentation at a certain stage in the process. It is, of course, open to question whether, from a hygienic point of view, the use of boric acid is permissible in articles intended for human consumption, on account of its antiseptic properties.—*Rép. de Pharm.*, vi., June 10, 1898, p. 256.

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The salts of mercury and copper are recommended by P. Carles to be placed in contact with the urine after asparagus has been eaten, in order to prevent the unpleasant smell that frequently prevents patients from partaking of this delicacy. The salts of lead and bismuth do not answer, and the simplest plan is to use a crystal of copper sulphate. Similarly the volatile oil of mustard is not produced in presence of these salts, and any that has already been formed is quickly destroyed.—*Rép. de Pharm.*, vi., June 10, 1898, p. 263.

Preparation of Chloroform Water. According to M. Mansier, a solution of chloroform, containing 0.8 Gm. per litre, placed in a stoppered flask two-thirds full, if maintained at a temperature of 12° to 14° C. without shaking, will be found, after a fortnight has elapsed, to contain only 0.4 Gm. of chloroform. If chloroform water of the same original strength be placed in a flask three times as large as is necessary and examined after it has been violently shaken several times it will be found to contain 0.6 Gm. of chloroform. Hence, the quantity of chloroform necessary to fully saturate air being known for all temperatures, it is easy to prepare a solution of definite strength and better keeping qualities. The proposed formula directs that 4.6 Gm. of chloroform, previously weighed in a small flask, be added to 900 Gm. of distilled water contained in a litre flask, and the whole agitated until globules of chloroform disappear. It is calculated that the air in the flask will be saturated by 0.1 Gm. of chloroform, leaving a solution containing 0.5 Gm. per 100 Gm. The product should be preserved in full vessels.—*Journ. de Pharm. et de Chim.*, xii., June 15, 1898, pp. 585-587.

Pimpinellin. Pimpinellin, the bitter principle from the root of *Pimpinella saxifraga*, has been isolated by G. Hent, in long colourless shining needles. It is insoluble in water, with difficulty dissolved in ether, and readily soluble in alcohol. With concentrated sulphuric acid it dissolves, giving a greenish colour; it melts at 106° C., and has an acrid burning taste.—*Chemik. Ztg.*, xxii., 144, after *Arch. Pharm.*, 236, 163.

Presence of Emulsin in Lichens. Liebig and Wöhler concluded that emulsin was peculiar to bitter almonds, but other investigators, among them Bourquelot and Gérard, have proved the presence of a ferment analogous to emulsin, not only in other members of the natural order Rosaceæ, but in *Aspergillus niger*, *Penicillium glaucum*, and many of the humbler types of plants. Bourquelot's conclusion that most fungi, especially those parasitic on trees, secrete a ferment which, like emulsin, is capable of hydrolysing glucosides, has led Hérissey to look for emulsin in lichens, since they are partly fungal in their nature. Up to the present he has found a ferment, capable of acting on amygdaline, in all fungi which he has examined, viz., *Usnea barbata*, *Physcia ciliaris*, *Parmelia caperata*, *Peltigera canina*, *Pertusaria amara*, *Cladonia pyxidata*, *Evernia furfuracea*, *Ramalina fastigiata*, and *R. fraxinea*. The process adopted in the detection of emulsin consisted in placing from 0.4 to 1.2 Gm. of the bruised lichen in contact with a solution of 0.2 Gm. amygdaline in 20 C.c. of water saturated with thymol. The mixture was placed in a tube, proved free from glucosides, in an oven at a temperature of 35° C. On the next and following days prussic acid was sought for and proved to be present by distilling a portion of the solution, and, on addition of water and the appropriate reagents, obtaining prussic acid. Glucose was detected by the use of Fehling's solution.—*Journ. de Pharm. et Chim.*, xii., June 15, 1898, pp. 577-580.

THE BARK OF *CLEISTANTHUS COLLINUS* AS A FISH POISON.

BY DAVID HOOPER, CALCUTTA.

In the *Indian Forester* for June, 1896, Mr. W. F. Biscoe drew attention to the economic uses of the *Kodarsi* tree in the Nizam's dominions. *Kodarsi* (Telugu and *Oduvan* (Tamil) are the vernacular names of the *Cleistanthus collinus*, Benth., which was formerly known as *Lebidieropsis orbicularis*, Mull-Arg. It was stated that the tree is largely used and has a valuable timber, which, in its pole stage, is considered as good as teak.

On the authority of Dr. Ainslie and Dr. Roxburgh, the fruit of this tree is reported to be exceedingly poisonous; one pagoda weight of the capsule in powder is believed to be sufficient to kill a man. The leaves and roots are also harmful, and the first is avoided by animals. The Chemical Examiner of Madras within the past twelve years has been in a position to confirm these reports, and has discovered the leaves and fruits of the tree being employed for criminal purposes in South Arcot, South Canara, Malabar, and other districts in the Presidency. Mr. Biscoe, in the extract above referred to, specifies the deleterious properties of the bark. He writes: "The bark must contain some poisonous property, for not only do white ants leave it severely alone, but it is used here for poisoning fish. The inner bark placed on the sores of sheep and goats is efficacious in healing them and in destroying maggots."

Wishing to examine the bark of *Cleistanthus*, with the object of detecting the active principle, Mr. Biscoe obligingly sent me a parcel of a few pounds of the freshly-dried bark, together with some of the capsules, for chemical analysis. The bark was in the form of thick, incurved pieces of a reddish-brown colour, with a dark brown exterior. The powder was of a light red colour, having an astringent taste, but destitute of any marked odour.

The amounts of moisture and mineral matter were estimated in a small sample of the powdered bark, and another portion was treated to the successive action of different solvents, which revealed the following approximate composition:—

Moisture	6.70
Fat, etc. (ether extract) .....	.78
Spirit Extract	32.42
Water Extract	7.86
Pectin, etc., by difference	2.45
Crude Fibre	42.44
Ash	7.35

Total..... 100.00

The fatty matter removed by ether possessed no peculiar reactions, and, as usual, was associated with chlorophyll. The spirit extract was of a fine red colour, and left a brittle residue when evaporated down to dryness; it consisted almost entirely of tannin. Duplicate estimations of the amount of tannin in the original bark gave an average of 33.3 per cent., a quantity much above that found in ordinary tanning barks. An examination of the various extracts revealed no distinct evidence of such principles as alkaloids or glucosides, and it seems conclusive that the activity of the bark resides in the astringent substance.

Those who have studied the subject of fish poisons will have noticed the wide range of vegetable products used in this connection. *Kakamari*, the berries of *Anamirta cocculus*; bark of *Walsura piscidia*; the fresh bark of various leguminous plants, as *Tephrosia*, *Derris*, *Mundulea*, *Erythrina*; the pungent flower-heads of *Spilanthes*; the fruits of species of *Randia*; and the barks of Euphorbiaceous trees of *Flueggia*, *Macaranga*, and *Securinega*. Some of the last-named are characterised as being rich in tannin.

Fish seem to be particularly sensitive to substances of an acrid, bitter, or astringent nature. Plants containing the soap-like principle, called saponin, are, without exception, fatal to fish life.

The toxicity of tannic acid or tannin does not seem to have been noticed by previous observers, but its occurrence in plants used for destroying fish in which more active principles are absent, leave grounds for supposing that this widely distributed plant constituent is harmful.

A few preliminary experiments have been made by mixing in pure water, containing live fish, a few grains of commercially pure tannic acid. The experiments have shown that the acid has a decidedly toxic action on small fish. From the movements of the fish it was evident that the acid was a most objectionable addition to the water, but whether the tannin itself killed them, or, by abstracting oxygen from the water indirectly produced suffocation, must be left to physiologists to decide.—*Indian Forester*.

A VISIT TO THE SPA WELLS NEAR BALLYNAHINCH,

THE MEDICINAL SPRINGS OF COUNTY DOWN.

BY L.P.S.I.

It might be difficult to find out, and perhaps not complimentary to inquire, how much the Continental watering-places—Baden-Baden, Fredrickshall, etc.—owe in popularity and renown to their intrinsic utility, and how much to custom and the great tendency of the *élite* of the earth to precipitate themselves at a fashionable resort, not so much to escape the "madding crowd," for society life is always awhirl, as to avoid the masses of the cities. Mark Twain, who is a pretty accurate guide as to what is genuine on the Continent and elsewhere, whilst he condemns the Turkish bath as an unmitigated fraud, mentions one spa favourably as removing a touch of rheumatism which troubled him. Let mineral springs possess what value they may, it is evident that in order to be attractive and popular, an expenditure of cash in accommodation and in making the spot easy of access would be needed first. The spa wells of Co. Down were the resort twenty years ago of crowds of Irish gentry, and up to ten years ago, though the visitors had largely decreased, these wells were still fairly popular. *Nous avons changé tout cela*, or at least somebody has done it. Ireland has all the necessary natural attractions for a touring country. The one drawback is the possibility of only reaching the island by a sea voyage of some hours. The proposed tunnel between this country and Scotland, which would cost five or six millions, is rather a high speculation for Mr. Ritchie to assist financially. The Ballynahinch Spa wells might only afford tourists who are accustomed to roam the earth for Alps and Niagaras rather a *bonne mouche* than a feast. It was with the intention of picking up a few particulars that I recently visited them.

The wells are two miles from Ballynahinch. The latter village (population 1500) is somewhat famous, and especially just now as the centenary of 1898 might suggest. It was here that 8000 farmers made a stand against a few thousand Royal troops in 1798. Near by, the tomb of Betsy Grey, who assisted the rebels, is still preserved. With the Spa as centre, and taking a radius of fifteen miles or so, one would enclose a fair collection of historical curiosities and ground. Newcastle with the recently erected Slieve Donard Hotel (cost £80,000), and the fine demesnes of Lord Annesley, and Downpatrick, with its ancient cathedral and the resting-place of the Patron Saint of Ireland. If any members of the British Pharmaceutical Conference visit Ballynahinch they will find the great profession represented by a single pharmacy. I am sorry to say that the architectural construction of the village without exception is humble. Nevertheless the village is a hive of industry, sewed muslin and the flax industry mainly.

There are two ways to the wells, one through Captain Ker's Demesne and the other by the public road which skirts the demesne.

I arrived at my destination in about forty minutes. A neat omnibus runs between the Spa and Ballynahinch to suit railway travellers. The fare is 6d. There is a Presbyterian church at the Spa; it is one of the first things you see.

After looking about this sleepy little village (I must confess the day was Sabbath) we discovered a boy, who informed us the way to the wells, which were about thirty yards from the church. They are situated in a little park, beautifully decorated with trees and flowers, the roses being in enormous quantities. (It should be remembered that a few miles from here is Newtonards, where the gardens of Dickson, the renowned Belfast florist, are.) The wells are two in number, and each is enclosed in a painted, slated, pyramidal shaped wooden house of its own. These were locked. We were informed that an old woman kept the key. So we went in search of her. We entered a neat, tidy garden and hence into a house, and here there appeared a clean, tidy old woman, arrayed in bonnet and white linen.

I said I was sorry for disturbing her on Sunday, but we were anxious to see the wells.

"Oh!" said she, with a great shake of her head, "A' keep the key. A'll go after you."

She opened the door to the iron spring and led the way in. A well-garnished room; in the middle stood a small pump. There were half-a-dozen tumblers in a little receptacle below the pump. There is a brass plate mounted, bearing the following inscription:—

ERECTED
By DAVID KER, Esq.
1810.

The name of the engraver appeared to be J. Brammath and Son, London, but it was somewhat dim. I took a glass of the water and a sample of it.

The old lady shook her head and asked what I wanted the sample for. "To analyse it," I said. "Oh, well," she rejoined, with her usual gesture, "hundreds have tried to analyse that water but they couldn't." I remarked "That that was very queer." "Queer or not queer," she replied, with a more vigorous gesture of the head, "they have tried it over and over again, and they can make nothing out of it. There is iron there and that's all, so you needn't bother trying to analyse it, for (here she shook her head again) it can't be analysed." I do not know what meaning she attached to the word; probably, however, she may have thought that the analysis of it would destroy its virtue. We proceeded to the other well—a similar state of affairs. We took a sample and copied an analysis pinned on the wall:—

BALLYNAHINCH SPA (LOWER WELL).

3.21 grains of residue (obtained by evaporation), contained, according to Sir Robert Kane's analysis—

Muriatic Acid	18
Sulphuric Acid	24
Soda	35
Protoxide of Iron	15
Lime	35
Carbonic Acid	39
Organic Matter	1.55
	3.21

Specific gravity equals 1.000539. The colour: Yellowish-brown, from the organic matter of turf held in solution.

There is a private hotel accommodating about thirty people, and, I was informed, it was kept busy. However, the mentor and guardian of the wells told me with many decisive nods of the head—"that it was going down"—referring generally to the district. There used to be a commodious bathroom attached to the wells. There was also a large ballroom, but it has fallen to ruins and is never used now. It appears that the present owner of the estate does not take the same interest in it as the previous landlord. The water, however, still retains its pristine purity and power.

I asked the old woman did she mind the time when it was in galore.

A series of mournful shakes of her head preceded her reply—

"Mind? A-think, A-mind, indeed, when my father was caretaker. The people used to swarm in here, and the ballroom was crowded. Ah! they were great times."

Ichabod seems to be written over the Spa and its belongings.

The well-houses are circular, having a diameter of eighteen feet.

There is an extract from a Belfast journal which, after describing, in effusive style a visit to the spa, concludes as follows:—

"A prettier place or one better calculated to make the delicate strong, the discontented cheerful, could scarcely be imagined than the neighbourhood of the Ballynahinch Spa." This was written some ten years ago by a young lady when everything was in good repair.

We went to the Puzzle Walks. They are very puzzling, round and round you go, and then you try to get back, and aim for your starting-point—you find yourself out of the road entirely. The "Walks" need repairs, and in some places the hedges meet each other and require clipping.

PHOTO-MICROGRAPHY.—IV.

BY EDMUND J. SPITTA, L.R.C.P. LOND., M.R.C.S. ENG., F.R.A.S.

(Continued from page 29.)

Before quitting the subject of lenses, I should like to mention, as perhaps the most suitable place for so doing, that it is very useful to have placed in the microscope tube, just above the objective, an auxiliary iris diaphragm. It has been called the Davies diaphragm. Its object in this position is to very slightly curtail the marginal rays of low power objectives, by doing which even with apochromatics a better definition—one full of greater contrast—is often obtained. Any reflections too from the side of the tube may be cut off by this means. It should be made truly central with the axis of the microscope and should be in no wise closed when using lenses of high aperture; for if such should be done—seeing that resolution entirely depends upon the numerical aperture of the lens, as already hinted—the wide-angled objective becomes a narrow-angled one and will cease to possess its separating power.

I have frequently used this term "numerical aperture," and hitherto have not had an opportunity of saying anything about it. The N. A. of a microscopical lens bears the same relation to its performance as the aperture of a telescope does to that instrument. Astronomers full well know that the larger the object glass becomes the greater the power the instrument possesses for separating close "double-stars." To put it another way, stars which with a small telescope appear as single are easily separated into "doubles" when sufficient aperture is employed. Increasing the aperture yet more, perhaps one of the "doubles" itself is found to consist of two, and it is no hidden fact that the higher the diameter of the telescopic objective the more "double stars" are found to exist. This is not the place to discourse upon the optical causes of this well-known fact; indeed, it would be foreign to an article on photo-micrography, but it serves to illustrate what N. A. really is to the microscopical objective. The higher it is the more you can see; and the less you have the more objects seem to blend themselves into a state of indivisibility. Opticians, therefore, have striven to obtain the highest degree of N. A. that they can give to each objective. The higher the power, the more easily is this obtained, and we regret that so many opticians understate the magnifying power of their lenses, so as to gain a repute for making wide-angle objectives. For example, it is easy to make a 1/12th of moderate N. A.,

and sell it for a 1/8th of high N. A. It is a fraud, but is often met with. With apochromatics manufactured by Zeiss, and Powell and Lealand, the foci given by the makers may always, without exception, be regarded as truthfully exact. The consequence of this is that the value in magnifying power of any objective is readily known, and this is of no small service in ascertaining how much the photo-micrographer has magnified his object; but to this I shall refer again when a suitable occasion arises. A practical point the photo-micrographer should bear in mind is to always obtain, speaking generally, as high an N. A. objective as he possibly can, for a 1/6th which magnifies 60 diameters with a low N. A. is not comparable in its powers of resolution to a 1/4th of high N. A., although it amplifies 20 diameters less. Magnification, therefore, is not so important—it can be got by camera-length or eye-piecing—as numerical aperture. I hope to illustrate this in due course by two pictures, one taken with a lens of low N. A., and the other with an objective of high angle, the magnification being the same in both cases. But from what has been said it would appear that low-angled objectives are of no use whatever. This is not the case. Seeing that although the depth of focus, which means the power possessed by the objective of viewing simultaneously several planes of focus, varies inversely as the square of the power, still it also varies as the reciprocal of the N. A.; so that the less the N. A. the more depth of focus is obtainable.

Depth of focus used to be thought to be a distinct property peculiar to the best objectives but now that the philosophy of microscopical optics is better understood, it is recognised not to have a separate existence of its own devoid of explanation, for it is known to directly follow as the result of lowering the N. A. As therefore the highest resolving power rests with lenses of the highest N. A., so the converse equally holds true that the less the aperture the less the objective can resolve, but the greater is its depth of focus. It would seem now still more than ever apparent that the day for low-angled objectives is gone, but we again repeat this is not quite the case, for when it is desirable to take in at a glance the entirety of the dimensions of an object, its height, depth, and width, and the place it occupies amidst others that surround it, we may find it far more enlightening to use a low-angled objective with plenty of depth of focus. It is better, we may find, to sacrifice the ideal in definition so as to obtain a more realistic picture—one of greater utility and instruction, seeing it would enable the eye of the observer at a glance to perceive the perspective and realise the general relations of the part to the whole than would be obtained in the case of the mental image only derived by differentially focussing first one plane and then another, as must be done with a high-angled objective.

This is true so far as vision is concerned, but when wishing to photograph what we see, the effect of a low N. A. and depth of focus may be even more apparent, for when visually we inspect an object in the microscope another factor enters into the problem, to which at present I have only referred—the accommodation of the eye itself. According to Professor Abbe, it assists very largely the performance of all objectives so far as relates to their depth of focus, but when taking a photograph there is no eye to assist, hence what appears well in focus to the observer may not be so in the negative, for no amount of dexterity will give to the plate that part of the depth focus which is due to the eye. Consequently objectives of low aperture may be even of more use to the photo-micrographer than to the visual observer.

Each type, then, of lens has its duty to fulfil. But if the reader is limited to the purchase of one kind only, I again state my conviction that the high-angled lens is that to be selected.

Shutting the iris diaphragm below the condenser is known to practically reduce the N. A. of the objective being employed, hence the question has been asked, If this is true, why buy low-angled lenses at all? It is because the image produced by closing the iris is not equal in truth or efficiency, owing to diffraction phenomena, to that given by a low-angled objective made as such.

Owing to apochromatics performing so well with any eye-piecing, anyhow, up to 27, or even more under certain conditions, this type of lens is not made of very low angle, for one which does not possess a great N. A. can be eye-pieced to give the required magnification, and so the depth of focus resulting from the low N. A. can be obtained.

Seeing that numerical aperture is of such importance, it must now be pointed out to the reader how he can learn to ascertain this for himself in any given lens before he purchases it.

There are two methods for dry objectives, but only one for homogeneous ones.

The first, applying to both types of lenses, is by using a special apparatus devised for the purpose by Professor Abbe, called the apertometer (Fig. 3). This consists of a piece of thick glass about 3 inches in diameter, half an inch thick. The part where the glass becomes segmental is bevelled from above downwards to an angle of about 45°. Near the centre (marked a) is a small disc of silvered glass with a tiny hole in its centre, where the silvering is removed. Two plates of metal, which can be shifted around the outer edge of the glass shown at b b are square one side and pointed on the other (see b in the side view). To use this apparatus, the glass is placed with the graduated surface uppermost upon the stage of the

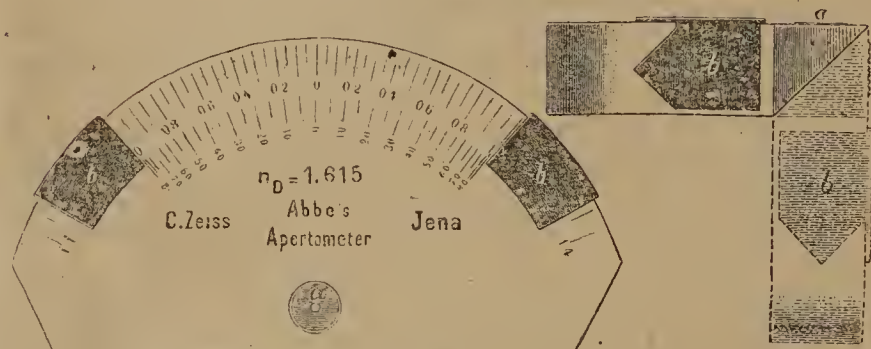


FIG. 3.

microscope (fixed vertically) in such a manner that the circular portion is forwards and the chord or bevelled piece backwards, towards the stem of the instrument. The edges of the little hole are now focussed with the objective to be measured, an eye-piece being used, and the length of the draw tube the same as when the objective is ordinarily in use. The two indices, as b b are called, are then placed on the edge of the glass as shown in the plate, but close to the middle of the semi-circle. Their sharp points should lie along the vertical edge of the disc, and their flat sides upon its upper graduated surface. It is best to direct the points away from each other to the outer side, if the power to be examined is comparatively high (N. A. above 0.6 or 0.7), but towards each other to the inner side if a low objective is employed.

With each instrument an auxiliary objective is supplied which screws, or must be made to screw, into the end of the draw tube, after which both are returned to the microscope, with the auxiliary lens passing down the main tube. The same eye-piece is then placed in the draw tube as before, and the auxiliary microscope then obtained is focussed to the image of the indices by sliding the draw tube in the main tube. Care must be taken both in pulling out and pushing in the draw tube not to alter the adjustment of

the objective under examination by accidentally shifting the main tube.

The indices are now adjusted, taking care they lie close to the glass plate until their sharp points just touch the periphery of the luminous circle seen on looking down the eye-piece. Their position found, the readings of the upper edges, which lie in the same vertical plane as the points, are read from one of the two scales on the plate. The half of the sum of the two readings on the outermost scale—that nearest the edge—will give the measured value of the N. A. of the objective under examination. Likewise the sum of the two readings on the inner scale will give the value of the angular aperture in air.

The illumination must be shifted from right to left or up and down, so that the light falls horizontally upon the edge of the glass.

Special instructions are given with each instrument, but lengthy as the description must necessarily appear, the apparatus is not difficult to use, the only fault is its expense. Still it is the only plan with immersion objectives.

With dry powers, however, a simpler plan of obtaining the approximate N. A. may be employed, and as it is not to be found in any text-book that I am aware of, I will describe it in as few words as possible.

Lay upon the table two pieces of white paper, using a black background, with their straight inner edges parallel to one another, and a definite distance (say 20 centimetres for lenses of N. A. over 0.50, less for low-angled ones) apart, then hold a rule vertically upon the table about midway between the two pieces of paper. Next hold the objective to be tested vertically against the rule and look down at the back lens. Images of the two pieces of paper will be seen there; now slide the objective downwards along the edge of the rule, always watching these images. They will separate farther and farther apart until at last a point is reached where only a slight bluish flicker remains visible on either side in the extreme margin of the lens, which, of course, indicates that the inner edges of the pieces of paper are in the direction of the most oblique rays which the objective is capable of receiving, or that the angle enclosed between these directions, which directions intersect in the principal focus of the objective, is the angle of aperture. To determine this angle, read off the distance from the table to the front of the objective, and subtract the working distance of the lens, so as to get the distance from table to focus. Then this distance divided by half the distance between the two pieces of paper is the cotangent of the semi-angle of aperture; the latter may, therefore, be obtained from a table of trigonometrical ratios, and the sine of the same angle is the N. A. of the objective.

Example:—

Distance between the two pieces of paper, 20 Mm.

Distance of front lens of objective from paper, 33.0 Mm.

Working distance of objective, 0.2 Mm.

$$\therefore \frac{33.0 - 0.2}{20/2} = \frac{32.8}{100} = 0.328$$

0.328 = cotan, of angle 71° 49', as we find from the trigonometrical tables, the sine of which = 0.95 = N. A.

With great care this method will give results accurate to one or two units of the second decimal. In looking at the back of the objective the eye should be at a distance about equal to the tube length for which the objective is designed, but the error caused by even considerable deviations from this theoretically required distance is very small.

THE SIGNIFICANCE OF OXY-METHYL-ANTHRAQUINONE IN SOME ORGANIC CATHARTICS.

Borntraeger's test for aloes, or the aloetin reaction, consists, as is well known, in obtaining a red coloration when the benzene or ether extract is shaken with ammonia. Other substances, however, such as rhubarb, turmeric, catechu, gall nuts are said to give a very similar reaction. Dr. A. Tschirch, in conjunction with G. Pedersen, finds that the substance which gives Borntraeger's reaction in aloes is an emodin, that is to say, tri-oxy-methyl-anthraquinone, of the formula $C_{15}H_{10}O_5$. Emodin can be readily obtained from aloes by extracting Barbados aloes with alcohol, precipitating the resin with water, then neutralising and separating the aloin by crystallisation, and finally extracting emodin from the filtrate with benzol or ether. The emodin is obtained from the benzol or ether residue by crystallisation from boiling alcohol in the form of orange-red needles. "Aloe-emodin" melts at 216° C., and not at 250°, as is usually given for emodin. Emodin can be obtained from Cape aloes in the same manner. Borntraeger's reaction is given by Barbados, Curaçoa, Arabica, and Cape aloes, but less so by *Socotra lucida*, slightly by Zanzibar and Mocha, but not at all by Natal aloes. This last point is interesting, as only the kinds of aloes which contain barbaloin (or socaloin) produce emodin, and those that contain nataloin are without emodin. As emodin is somewhat soluble in water, Borntraeger's test can be better carried out by boiling the substance with water and shaking the filtrate with benzene, and the benzene with a 5 per cent. ammonia solution. By this test it was found that all commercial samples of barbaloin contain emodin, although it is simple enough to remove the latter by treatment with anhydrous ether, which does not dissolve barbaloin. It is found, however, that it is not emodin only that gives Borntraeger's reaction, which is characteristic of a limited group of bodies. It is obtained with chrysophanic acid, morindon, aloexanthin, as well as with emodin, for these bodies are in simple relation to one another, being, in fact, oxy-methyl-anthraquinones. Chrysophanic acid is di-oxy-methyl-anthraquinone; emodin is tri-oxy-methyl-anthraquinone; morindon, its isomer, and aloexanthin is tetra-oxy-anthraquinone. Not only with these bodies, but also with bodies which are convertible into them by oxidation or otherwise, such as frangulin and chrysarobin, hence Borntraeger's reaction can be more correctly described as the oxy-methyl-anthraquinone reaction. It is as much a group reaction as the tannin reaction with iron salts. The examination of several kinds of drugs, such as Barb. Socot. Zanz. aloes, rhiz. rhei, rad. lapathi, cort. frangulæ, cascara sagradæ, rhamni cathartici, fol. sennæ, the wood and bark of *Morinda citrifolia*, by the modified test as above described, showed that the pronounced cathartics gave the reaction, whilst it could not be obtained with the water extract of such drugs as turmeric, catechu, tamarind, jalap, kamala, rhiz. podophylli and many other drugs, which are partly cathartic and partly colouring agents.

In fact, Borntraeger's reaction becomes of typical importance as showing the presence in drugs of the oxy-methyl-anthraquinone group of bodies, of which emodin is the most important. The relation between barbaloin and oxy-methyl-anthraquinone is shown by the conversion of barbaloin into emodin, which is, as stated, a tri-oxy-methyl-anthraquinone, by the action of air in an alkaline solution, thus:—



It is considered, therefore, that in this group of cathartics it is an oxy-methyl-anthraquinone—chrysophanic acid and emodin—which exerts the cathartic action. This view might be regarded as paradoxical, since Barbados aloes contain only 0.2 per cent. emodin

against 12 per cent. of barbaloin, but, as it has been shown that this group contains substances that are convertible into an oxy-methyl-anthraquinone, either by oxidation or by hydrolysis, a similar action no doubt takes place in the intestines. In fact, nataloin, which is not capable of yielding an oxy-methyl-anthraquinone, has no cathartic action. As alkalies assist the oxidation of aloin to emodin, so the aloe group of cathartics should be administered with an alkali.—*Ber. Deut. Pharm. Ges.*, 1898, 174.

PARLIAMENTARY NOTES.

THE SHAPE OF MEDICINE STAMPS was referred to in the House of Commons last week, when Mr. Mildmay asked whether the Postmaster-General would consider the advisability of giving orders that the 1½d. medicine stamp should be issued perforated and gummed instead of as at present.—Mr. Hanbury: The question has more than once been considered by the Board of Inland Revenue, but they find that there is great objection to stamps of a long narrow shape, such as the medicine stamp, being perforated, as they cannot be separated except slowly and with great care without being torn. So far as the Board are aware, those who use these stamps on any large scale prefer to cut and gum them for themselves; and in these circumstances the Board do not see their way to adopt the hon. member's suggestion.

THE LATTER DAYS of the present session will remain on record as the most memorable, from a pharmaceutical point of view, since the passing of the Pharmacy Act thirty years ago. It was something for registered men to learn that they could stop a Government Poisons Bill, and if the session had demonstrated nothing else, this revelation of political potentiality would have raised it to red-letter rank. Since the closing of that incident, however, events of striking importance have followed one another in rapid sequence. In our last issue we reported the words uttered by the Lord Chancellor and the ex-Lord Chancellor in Committee of the House of Lords with reference to one of the defects of the Pharmacy Acts, and one began to fancy that the faint streaks of the dawn of the pharmaceutical millennium were upon the horizon; but after we had gone to press, and the proposals of Lord Halsbury had been moulded into the amendment, which we print on page 89, it was perceived how vast a difference exists between expressed desire and actual performance. The bread which the noble law lords had led the calling to expect turned out to be the hardest of stones. In fact, the proposed salvation from the effects of one mistake in the 1868 Act was nothing more than an extension of another mistake—the Widow's Clause, or, to speak more correctly, Clause XVI. Such an addition to the non-contentious Pharmacy Bill was not likely to meet the approval of the promoters of the Bill, and representations were made which had the effect of postponing the third reading of the measure from Monday till Thursday.

MEANTIME the "companies" have become dreadfully alarmed, and prominent unqualified directors of these fungus concerns have spent a feverish time in flooding noble legislators with telegraphic appeals, and in soliciting public sympathy through the medium of the halfpenny press. "Vested interests" is their battle cry, but it is doubtful if any amount of shrieking will lead the Lord Chancellor to lose sight of the more legitimate vested interests created by the Pharmacy Acts, and which are based upon the technical training and scientific education of individuals. His Lordship may, however, be led to think that under the circumstances it is not quite justifiable to load the present purely domestic Pharmacy Bill with such a heavy tail of contention. The question of the abuse of company incorporation is much too vast and too important to be dealt with in a Lords' amendment. It merits a Bill to itself, and that Bill should be a Government Bill drafted after consultation with the Pharmaceutical Societies of Great Britain and Ireland.

MEDICINE has tried to imitate Law in asking for public aid in carrying out public duties. It may be remembered that last session the Incorporated Law Society was fortunate enough to secure Parliamentary sanction for a grant towards defraying the expense incurred by the Society in keeping the rolls free of black sheep. Dr. Farquharson tried on Tuesday to obtain an appli-

cation of the same principle to the General Medical Council's work of purification. The genial doctor asked that a grant of £5000 (the sum allotted to the Law Society) might be put into the coffers of the Medical Council to enable it to prosecute irregular medical practitioners. But the attempt failed. In the first place the two societies are not on all fours, so the Chancellor of the Exchequer explained, for the Law Society does not receive the penalties and costs resulting from the prosecution of offenders, whereas no such altruism is apparent in medical prosecutions. In the second place the Law Society is not assisted to the tune of £5000, but to only half that extent. Could Pharmacy succeed where Medicine failed? It is tolerably certain that the Pharmaceutical Council would willingly forego the amounts recovered under the Pharmacy Acts—especially in Scotland—for the privilege of having £2500 a year to expend in making the law relating to the sale of poisons more respected.

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE FOOD AND DRUGS ACT.

DEFICIENT LIME WATER.

At the Thames Police Court, on Tuesday, Charles Willmer chemist, of 31, Bow Common Lane, appeared to answer a summons, taken out at the instance of Mr. Joseph Anthony, Inspector under the Sale of Food and Drugs Act for the Poplar District Board or Works.—Mr. Young prosecuted, and Mr. Beck, who defended, pleaded guilty. His client sold the lime water as it was received, Lime water was an article extremely likely to undergo chemical changes, and every time the stopper was taken out carbonic acid was admitted; consequently the chemical change went on.—Mr. Mead imposed a penalty of 20s. and £2 2s. costs.

IMPURE PRECIPITATED SULPHUR.

At the Kensington Petty Sessions on Tuesday, the proprietors of Parke's Drug Stores, Ltd., were summoned by the Kensington Vestry, under Section 6, Sale of Food and Drugs Act, 1875, for selling precipitated sulphur containing 44.5 per cent. of non-volatilisable mineral matter consisting of sulphate of lime. Mr. W. J. Stephens appeared on behalf of the Vestry, and the manager at the Kensington branch of Parke's Drug Stores for the defendants.

Mrs. Florence Williams stated that on June 21 last she was instructed by Inspector Ellenden to make a purchase at the local branch of Parke's Drug Stores, 151, High Street, Kensington. She asked for 2 ozs. of precipitated sulphur, and was handed a small packet, for which she paid 2½d. There was no label on the packet, and nothing was said to her by the assistant who served her as to the nature of the article. She afterwards handed the packet to the inspector, who came into the shop.

Inspector Ellenden stated that he received the sample from the last witness, and after explaining that the article had been purchased for analysis by the public analyst, divided it in the usual way. He drew the assistant's attention to the fact that the packet was not labelled, and the assistant asked to be allowed to affix a label. Witness, however, intimated that he could not comply with the request. He now produced the analyst's certificate.

Mr. Stephens intimated to the Bench that the Vestry had never had a conviction against the present defendants, but had found it necessary about two years ago to caution them regarding the sale of mercury ointment.

Defendant's manager admitted that the article, as described, had been supplied, but maintained that it was entirely an accident that the article asked for was not served. In view of the new rules connected with the British Pharmacopœia, which, however, would not come into force for about three months (*sic*), orders had been given at the Stores that all the milk of sulphur—the article in question—which was sold should be put away, and not served to a customer.

Dr. Forman (magistrate) asked whether the milk of sulphur was not an article of commerce.

Witness replied that such was the case, but that it is not scheduled in the Pharmacopœia.

Dr. Forman said that precipitated sulphur, whether in the Pharmacopœia or not, should be sulphur which, when sublimed, would leave no residue.

Witness replied that he was anxious for it to be understood that it was quite an accident that the milk of sulphur was given instead of the precipitate.

Mr. Stephens remarked that the certificate of the public analyst reported the article in question to be not in accordance with the regulations of the British Pharmacopœia.

Dr. Forman: My contention is that, whether the article was in accordance with the Pharmacopœia or not, it was not what the customer asked for.

Mr. Stephens: That is just our contention, sir.

Mr. W. Bird (Magistrate): This, we consider, is a very serious case. It is absolutely necessary that the public, on going to a chemist's shop, or a place where drugs are sold, should get what they ask for, and that they should get pure drugs when they want them. As I said, this is, we consider, a serious case, and the defendants will therefore be fined £3 and costs.

ELEMENTARY EDUCATION IN GERMANY

The Germans attach much importance to compulsory education from the earliest youth, but as regards children of the working classes, in view of the small number of teachers, in proportion to those who have to be taught, the chief advantage gained is giving the latter regular habits and keeping them out of mischief, especially as under military principles a control is exercised by the schoolmasters and mistresses not only in but out of school. Consul Mulvany, of Düsseldorf, says that it is only natural that such a forced system should not be very highly valued by the recipients, and that only a few of the more intelligent children derive much material benefit, but it affords an opportunity to the authorities of testing the quality of brain with a view of development to higher posts in the interests of the pupils and of the State. The education of children is absolutely compulsory from the age of six to fourteen; only in exceptional cases where the child is considered to be sufficiently advanced and is required at home is there a departure from this rule. All elementary schools are free of fees; in small villages there are eight different divisions, though the children may be possibly taught in one room by one and the same master, whereas in towns it is found sometimes necessary to subdivide the division, thereby forming sixteen different classes. There are no examinations. These schools are supported partly by the State, partly by the community, in most cases the State paying about half the cost; as to proportion very much depends upon the tax-paying powers of the community; as a general rule there is no special school tax. In religious education the children are separated according to confession; all must attend Bible history classes; the appointment of schoolmasters is determined in accordance with the preponderance of the Roman Catholic or Protestant religion. There are special seminaries where teachers of both sexes are qualified for higher grades of education; the community appoints the teachers subject to the sanction of the State. Children between six and fourteen years of age can only receive education from duly qualified teachers; no one is allowed to teach at either private or public schools without having passed a specified examination. If parents, no matter what their social rank may be, neglect to have their children taught during the age from six to fourteen by a qualified teacher they are compelled to send them to the public elementary school. All higher schools levy fees. Private schools can only be established under sanction of the State. All schools are subject to the supervision of Government inspectors, whose duty it also is to see that children of men of high rank, even when educated in their parents' house by private tutors or governesses, receive that education from thoroughly qualified persons. Consul Mulvany quotes a case in point, where the inspector insisted upon examining the tutor and the pupil, a boy of some six or seven years of age, as to proficiency. The elementary or preliminary period of education being completed, that is, in the working classes, the boys and girls apprenticed to qualified masters in any trade or business, the same have to attend the evening classes of technical *Fortbildungsschulen*, which now are compulsory; all branches of trade and industry are represented, and even in the higher classes this further education is brought within such easy reach of all that an important groundwork is formed to which in a great measure may be attributed the great strides made in industrial and commercial development. The higher class schools for general

education are *Real Schulen*, where chiefly modern languages and mathematics are taught to lads who are intended for technical and commercial life; and the *Gymnasium* where classics and that class of education is given to prepare for higher professions, such as the Church, the Army, Navy, and the Bar; these are State institutions, being public day schools. Very few boarding schools exist in the country, and they belong to private individuals. The fees of the public schools are extremely moderate, so that they are open to all comers who can pass the necessary school examination. On the school bench no distinction is made between the highest members of the aristocracy and the sons of even the lower middle-classes, so that the man of title later in life buys his shoes and stockings from a school companion who may have passed a better examination than he, and this in a country where the distinction of class is much more marked than in England. There is still a higher class of technical schools or colleges where students take diplomas for professions, for instance, in agriculture, forestry, viticulture, engineering in all its branches, and all of course under State supervision.—*Journal of the Society of Arts.*

BRITISH PHARMACEUTICAL CONFERENCE.

BELFAST MEETING, 1898.

LIST OF PAPERS TO BE READ.

1. "Albumin and Some Types of Proteid Digestion," by Gordon Sharpe, M.D. Edin.
2. "Gluten Flower and Its Analysis," by D. V. Fielden, L.P.S.I.
3. "Materia Medica Animals," by J. C. McWalter, L.R.C.S.I., etc.
4. "Salient Features of the Irish Flora," by G. C. Druce, M.A., F.L.S.
5. "Kiesulguhr," by John Moss, F.I.C., F.C.S.
6. "The Amount of Carbonic Anhydride Available in the Official Granular Effervescent Preparation," by C. S. Dyer, A.P.S.
7. Note on Eucalyptus Oil," by E. J. Parry, B.Sc., F.I.C.
8. "Notes on Concentrated Oil of Lemon," by T. H. W. Idris, F.C.S.
9. "Note on Extract of Ginger," by T. H. W. Idris, F.C.S.
10. "A Quick Polarimetric Method for the Estimation of Strophanthin in the B.P. Tincture and Extract," by Edward Dowzard, F.C.S.
11. "The Characters and Methods of Estimation of the Official Hypophosphites," by H. A. D. Jowett, D.Sc.
12. "Note on the Mydriatic Alkaloids," by H. A. D. Jowett, D.Sc.
13. "Pharmacists and the Pharmacopœia," by P. MacEwan, Ph.C., F.C.S.
14. "Galenic Pharmacy of the 1898 Pharmacopœia," by F. C. J. Bird.
15. "The Nomenclature of Certain Drugs of the Pharmacopœia," by G. C. Druce, M.A., F.L.S.
16. "The Chemistry of the Pharmacopœia," by P. Kelly.
17. "The Galenicals of the Pharmacopœia from a Wholesaler's Point of View," by H. Wippell Gadd.
18. "Notes on Estimation of Ferrum Redactum," by E. Saville Peck, B.A.
19. "The Pharmacopœia Chemically Considered," by A. L. Doran, L.P.S.I.
20. A Paper by J. C. Umney, F.C.S.
21. A Paper by W. A. H. Naylor and John J. Bryant.

Note.—The Hon. Secretary, Mr. W. A. H. Naylor, 38, Southwark Street, London, S.E., requests that all manuscripts of papers may be sent to him without delay, in order that the papers may be formally approved for presentation to the Conference and put in type. Proofs will then be supplied for the authors to correct and read from at Belfast.

THE PHARMACEUTICAL SOCIETY AND ITS PRESIDENTS.

HENRY SUGDEN EVANS.—1869-70.

AT the close of Sandford's six years' occupancy of the presidential chair, the then Vice-President, Henry Sugden Evans, was elected as his successor. As it happened, he was the first President of the Society chosen from the younger generation of examined pharmaceutical chemists. Born in 1830, and educated at Merchant Taylors' School, he was for some time connected with the well-known Liverpool firm, whose interests he afterwards represented in Canada. He was an active member of the Liverpool Chemists' Association from 1849 onward, and to that body, as well as to the British Pharmaceutical Conference, he communicated several scientific papers.

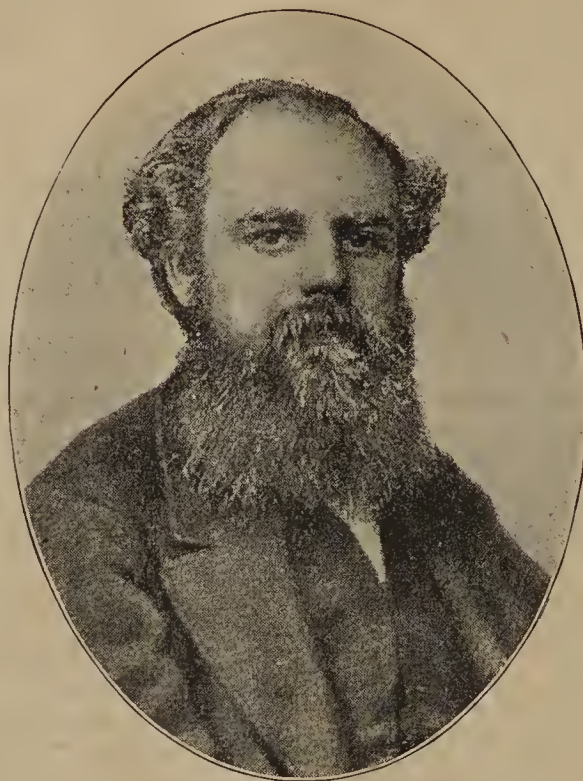
During the year 1869-70 the social and financial advancement of the Pharmaceutical Society was very marked, a large number of those who became registered as chemists and druggists under the Act of 1868 having joined as members. An even more promising feature was the great addition to the lists of registered apprentices and associates, whilst the Society's laboratory and lecture-hall were crowded. Nearly a hundred students entered for each of the courses of lectures, and the provision of increased laboratory accommodation was rendered an imperative necessity.

Already certain imperfections had been detected in the new Act, and a short amending Act had been passed with the object of removing a certain disability of medical men. The Council had also been busily engaged in considering an extension of the schedule of poisons, in drafting proposed regulations for the keeping and storing of poisons, and in preparing a Register of chemists and druggists. Speaking at the annual meeting on May 18, 1870, the President took an extremely, and what many would now consider an unduly, optimistic view of the position of affairs. Thus, he referred to the completeness with which the objects of the founders of the Society had been carried out, and continued: "We are now a united body. The whole of the Chemists and Druggists of Great Britain are united into one band; a system of pharmaceutical education has been perfected; the necessity for education has been legally recognised, and within the custody of this Society is the regulation and test of pharmaceutical education."

A battle royal was fought at this annual meeting over the President's motion that the Society should adopt the regulations as to the keeping, dispensing, and selling of poisons, drawn up by the Council. Mr. Evans urged that the necessity for such regulations had thoroughly imbued the House of Commons at the time the Pharmacy Act of 1868 was passed, and that—since the Council, as the result of a *quasi* compromise, had virtually undertaken to carry out the known intention of the Government and Parliament

in the matter of poisons—it was the duty of the Society to do that which Parliament had determined was necessary. He thought that failure to adopt any regulations would be construed by the Government as a deliberate rejection of the first principles upon which the Act was granted, and that the defect might subsequently be made good by the summary adoption by Parliament of regulations which would prove far more irksome than these which most acknowledged to be practical, while rejecting them because of imagined coercion. But the Society as represented at the meeting, apart from the Council, would have nothing to do with compulsory regulations, and the utmost concession that the Council could obtain in the matter was to secure that the consideration of the question should be referred to the incoming Council, which was to report to the next annual meeting.

Another important matter that cropped up on the same occasion was the question of co-operative trading, and the President was openly called upon by one insistent member to resign from the Society because a report was prevalent that he was very deeply implicated in the supply of drugs to certain stores. This was the first occasion upon which the stores difficulty was publicly referred to, and looking back upon the proceedings after the lapse of twenty-eight years, it is not difficult to imagine that the member who raised the question had a prophetic feeling of the trouble it was destined to bring upon the craft. A third point of interest at the same meeting was the proposition by the late G. F. Schacht that the members should urge upon the new Council the desirability of framing some scheme by which the resources of the Society available for educational purposes might be distributed generally over the country, rather than concentrated upon one



H. SUGDEN EVANS.

particular school. The proposition met with a large measure of support, the President remarking that the strongest argument in its favour was to be found in the fact that more than two-thirds of the young men who had recently passed the qualifying examination had received their education entirely in the provinces. Ultimately the motion was unanimously agreed to in the following modified form: "That this meeting is of opinion the means hitherto adopted by the Society to supply the educational wants of its members are no longer adequate to the necessities of the times; and it respectfully urges upon the new Council the desirability of considering some scheme by which the resources available for such purposes may be more generally distributed."

Throughout his career Mr. Evans was an earnest worker in various departments of science, especially in microscopy, in which he had obtained great proficiency. In his official capacity he attended the Second International Congress, held in Vienna, being the first official representative of the Society to attend a foreign gathering

of pharmacists. On retiring in 1884 from his business engagements at Montreal, he was appointed by the Dominion Government as Chief Public Analyst of Canada. He died February, 1886, in the fifty-fifth year of his age.

ADOLPHUS F. HASELDEN.—1871-73.

Mr. Sandford was again elected President for a brief space in 1870, but resigned from that position in April, 1871, consequent on the decision of the Council to present the proposed poison regulations to the next annual meeting with such alterations as would divest them of a compulsory character. At the Council meeting in May, therefore, the chair was taken by the Vice-President, Mr. Adolphus F. Haselden, who was immediately afterwards elected President. He was a pharmacist who rendered valuable assistance in his time, and was always a consistent supporter of the Society's operations. For many years he served on the Council, having been first chosen in 1859 to fill the vacancy caused by the death of Mr. Jacob Bell. As already mentioned, on the resignation of Mr. Sandford in 1871, he became President, which office he held until his retirement from the Council in 1873. Mr. Haselden was a frequent contributor to the *Pharmaceutical Journal*, now become a weekly publication, his papers bearing on practical subjects and matters of interest to the general community. In these numerous literary efforts he displayed much skill, investing his remarks with a certain play of fancy which rendered them acceptable; amongst them he endeavoured to solve the vexed question, "Are we progressing?" His uncompromising allegiance to the Society must not be unnoticed. Mr. Haselden justly prided himself on being a good Latin scholar, and in consequence of his classical attainments his services were in request in the Preliminary and such Council examinations as required this branch of knowledge.

At the annual meeting held a few days after Mr. Haselden's first election as President, the vexed question of the poison regulations was finally disposed of. After reading a threatening letter from the medical officer to the Privy Council, in which it was stated that the Privy Council thought it right to apprise the Pharmaceutical Council that, should no such regulations be submitted for approval after the annual meeting, the Privy Council would feel it to be its duty to endeavour to protect the public by proposing to Parliament further legislation, the President proposed that the draft regulations should be accepted for voluntary adoption, and that they should not be made compulsory. After a protracted and somewhat heated discussion it was decided to leave the question of poison regulations in the hands of the Council to deal with as it saw fit, and the fate of the regulations was thus decided.

Co-operative trading and proposed grants to provincial associations were the most exciting topics discussed on the second occasion that Mr. Haselden presided over an annual meeting of the Society, whilst the abrogation and alteration of some of the Society's bye-laws lent a passing interest to the proceedings at the close of another year. Otherwise the times were fairly quiet,

and the Society progressed slowly, carrying out its programme in a comparatively uneventful manner

Notice of Mr. Haselden's death was received on the very morning the Council was sitting, Wednesday, February 4, 1880. Several of those present testified most feelingly to his worth. The general opinion expressed was regret for the loss of a faithful Councillor and highly educated man.

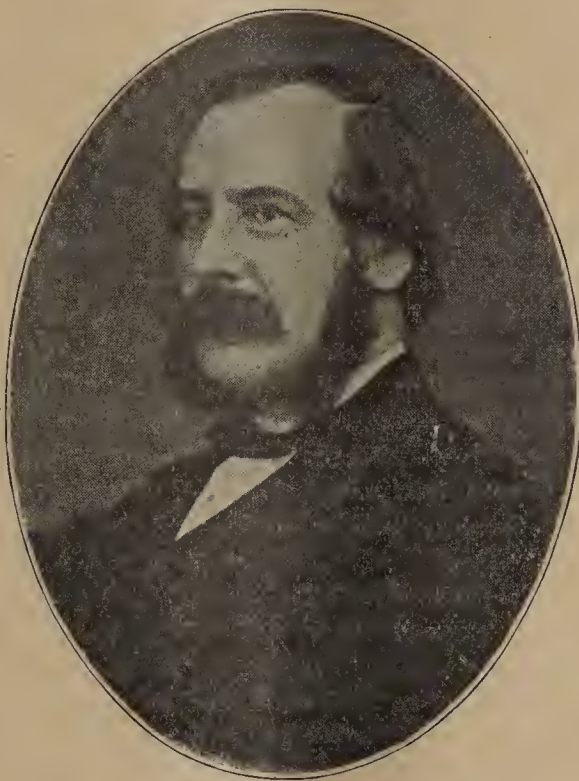
THOMAS HYDE HILLS.—1873-76.

The house of John Bell and Co. was again called upon to furnish a head for the Pharmaceutical Society on Mr. Haselden's retirement. Mr. Thomas Hyde Hills was born May 27, 1815, and during the last ten years of his life he was comparatively unknown to the younger generation. For years, however, both in his official and private capacity, he faithfully pursued the course marked out by Jacob Bell, to whom in a double sense he had succeeded. He fulfilled his various public engagements with untiring assiduity, while he cultivated social amenities as part of the duties of his position. His presence at all pharmaceutical functions was invariable. Born at Maidstone, he was apprenticed for seven years at Brighton to Mr. Thorby, who himself came from the house in Oxford Street. Migrating to London to try his fortune in the metropolis he wandered up and down in search of a situation and found none, till finally he obtained a place as temporary assistant with John Bell. We have it from his own recital that it was at the express intervention of Jacob Bell that he was ultimately engaged as a regular assistant, having been beforehand twice refused. The two young men were thrown together as juniors, and thus a friendship was created which was only severed by death. Mr. Hills said, "I did all in my power to make myself useful to the firm, and, as far as might be, indispensable; but for that even my friend could not have carried his point."

So it happened that Mr. Hills became superintendent, and subsequently the head of a great establishment, with his name perpetuated in Hills Place, a

standing topographical memorial. John Bell died in 1849; Frederick John Bell, the younger son, had left; Mr. Hills then was admitted as a partner, and on the death of Mr. Jacob Bell, that gentleman bequeathed his share of the business to the companion of his youth. Mr. Hills was the first associate of the Society, but cannot be included among the Founders. He was elected to the Council in 1860, on which he served more than twenty years. He was Vice-President from 1863 to 1868; then Treasurer in the room of Daniel Bell Hanbury until 1873; and finally President until 1876. Thus a young associate rose to the place of highest honour, an example which may stimulate and encourage others.

We come now to a distinct phase of character; no one, not Jacob Bell himself, so wisely made the hospitalities of private life subservient to the direct advance of pharmacy. Whenever a conference was desired, political, medical, or scientific; whenever difficulties arising from misunderstanding or imperfect knowledge had to be smoothed away, his house was laid at the disposal of the



A. F. HASELDEN.

interested parties. The social element is a great power; no one used it with less ostentation and more beneficial influence than Thomas Hyde Hills. Blessed with a frank and kindly disposition, there was in him an utter absence of jealousy with regard to men who were successful and came to the front in the pharmaceutical or scientific world. With impulsive generosity he befriended young men at the outset of their career.

It will hardly be necessary to mention his liberality to the winners of the Pharmaceutical Society's medals, by a gift of books, the annual presentation of which preserves his memory. The Jacob Bell Memorial Scholarships and the British Pharmaceutical Conference were similarly endowed. He bequeathed a legacy of £1000 for the purpose of assisting or purchasing the election of orphans of members and associates of the Society who had been subscribing members to the Benevolent Fund for three years and upwards, to orphan schools or asylums. The friendship between Mr. Bell and Sir Edwin Landseer was continued by Mr. Hills, who in turn became the great artist's confidential adviser, companion, and financial agent. Time was when Mr. Hills was surrounded by men who were, or who became, famous in their several departments. The personal record of his life is the history of the rise of pharmacy. We can never form a really just estimate of the times by which we are immediately surrounded—men and events are too near for us to judge correctly. The past in an especial way is ours, and we may say with impartiality that the period which has just been sketched may live in the grateful recollection of the pharmacist of the present day. Mr. Hills died November 19, 1891.

During Mr. Hills' three years of office the stream of events flowed placidly on the whole, and nothing of primary importance occurred in connection with the history of the Society. Continued efforts were made, but without avail, to secure the exemption of chemists and druggists from service on juries, and steps were taken by the Council to alter the course and conduct of the educational establishment committed to its care, so as to bring it more strictly into accord with the altered circumstances of the Society. Although one of the objects for which the Society was founded was to promote pharmaceutical education, it was felt to be no part of its duty to defray the cost of educating young men coming into the trade. At the same time, it was considered desirable to give the fullest effect to the appliances for education existing in the Society's house, and to ensure the existence of a school at which students might obtain the necessary instruction under the professors who had hitherto so ably conducted the classes. Whilst, therefore, the outlay of the Society's funds on the School of Pharmacy was reduced to a definite annual charge, arrangements were made by which the Council still retained its controlling authority over the system of education pursued in the School.

Already a tendency had begun to manifest itself for the number of pharmaceutical chemist members to fall off, though associates and apprentices continually increased in numbers. A readjustment

of the subjects for the Minor and Major examinations was effected, and it was hoped that, in consequence of this, a larger proportion of candidates would proceed to the higher examination, but that hope was not realised. As a matter of fact, the recognition of the Minor as the qualifying examination was already beginning to make its influence felt, in the reduction in the number of those who aspired to higher rank in the Society.

A Sale of Food and Drugs Act was passed in which several suggestions by the Council of the Society were embodied; an attempt by the Government to alter the Poisons Schedule was defeated; the "patent" medicine licence was reduced to five shillings, uniformly throughout the country; and the insertion of a "reciprocity" clause in an Irish Pharmacy Bill was successfully opposed, on the ground that it would enable individuals to style themselves "pharmaceutical chemists" in Great Britain after passing a less stringent examination than the British Major examination.

Mr. Hills was the donor of the entire fund provided for the various prizes of books presented to the winners of the medals awarded each year to pharmaceutical chemists who were associates of the Society at the time of passing the Major examination, as well as those given to the holders of the Jacob Bell Memorial Scholarships. Moreover, by his will, he bequeathed to the Benevolent Fund of the Society the sum of one thousand pounds, with the condition that it was to be invested and the income therefrom applied for the purpose of assisting or purchasing the election to orphan schools or asylums of orphans of members and associates of the Society who had been subscribers to the Benevolent Fund. The following is an extract from the proceedings of the Council for November 2, 1892, giving the terms in which the Orphan Fund was formally established:—

That the legacy to the Benevolent Fund, bequeathed by the late Thomas Hyde Hills, be regarded as a nucleus of a fund to be known as the "Orphan Fund of the Pharmaceutical Society

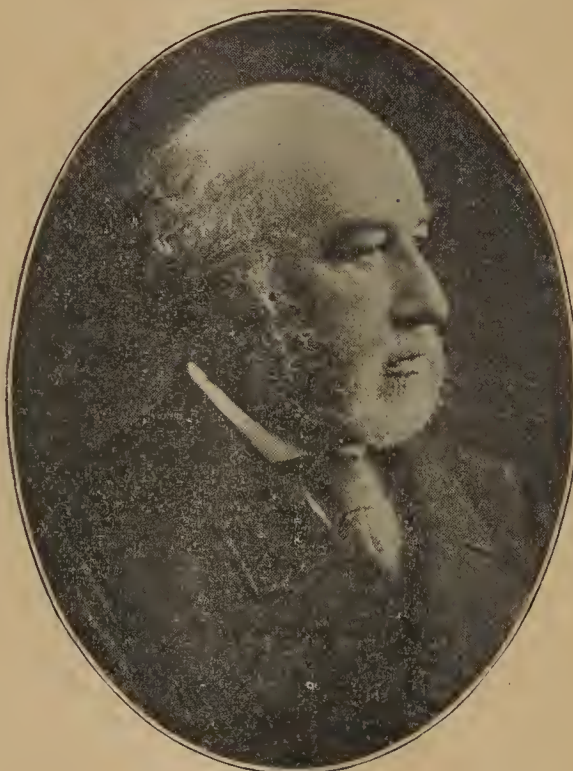
(founded by Thomas Hyde Hills, 1891.)"

That donations and subscriptions be invited, and that donations be invested.

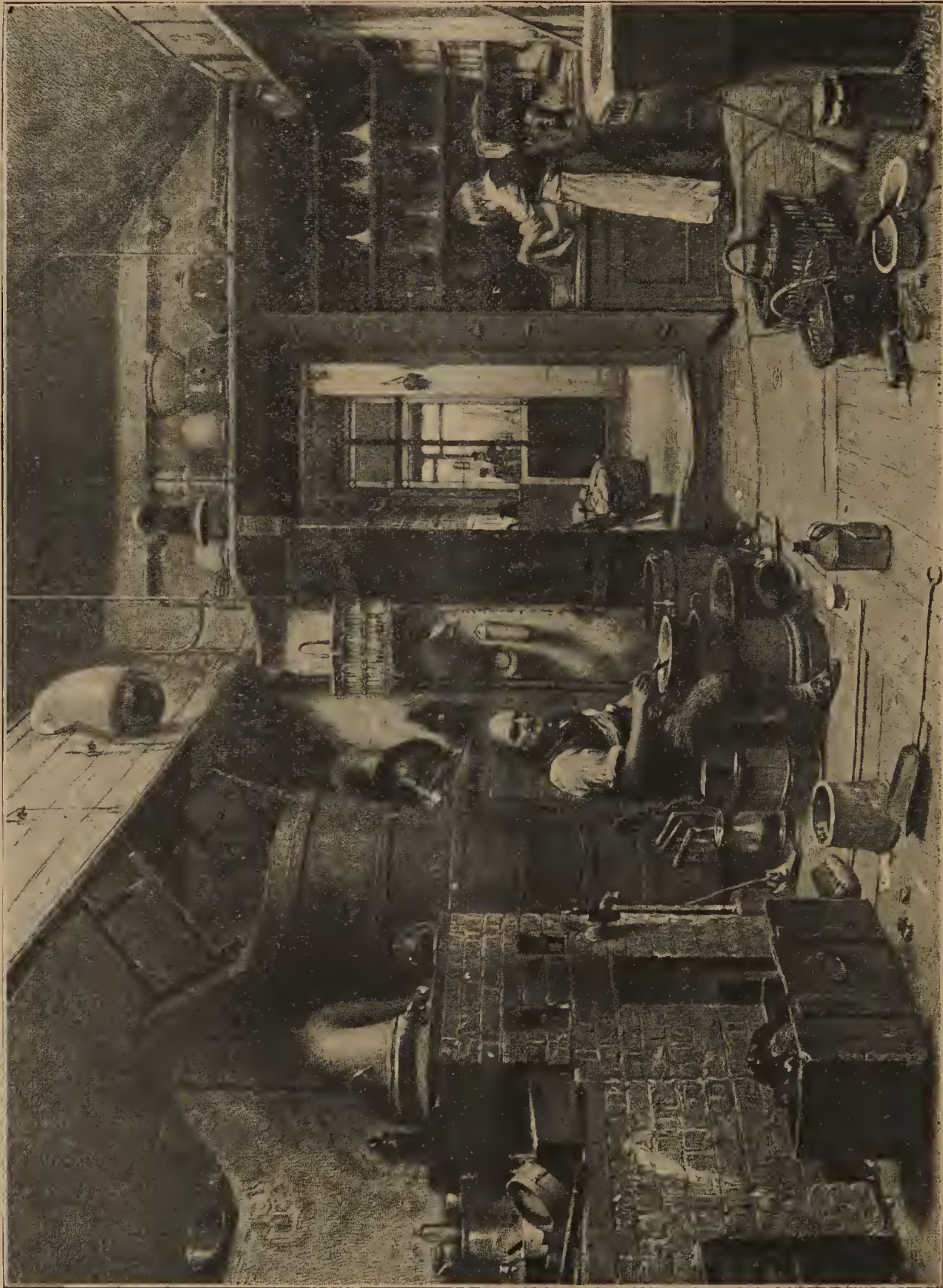
That the income derived from the invested capital and such portion of the subscriptions as the Council may deem desirable, be applied in the discretion of the President and Council of the Pharmaceutical Society of Great Britain for the purpose of assisting or purchasing the election of orphans of Members and Associates of the Society (who have been subscribers to the Benevolent Fund for three years and upwards) to Orphan Schools or Asylums.

That every application for assistance from the Fund be made in the manner directed by clause 7 of the Benevolent Fund Regulations at present in force, and be submitted to the Benevolent Fund Committee, who will, in due course, report to the Council.

That the right of selecting a child for admission into an Orphan School or Asylum be vested solely in the Council.

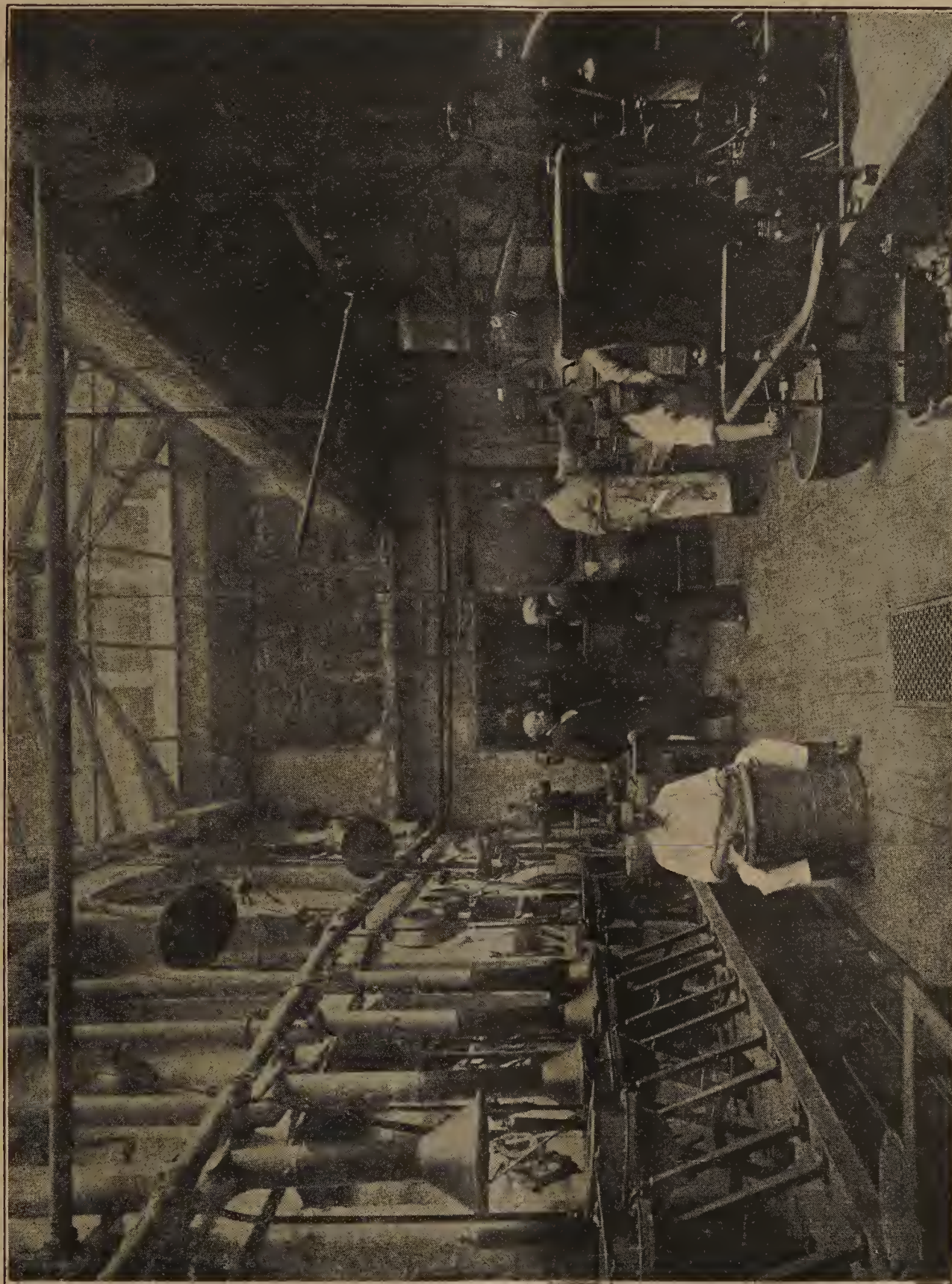


THOMAS HYDE HILLS.



JOHN BELL AND CO.'S ORIGINAL LABORATORY.

From an engraving by J. G. Murray.



JOHN BELL AND CO.'S LABORATORY, 1871.

From a photograph by S. A. Walker.

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LONDON: SATURDAY, JULY 23, 1898.

PHARMACY ACTS AMENDMENT BILL.

THE third reading of this Bill, on the motion of the EARL OF HARDWICKE, came on in the House of Lords on Thursday afternoon, and at the moment of going to press we learn that in view of the circumstance that the Bill is intended only to affect the internal organisation of the Pharmaceutical Society, the LORD CHANCELLOR, though strongly impressed with the present unsatisfactory state of the law in regard to companies carrying on the business of chemists and druggists, has decided not to move the amendment standing in his name. The Bill was accordingly read a third time and passed.

A PHARMACEUTICAL CENTENARY.

THE number of pharmacies in this country which can claim to have existed for a hundred years is not great, and special interest, therefore, attaches to the fact that the present year is the centenary of the firm of JOHN BELL and Co., of Oxford Street, London, the present head of which is Mr. WALTER HILLS, President of the Pharmaceutical Society. The founder of the business was JOHN BELL, one of the early promoters of the Society, who, as related in the 'Progress of Pharmacy,' opened his shop in Oxford Street with a small capital and many doubts as to his means of making a business and keeping out of debt. On the first day his receipts amounted to ten shillings, but, in giving change, he was cheated out of half a guinea, "a result which so discouraged him that at night he would not light his lamps until a friendly neighbour came in and consoled him." Success came slowly but surely to the young pharmacist, and in a few years it became unnecessary for the shop-boy to find occupation at the back of the shop "in pounding a dusting-cloth in the bell-metal mortar in order to maintain a semblance of business activity, and at the same time to inform passers-by, through the ringing sound of the mortar, that physic was compounded there." That shop-boy, much advanced in years, is represented with his mortar in the illustration printed at page 84.

Twelve years after the business was started JACOB BELL was born, and in due course that eminent pharmacist became head of the firm, with THOMAS HYDE HILLS as a partner, and destined later to become sole proprietor. In the illustration at page 85, which shows the laboratory at a later stage, Mr. T. H. HILLS is seen standing in the background, to the left, faced by the late SAMUEL GALE, whose name is only one of the extensive list of prominent individuals in the ranks of pharmacy who have, during the past hundred years, been connected with the famous establishment in Oxford Street. That list includes the names of REDWOOD, BENTLEY, BARNARD, FRANCIS, and many others too numerous to men-

tion here. The present proprietor is, as stated above, Mr. WALTER HILLS, President of the Pharmaceutical Society, who is the third representative of the firm of JOHN BELL and Co. to preside over the destinies of that body. JACOB BELL was elected president four times, THOMAS HYDE HILLS three times, whilst their successor now occupies the presidential chair for the third occasion. From this and the foregoing facts it may be gathered, therefore, what a power the Oxford Street house has been in connection with the progress of pharmacy in Great Britain.

PROFESSIONAL MEN AND THE STATE.

IN an address recently delivered at the annual meeting of the Metropolitan Counties Branch of the British Medical Association, Dr. ROBERT FARQUHARSON, M.P., expressed satisfaction that the great medical corporations and the General Medical Council are beginning to press forward in public life, and that they are now being consulted by State departments in matters of hygiene and social legislation. Even the "vague and mysterious body which attracts some awe-stricken attention under the name of the Privy Council" is in occasional communication with the professional leaders, but in Dr. FARQUHARSON'S opinion the Local Government Board ought to be the head centre of everything that concerns public health. That department is, however, undermanned, its officials are underpaid, and its usefulness is seriously hindered by the comparatively subordinate position which it holds. "Why the Home Office, which regulates little more than law and order and factory legislation, should have a full-blown Secretary of State at its head, whilst the bureau to which is confided all our sanitary legislation, all water questions, and the whole of local government should merely rank alongside the Board of Agriculture and Dover House is an anomaly."

Turning next to the question of bringing professional influence to bear, Dr. FARQUHARSON puts in a claim for the British Medical Association as providing the most useful and practical machinery for organisation and educative influence and agitation when necessary. "Our constitution is broad and democratic; we appeal to a wide constituency, and we have planted in every corner of the United Kingdom centres of light and leading, which should illuminate, and instruct, and convince. Out of the 35,000 medical men in these islands nearly 18,000 belong to the Association, and our branches spread and ramify everywhere, from Caithness to India. What an organisation this is for concentrating and co-ordinating the great body of force and influence, which we might and do possess!" Whilst objecting to test questions, Dr. FARQUHARSON suggests that all can operate on the somewhat pliable minds of public men, and persuade them that we are not working for mere power or personal self-interest. This, it may be observed, applies to chemists no less than medical men, for by organised pressure we also can educate the public mind, and force well to the front the questions in which we, "as custodians of public health," are specially interested. In that way—and probably in that way only—can such questions be rendered generally intelligible or sufficiently prominent to attract the required amount of attention, giving them, as Dr. FARQUHARSON puts it, a chance of being picked out from among their competing rivals for early consideration and treatment. Each one can do something in the matter, and as there is much to be done for promoting the common interests of the craft, each one should do all he can individually and by co-operation with others.

ANNOTATIONS.

THE SALE OF POISONS is a subject that has already, for the time being, lost interest for the daily press, but the *Daily Chronicle*, referring to the Poisonous Substances Bill, which is among the massacred innocents for this session, comments on the fact that the *Pharmaceutical Journal* has published an instructive table of the deaths, during 1895 and 1896, by accident and suicide from various kinds of poison. On paper, observes the *Chronicle*, the restrictions placed on the sale of poisons by the Pharmacy Act of 1868 are rigid enough, but "it is a matter of everyday experience that they are evaded with the greatest ease." Presumably this statement refers to the evasions of the Act by joint-stock companies, photographic dealers who are not registered chemists, and other unqualified persons. Continuing, the *Chronicle* points out that in the case of the scheduled poisons alone the deaths amounted to no fewer than 861 in the two years, rather more than half the number being attributable to opium and its cognates and chloroform. "In the former class the suicides were responsible for about two-fifths of the total number of deaths. But it is among the unscheduled articles that the largest proportion of suicides is found, carbolic acid being responsible for no fewer than 224 fatal cases in 1895 and 163 in 1896, the accidental deaths from this cause numbering, curiously enough, 34 in each year. It is obvious, therefore, that the recommendation of the Pharmaceutical Council to add carbolic acid to the Schedule of the Act is one to be taken seriously into consideration. Carbolic acid is no doubt a valuable sanitary agent, but its unrestricted sale will clearly have to be stopped."

THE POISONOUS SUBSTANCES BILL may possibly never be heard of again, but if its untimely birth serves no other purpose, it has at least proved the means of bringing chemists and druggists together for the defence of their class, whilst affording an opportunity to convince legislators that the support or opposition of that class is not a thing to be despised. The letter from Mr. Jas. Cocks, in this week's issue, testifies to the fact that in the House of Commons considerable importance has been attached to the position recently taken up by the Pharmaceutical Society, and also that a marked effect was produced by the circular issued by the Council. Numerous communications have been received by the Editor from registered chemists who have approached their parliamentary representatives on the subject of the sale of poisons, and it is gratifying to find that in most cases extremely favourable replies have been received. Probably the chief difficulty that presents itself to members of Parliament in this connection is the red-herring of so-called "monopoly" that has been drawn across the path by adversely interested parties, and it behoves registered chemists to deal very carefully with this aspect of the matter.

THE IDEA OF MONOPOLY is rightly abhorrent to the average British mind, but when the term is associated with the sale of poisons, it is as much misapplied as it would be if applied to restriction of the practice of law or medicine. For the retailing of certain poisons has not been restricted to registered chemists with the idea of benefiting them, but solely and entirely in the public interest. The man in the street would naturally prefer that he should be able to procure anything and everything he requires, wherever and whenever he chose. But those responsible for the conduct of public affairs have found it desirable in many instances, for the public safety, to place some restrictions upon the freedom of action of individuals. Such was the case when the Pharmacy

Act of 1868 was passed, and chemists had the regulation of the sale of certain poisonous articles thrust upon them. Pharmacists did not desire the position and have never cared for it, but since the development of their business has been influenced to a marked extent by the manner in which the Legislature interpreted public necessities, they feel at the present time that acquiescence in a total change of policy would tend to influence their interests prejudicially. Whilst, therefore, the trade in scheduled poisons is not directly profitable to chemists and druggists, and only to a very limited extent indirectly, they ought to oppose strenuously any attempt to reverse a policy that has been proved to operate successfully in the public interest during the last thirty years.

PROBABLY THE BEST LETTER written to a Member of Parliament on the subject of the Poisonous Substances Bill was that sent by Mr. Archibald MacNaught, of Greenock, to Sir Thomas Sutherland, M.P. Without being unduly long, it contained an admirable summary of the whole case for chemists, and we only regret that space will not permit it to be printed in the Journal. A reply from Sir Thomas Sutherland, in which the "monopoly" difficulty was touched upon, educed a second letter as clear and convincing as the first, and we cordially congratulate Mr. MacNaught, not only upon his complete grasp of the subject, but also because of the felicitous way in which he has been able to explain the numerous points of difficulty.

"DRUG COMPANIES THREATENED" was the heading to a letter which appeared in the *Daily Mail* of Monday, in which the great British public was urged to sympathise with the shareholders in joint-stock companies who have invested their surplus funds in such a manner as to take the bread out of the mouths of chemists and druggists. This would-be alarmist begins by relating that a harmless Bill, styled the Pharmacy Acts Amendment Bill, came before the Grand Committee of the House of Lords last week, and passed through committee without amendment, but that, in response to suggestions, the Earl of Hardwicke, who has charge of the Bill, promised to draft a clause to add to the measure on the report stage, the effect of which would be to prevent companies from trading as pharmacists. This, the writer of the letter observes, is the only preparation for the introduction of a clause that would destroy the vested interests and confiscate the property of shareholders in drug companies. But why such shareholders should be permitted to claim vested interests in the effects of an oversight in drafting an Act of Parliament is not clear, and the writer of the letter is careful not to enlarge upon that point.

A REPLY PROMPTLY APPEARED in the same paper on Tuesday, when "A Qualified Man" insisted that the proposed clause would deal with what constitutes a grave danger to the public. As he observes, with good reason, it amounts to a scandal that seven unqualified persons should be allowed to associate together and do what it is illegal for a single unqualified person to do. The fact that a qualified manager is employed as cover is only an evasion of the law, as the majority of the employes are mostly unqualified. What, he asked, would happen if any seven tinkers were allowed to call themselves "The Metropolitan Doctors, Limited," and, while retaining a qualified medical man as cover, should employ unqualified assistants to attend patients? "Apart from the danger to the public, is it not a gross injustice to men who have been to the trouble and expense of qualifying that these companies, some of which do not pay five per cent. on their ordinary shares, should be allowed to take the bread out of our children's mouths?" In response to this reasonable appeal to the good sense of the public, Mr. Jesse Boot, of Nottingham, rushed in to the

rescue, beginning his insidious attack by complimenting the proprietors of the *Daily Mail* on their struggle with Messrs. Smith in connection with the *Harmsworth Magazine*. He says: "We are particularly interested because we have fought the battle of monopoly in our own trade and won, as you will do." After thus impudently claiming the drug trade as his own, he then proceeds to insinuate that there is something underhand in the fact that the Hon. W. F. D. Smith has acted as sponsor to the Pharmacy Acts Amendment Bill. In this case, as in the one previously referred to, the writer of the letter assumes that Parliament is likely to recognise vested interests in a successful attempt to take advantage of an oversight, but it would have been just as reasonable to acknowledge the existence of such interests in the case of the swarm of bees recently reported to have established themselves in a pillar letter-box. For a time the bees maintained their position, but in the end they were smoked out.

THE CLAUSE OBJECTED TO is equally objectionable to registered chemists, for, as drafted by the Lord Chancellor—not by the Earl of Hardwicke, as has been mistakenly assumed—it only proposes to legalise the existing condition of affairs. Thus, it states that: "A company may carry on the business of a pharmaceutical chemist or chemist and druggist if and so long only as the business is *bonâ fide* conducted by a manager or assistant being a duly registered pharmaceutical chemist or chemist and druggist, but, subject as aforesaid, Sections 1 and 15 of the Pharmacy Act, 1868, shall apply in the case of a company in like manner, as they apply in the case of an individual." The chief effect of this clause if it became law would be formally to recognise the right of companies to carry on business as chemists, whereas at present they are only enabled to do so by virtue of having been accidentally omitted from the operation of the Pharmacy Acts. It would also probably enable companies to be proceeded against in the case of breaches of the Pharmacy Act, 1868, by their employés. But inasmuch also as no machinery is provided for carrying out the intention of the clause it would remain practically inoperative, and there would be no greater protection for the public, so far as companies are concerned, than already exists, which is little enough, as our readers know. So far as the promoters of the present Bill are concerned, they disapprove of the proposed clause as it stands, and prefer that the Bill should continue to be, as originally intended, a non-contentious measure. Unfortunately, the reports of what took place in the House of Lords last week have encouraged baseless hopes in the minds of many registered chemists, but it would be idle to pretend that any satisfactory solution of the problem may be expected at present.

A SOMEWHAT SENSATIONAL NOTE in the *Lancet* of July 9, on the subject of dispensing by chemists, appears to us to have hardly been justified by the facts. In his report on the health of the city of Birmingham for the year 1897, Dr. Alfred Hill stated that fifty-two samples of medicine dispensed from prescriptions were obtained from "persons qualified under the Pharmacy Act," and that eleven of those were condemned. The *Lancet* quite unjustifiably informs its readers that all those samples were obtained from "qualified pharmaceutical chemists." As a matter of fact we have good reason for believing that not one of the eleven defective samples was obtained from a pharmaceutical chemist. But, unfortunately, in pharmacy as in medicine, a number of individuals have been able in time past to secure registration on altogether insufficient grounds, and Birmingham pharmacists are not free from the infliction of a certain proportion of such inefficients in their ranks. Moreover, despite the inevitable existence of a few

black sheep in pharmacy, the cases of professional misconduct amongst medical practitioners are far in excess of such cases proved against registered chemists, and it seems rather unfortunate that a journal which is rightly jealous of the reputation of the class for which it specially caters should give currency to inaccurate statements regarding the innocent members of another and closely allied class.

THE ELEVEN BIRMINGHAM CHEMISTS alleged by Dr. Hill to have supplied defective medicines are, of course, much to blame if the facts be as stated. The report does not distinguish between the samples obtained from chemists and those from unregistered persons, but four individuals appear to have erred by using too little or too much potassium iodide, one used the avoirdupois instead of the apothecaries ounce in weighing magnesium sulphate, one dispensed eighteen per cent. too much quinine sulphate, and another had allowed his sodium bromide to become too damp. None of the errors were at all serious, but their occurrence should nevertheless have been prevented, and it is to be hoped such incidents will not need to be reported in future. It may be suggested to the respectable chemists of Birmingham that they should take steps to secure the publication of full and complete reports of the city analyst in future. When errors are recorded in dispensing medical prescriptions the prescriptions should be published; but it is of even greater importance to the craft to have the offences charged against chemists carefully differentiated from those committed by the employés of joint-stock drug-stores and other unqualified persons. In connection with this matter, a correspondent has directed attention to an absurd paragraph headed "Chemists' Frauds (?)," in a paper which arrogates to itself the title of *Science Siftings*. The paragraph seems to have been instigated by the note in the *Lancet*, but such rubbishy productions as paragraphs from which the facts appear to have been carefully sifted, are not worth troubling about.

THE B.P. CONFERENCE PAPERS so far promised already exceed in number those read at Glasgow last year, and judging from the full programme arranged by our Ulster friends, it will be difficult to find time for any more to be considered at the Belfast meeting. It will be seen, on reference to the list printed at page 79, that several of the papers will deal with the new Pharmacopœia, and we understand that arrangements will probably be made to devote half a day to a general discussion on that subject. It has more than once been suggested that some topic of general interest should be brought up for discussion in this manner, and the new Pharmacopœia seems to suggest itself as a particularly suitable subject. If the experiment succeeds, the idea may subsequently develop in an interesting fashion. Meanwhile, however, it is of importance that the promised papers should be sent in without delay to the Hon. Secretary, Mr. W. A. H. Naylor, in order that they may be submitted to the Conference Executive, and, if approved, put in type prior to the meeting. We are also requested by Mr. R. W. McKnight to state that applications for tickets should be addressed to him at Carlisle Circus, Belfast, before August 1, as that will help the local Committee in completing the arrangements.

THE CHELSEA PHYSIC GARDEN, which has been maintained by the Society of Apothecaries since 1673, is now about to be abandoned by that somewhat decadent body, but it is satisfactory to note that the Garden will be preserved in the public interest. In the House of Commons, on Tuesday, Mr. Whitmore asked the honourable

Member for the Thirsk Division of Yorkshire, as a Charity Commissioner, whether he was aware that the Society of Apothecaries had resolved that it could no longer maintain the Physic Garden at Chelsea; and whether, in view of this decision, and in order to preserve this ancient garden, the Charity Commission would be willing to sanction its acquisition by the governing body of the City Parochial Charities and its subsequent maintenance by them as a botanical garden. In reply, Mr. Grant Lawson said the Society of Apothecaries, as trustees of the Physic Garden at Chelsea, have applied to the Charity Commissioners for the establishment of a scheme for the future administration of the trusts regulating the Garden, which is now maintained at the charge of their corporate funds, and they desire to be relieved from the trusteeship. The Commissioners have received from the trustees of the London Parochial Charities an offer to undertake the trusteeship of the Garden, and to make a provision for its maintenance for the purpose of botanical study, which appears to be sufficient for that purpose. The Commissioners accordingly propose to publish a scheme giving general effect to these proposals. It is worthy of note that the Garden was originally made over to the Society of Apothecaries on condition "that they should at all times be continued as a physic garden for the manifestation of the power and wisdom and goodness of God in creation, and that the apprentices might learn to distinguish good and useful herbs from hurtful ones." A second condition was that each year the Society should present to the Royal Society specimens of sixty new plants until their number reached two thousand.

BOTANICAL WORK WANTING WORKERS is the subject of a suggestive paper read by Mr. E. M. Holmes before the S. E. Union of Scientific Societies, and published in *Natural Science* for July. He points out that the field for investigation in botanical work is so extensive and increases so rapidly every year, as new discoveries open up new vistas of possible knowledge, that the title of his paper refers only to the flora of the county of Kent, as being the one with which he is most familiar, and as best serving his purpose, although the remarks made will probably apply with equal force to other counties. An examination of various county floras that have been published shows that the flowering plants have, as a rule, received much more attention than the cryptogams, and that in very few instances have adequate county lists of mosses, lichens, fungi, or algæ been published. Such as have appeared are usually imperfect in one or other of the groups, especially as regards dates and localities, the mosses and fungi being generally those best represented. It is, therefore, that branch of botanical work which specially needs workers, and to which Mr. Holmes wishes to direct particular attention. But other branches of botanical work to which attention might be directed are:—(1) The relation of the distribution of plants to water-sheds, geological formations, and chemical constituents of the soil, drainage, land carriage, agricultural seeds, and other causes; (2) the special means by which different mosses rarely found in fructification are propagated and distributed; (3) the rate of growth of different species of lichens; (4) the relation of *Hymenomycetes* and *Gasteromycetes* and other plants to the roots of special trees or plants; (5) the spread of parasitic fungi, injurious to plants, from wild plants to cultivated species of the same genus.

TERRESTRIAL CORONIUM has been detected by Professor Nasini, of Padua, amongst the gases emanating from the earth in Italy.

In the spectrum of the gases of Solfatara di Pozzuoli, which contain argon, a bright line was noted with the wave length 531.5, corresponding to that of 1474K, attributed to coronium, an element supposed to be lighter than hydrogen. Other lines observed were of wave-length 653.5, 595.5, 536.2. In the spectrum of gases gathered from the fumarole of Vesuvius, Professor Nasini and his assistants have observed the lines 769.5, 631.8, 572.5, 536.5, 441.5, and again 595.5. These lines do not all belong to the spectrum of argon or helium; they show a coincidence or proximity only with some unimportant lines of various elements, such as iron, potassium, and titanium. Considering the conditions of the experiments, the presence of these elements in the gases studied is not probable. The line 572.5 is near to one of nitrogen, but, being the only visible line of the spectrum of this gas, it cannot be attributed to it. Besides coronium there are thus probably other new elements in these gases. Commenting on the announcement of this discovery, the *Times* points out that this is an announcement of the highest interest from a scientific point of view, as at once confirming the results of spectroscopic examination of the sun and adding another proof of the substantial identity of materials in the sun and earth. Hitherto nothing has been known of the substance which produces the coronial line 1474K. It has not been observed anywhere in nature except in the corona, its supposed identity with the auroral line having long ago been disproved. The unknown substance appears now to have been found just where, if anywhere on earth, it might be expected—*i.e.*, in the gases from volcanoes, or the springs and minerals subject to volcanic action.

THE THIRD INTERNATIONAL CONGRESS OF APPLIED CHEMISTRY will be held in Vienna from July 28 to August 2, and in the Section of Pharmaceutical Chemistry it is intended to discuss (1) a proposal to introduce into all pharmacopœias and supplements to pharmacopœias statements of the physical and chemical properties, and of the qualities requisite to establish the purity of substances; (2) a proposal to introduce for all countries not only uniform methods for the preparation of heroic remedies, but the employment of uniform standards to determine the potency of medicaments; (3) a proposal to introduce uniform methods of determining the amount of active substances contained in surgical dressings; (4) the nature of the analytical researches to be employed for estimating the value of new serum therapeutic preparations, and the precautions to be taken before such preparations are recognised as suitable for use in medical practice; and (5) the general qualities requisite in medicinal wines.

THE REGISTRATION OF TRADE MARKS is simplified by a decision of the House of Lords last week, which reverses the established practice of the Patent Office in regard to "fancy" words. The word "Solio" was objected to as a trade mark in connection with photographic goods, on account of its evident derivation from "Sol," but the House of Lords decided that the objection was too far-fetched. The immediate result of this decision will be to alter the entire practice of the Patent Office, so far as name words are concerned; and doubtless a very large number of invented words which have been refused as descriptive of the goods can now be registered. In recent years Section 64 of the Patents, Designs, and Trade Marks Act has been interpreted by the Comptroller and the Courts in an extremely limited sense, with the result that while applications for patents have greatly increased, those for trade marks have seriously diminished.

PHARMACEUTICAL SOCIETY.

EXAMINATIONS IN LONDON.

July, 1898.

MAJOR EXAMINATION.

Candidates examined	31
" failed	15
" passed	16

Dixon, William.	Hovenden, Sydney Churcher.
Ellis, Hugh Edward.	Jones, George Maurice.
Flemming, Thomas Henry.	Martindale, William Harrison.
Franklin, Arthur Cawte.	Merrickin, Sydney Herbert.
Gale, George Thomas.	Pick, Frank Phillips.
Garnett, John Benbow.	Rhead, Alfred.
Hart, Samuel Henry.	Smallwood, Frederick William.
Hodgson, John Edward.	Teale, John Oliver.

MINOR EXAMINATION.

Candidates examined	340
" failed	238
" passed	104

Barker, Henry John.	Kennard, Lillian Sarah.
Barrett, Thomas Edward.	Kesterton, Walter.
Battle, John Cyril Marfeet.	Kieft, Edward James.
Bennett, Charles Thomas.	Lacey, Richard Samuel.
Bennett, William Chaplin.	Lanc, George.
Benzie, Robert.	Lane, Harry Richard.
Blore, Moulton.	Legg, Harold Beaumont.
Bould, Frederick Ewart.	Lescher, Thomas Edward.
Brian, Ernest.	Lycett, Herbert.
Brookes, Alfred.	McRostie, James.
Bunting, Sydney.	Magnay, William.
Burdon, James Rowland.	Maidment, Harold Harding.
Burridge, Archibald Edger.	Meyler, Thomas.
Calvert, William Eggleston.	Moore, Kate Lillian.
Carr, Charles Frederick.	Morris, Gerald Arthur.
Chambers, Ernest James.	Morrish, Charles Henry.
Chapman, Alexander Sterling Brice.	Mosley, William Francis.
Chatburn, Edwin Jordan.	Nicol, Alexander William Rendall.
Churchill, Arthur Henry.	Nundy, William Lockwood.
Collins, Clifford.	Nunn, Ernest Albert.
Crawford, Ernest.	Parry, Idwal.
Cruse, Thomas Edward Castell.	Paterson, George Frederick.
Dance, James George.	Payne, Herbert.
Darroll, John Walter.	Prescott, Wilfred Egerton Peter.
Dawson, Dan.	Quibell, John William.
Elbourne, Ernest Gilbert.	Rawling, Joshua.
Ellis, Frederick John.	Richardson, James Alfred.
Evans, John.	Roberts, John Lloyd.
Farr, Minnie.	Robertson, Sidney.
Fenn, George.	Rolfe, John Thurlow Twaites.
Frank, John William.	Rouse, William Henry Broom.
Freke, Alice.	Sales, Charles Henry.
Garland, Alfred Harry.	Saltmarsh, Alice Isabella.
George, William Blissett.	Sarjeant, Herbert William.
George, William Foxton.	Sayers, Stephen Percy.
Glaister, Robert.	Selby, Horace Walter.
Gould, Sydney Hartforth.	Sencicle, Fred.
Gray, William.	Sinnett, William.
Green, William Baker.	Smith, Henry Llewellyn.
Harmer, John Daniel.	Smith, James.
Haydon, Arthur Henry.	Spurway, William James.
Hughes, Edward Davies.	Stovin, John.
Inch, Jedediah Paul.	Sykes, Henry Vincent.
James, Ernest Owen.	Tanner, William Edward.
Johns, Aneurin Vaughan.	Thompson, George Pinder.
Jones, Thomas Stephen.	Turner, Alfred William.
Jones, Thomas William.	Vallet, Cyril Edward Franklin.
Keeton, Percy.	Walker, Martin Pybus.

Wallace, William Henry.
Wallis, Thomas Edward.
Wathes, Arthur.
White, Robert Shoebridge.

Whithead, Herbert Joseph.
Whiting, William.
Wild, Thomas Jabez.
Wooldridge, Thomas.

FIRST EXAMINATION.

Certificates by approved examining bodies were received from the undermentioned in lieu of the Society's Examination:—

Alexander, George; Waterloo.	James, Alexander; Hornsea.
Asquith, David Warner; Nuneaton.	Lewis, Llewelyn; Swansea.
Bennett, Reginald Robert; Dover.	Mansbridge, William Alfred; Bristol.
Burgis, William Gaisford; Hampstead.	Marchant, Walter S.; Hereford.
Corke, Herbert Edward; Woolston.	Ness, Alfred; Kennington.
Dale, William A.; Marske.	Oxley, Harry; Edinburgh.
Furness, Sydney Edward; Clerkenwell.	Pearce, Rosa Adeline G.; Cainscross.
Gaubert, Percival S.; Wembley.	Ridyard, Clement W.; Kennington.
Hallam, Isaac; Melton Mowbray.	Scott, Samuel; Barrow in Furness.
Harris, Percy; Erdington.	Seaber, Charles William; Aldershot.
Hirst, Alfred Norman; Manchester.	Sharpley, Major; Market Rasen.
Hughes, Harry; Leicester.	Sillitoe, Harry Archibald; Ipswich.
	Webster, Richard R.; Edinburgh.

COUNCIL PRIZES EXAMINATION QUESTIONS.

CHEMISTRY.

July 19, 1898.—2 till 5 p.m.

1. What is meant by the periodic law? Write an account of it and show the advantages it possesses in the study of chemistry, and also the cases in which it seems to fail as far as our present knowledge extends.
2. Give a general statement of the action of non-metallic elements on the alkaline hydrates, and show how any apparent exception may be reconciled with the general statement.
3. What processes are employed for the manufacture of the alkali metals, and of their hydrates and carbonates?
4. Give a short description of the varieties of carbon. State how far they can be transformed into one another, and describe a chemical test which may be used to identify the principal varieties.

MATERIA MEDICA.

11.30 a.m. to 1 p.m.

1. State the botanical source and the mode of production of Scammony, Asa-fetida, Guaiacum Resin, and Kino.
2. How would you detect the presence of Galbanum in Ammoniacum, Paraffin in White Beeswax, Cotton Seed Oil in Olive oil?
3. By what means would you estimate approximately the quality of Oil of Eucalyptus, Oil of Peppermint, and Copaiba?
4. State what you know about Benzoin; its botanical and geographical sources, its varieties and their constituents. How would you determine the value of a sample for medicinal and for general use respectively?

BOTANY.

10 a.m. to 11.30 a.m.

1. Enumerate and briefly explain the various methods of reproduction known to you amongst Thallophyta and Bryophyta.
2. Describe the anatomical structure of a foliage leaf; and explain clearly how this structure is adapted to the adequate performance of the functions of transpiration and assimilation.
3. Give a complete history of the leafy shoot of any deciduous tree from its origin in the spring from the winter bud up to the time when it loses its leaves in autumn.
4. Sketch briefly the variations in morphological structure in either the Leguminosae or Euphorbiaceae, and show how these variations are adapted to special conditions of climate and environment. Briefly indicate the nature of the floral parts in the Euphorbiaceae.

PHARMACEUTICAL TRANSACTIONS.

EXETER ASSOCIATION OF CHEMISTS AND DRUGGISTS.

A special meeting of the members of the Exeter Association of Chemists and Druggists was held at the Albert Memorial Museum, Queen Street, Exeter, last week, to consider what action should be taken with regard to

The Poisonous Substances Bill.

The President (Mr. D. Reid) occupied the chair, and Mr. J. HINTON LAKE (Vice-President of the Association and local secretary of the Pharmaceutical Society) briefly introduced the subject for discussion. He expressed the opinion that some action should be taken by the Association in the matter.

The PRESIDENT said he had received a letter from Mr. G. Stocker, who had communicated with the Hon. Sir Stafford Northcote, Bart., C.B., M.P. (the member for the city, who recently received a deputation from the Association on the Pharmacy Acts Amendment Bill), on the same subject. Mr. Stocker had received the following reply from Sir Stafford Northcote's private secretary:—

25, St. James's Place, S.W.

July 11, 1898.

Dear Sir,—Sir Stafford Northcote wishes me to acknowledge your letter and say that he notes what you say, but no fresh contentious measures are likely to be proceeded with this session.

Believe me, yours truly,

G. W. MARRIOTT.

Mr. G. Stocker.

Continuing, the President said he took it that the members of the Association were all of one mind as regarded the Poisonous Substances Bill. So far as he could make out, the chemists of Exeter were all dead against it. Of course, the Bill was what was called "slaughtered," so far as the present session was concerned. It, however, would be passed on with others until another session. Therefore, the Association would have to be prepared to take action when it came up then, because there was every reason to believe that a Bill brought forward by such a statesman as the Duke of Devonshire would not be allowed to rest. He thought some very strong opposition should be brought to bear on the matter. He had a conversation with Alderman Gadd, J.P., on the Bill the previous day, and he asked him to say that he had another engagement that day and could not be present at that meeting. If it had been necessary to take immediate action he would certainly have cancelled his other engagement and attended their meeting, but as there was no need for immediate action he asked him to apologise for his absence. His (Mr. Gadd's) idea was that they should simply pass a resolution and send it up to Sir Stafford Northcote, M.P., asking the hon. baronet to give the members an opportunity of allowing a deputation to wait upon him and explain matters to him, in order to ascertain his views before the next session of Parliament.—Mr. J. H. LAKE concurred with the suggestion, and the PRESIDENT said that would be the best course, seeing that there was no chance of the Bill passing into law during the present session. He thought that whether they decided to ask Sir Stafford Northcote to receive a deputation or not, they, as an Association, should pass a resolution stating what their views were on the measure. They ought to condemn the Bill *in toto*.—The PRESIDENT: Decidedly *in toto*.—Mr. LAKE said that was the first thing the Association should do, and he therefore would propose the following motion, if it met the wishes of the members:—

That this meeting of members of the Exeter Association of Chemists and Druggists is of opinion that the introduction of the Poisonous Substances Bill is both unnecessary and dangerous to the public safety, inasmuch as by the Pharmacy Act suitable trained persons are already provided (who possess an intimate knowledge of the nature and use of poisons) for the purpose of distributing those substances. The fact that registered chemists and druggists often refuse to sell poisons at their discretion should be regarded as ample proof of the necessity for some safeguard being adopted for the public safety other than simply attaching a "Poison" label to the poison sold by an unqualified person. In effect the Poisonous Substances Bill stultifies the Pharmacy Act, inasmuch as the discretion of the vendor, which has been hitherto very effective in the case of the pharmacist, is utterly ignored. This Bill should, in the interest of the public, be most strenuously opposed.

Mr. P. F. ROWSELL (Hon. Secretary), for the purpose of discussion, questioned the advisability of inserting the words "is both unnecessary and dangerous to the public safety" into the motion, because whilst he agreed with the principle embodied, looking at it from a general public point of view it would be safer

than things were at present to have the Poisonous Substances Bill, although it was not desirable from a chemist's point of view.—Mr. LAKE said he did not think that the safety of the public would be enhanced by such a Bill. At present the sale of scheduled poisons was in the hands of qualified men, and if the Bill was passed they would be giving the unqualified men greater powers in the sale of the unscheduled poisons.—Mr. ROWSELL pointed out that such poisons as spirits of salts and carbolic acid could be sold by unqualified men in half-pint jugs at present.—The PRESIDENT said he understood that Mr. Rowsell meant that it would be safer for the public to have carbolic acid labelled in an oil-shop, and such places where it could be obtained from unqualified men, than not to have the carbolic acid labelled at all.—Mr. ROWSELL said that such gentlemen as the Duke of Devonshire and Sir Stafford Northcote would look at the question from the point of view of the safety of the general public.—Mr. MILTON said he quite agreed with Mr. Lake's motion. The question was whether it was not dangerous to hand over the sale of these poisons to persons who know nothing about them.—Mr. ROWSELL pointed out that it was not a case of handing over the sale to unqualified persons. It was in the hands of those persons at present. He believed they could get at an oil-shop any of the substances mentioned in the new Bill.—Mr. LAKE, referring to vermin poisons, said he often refused to sell these poisons.—The PRESIDENT: I think we all refuse to sell them.—Mr. W. F. PEARCE said nobody would sell phosphor paste; and in the course of further discussion it was thought that the poison should be added to the list of scheduled poisons.—Mr. LAKE said some gentleman should propose a resolution to the effect that the list of scheduled poisons should be increased by the addition of a number of other articles.—The PRESIDENT: I think myself what we want to do at the present time is not so much to say what we want as to oppose this Bill, and do our part to try and prevent it becoming law. Having regard to the nature of the discussion in the House of Commons when our Bill passed through the other day, we might, at some future time, have a thorough good Poisons Bill. What we want to do at the present time is to clear the ground of all this tinkering business, and not show our hands as regards what we do want, and then when the time comes for concerted action we can get together a thoroughly good Poisons Bill. We ought not to mix matters up at the present time.—Mr. MILTON remarked that he thought Mr. Lake's proposition met the case admirably.—Mr. ROWSELL said Mr. Lake's motion undoubtedly met the case from a chemist's standpoint, and he found that the first part was qualified by the second part. His desire was that it should not be misinterpreted.—There was a general consensus of opinion that the present Bill stultified the Pharmacy Act.—Mr. ROWSELL said that after the discussion that had taken place he would second the motion.—Mr. MILTON and Mr. PEARCE supported the resolution, which was carried unanimously.—The PRESIDENT suggested that a resolution should now be passed to the effect that Sir Stafford Northcote, M.P., be asked to give a deputation from the Association an opportunity of fully explaining their views on the subject at some convenient time when he was in Exeter before the next session of Parliament, with the object of his opposing the measure when it came before the House of Commons.—Mr. LAKE thought that a resolution of that kind would confirm the resolution the meeting had already passed.—Mr. ROWSELL said they might add the suggested resolution to the previous one.—The PRESIDENT said he would move that copies of Mr. Lake's resolution be forwarded to the Pharmaceutical Society, and also to Sir Stafford Northcote, asking him to give a deputation a personal interview before the next session.—Mr. ROWSELL reported that he had received a communication from the Pharmaceutical Society enclosing a copy of the Bill and a circular letter signed by Mr. Walter Hills, as President, who urged that steps should be taken to prevent the Bill becoming law; also a pamphlet setting forth reasons against the Bill, and he (Mr. Rowsell) thought that the Association might use the following paragraph as a strong argument why the Bill should be opposed. "Labelling alone is practically worthless as a safeguard against accidental poisoning, and, in fact, a too general use of the word 'poison' is more likely than not to defeat its own end, and the warning it is intended to convey would probably be weakened in efficacy by too great familiarity. The safety of the public lies chiefly in the competency of the vendor, and not in the wording of a label. The Poisonous Substances Bill does nothing to ensure real security."—He suggested that a copy of the "reasons"

should be forwarded to Sir Stafford Northcote with the resolution.—Several members thought the idea a good one.—Mr. LAKE agreed with previous speakers that it was necessary that they, as an Association, should take some action independent of the Pharmaceutical Society, because they were not entirely led by that Society. If they sent the Society's circular alone it would look as if they were following upon lines which had already been cut and dried for them. It would therefore be advisable to let the resolutions being passed by that meeting go together with the Society's circular.—The PRESIDENT remarked that evidently Mr. Stocker had written to Sir Stafford Northcote after seeing what action the Pharmaceutical Society was taking in the matter. It, however, was necessary that some concerted action should be taken for the moment to carry much weight.—Mr. LAKE said the interview they recently had with Sir Stafford Northcote with reference to the Pharmacy Bill carried very great weight indeed.—Mr. ROWSELL expressed his belief that copies of the report of that interview were sent to many members of Parliament by local chemists in different parts of the country.—Mr. LAKE said he knew for a fact that Sir Stafford Northcote exercised his influence amongst his friends.—The PRESIDENT observed that whatever action they took must be concerted action for it to be of any use.—Mr. ROWSELL thought that by concerted action they would gain very much more than by independent action.—It was eventually resolved that copies of Mr. Lake's resolution and the Pharmaceutical Society's pamphlet be sent to Sir Stafford Northcote, with a request that he would give the interview desired, and also that a copy of the resolution be forwarded to the Pharmaceutical Society.—Mr. ROWSELL then brought forward the question of

Proprietary Articles Containing Poison.

—Mr. MILTON said the subject was an important one, and should not be discussed until notice had been given. Personally he saw no objection. As the subject was in the hands of the chemists he did not see any reason why it should not be protected.—It was decided to consider the question at a future meeting.—Mr. W. F. PEARCE brought forward the question of

Early Closing.

He suggested whether the chemists could not adopt Wednesday as an early closing day.—The PRESIDENT: It is a very mixed question.—Mr. MILTON: I had quite enough of early closing on the last occasion.—Mr. LAKE: My experience has been anything but favourable.—Mr. MILTON: I should never do it again.—Mr. LAKE: Nor I. I would not close on any consideration.—Mr. ROWSELL said he found that early closing was worse than keeping open.—Mr. REID remarked that they were nearly worked to death before 8 o'clock on an early closing day, and it was a considerable strain.—Mr. LAKE said it afforded an excellent opportunity for smaller towns to have a dig at them. When the last early closing movement was being carried out, he had several broad hints from his customers on the subject.—Mr. MILTON said the movement would not be successful unless they had one recognised early closing day. In Exeter there were two early closing days a week.—Mr. ROWSELL suggested whether the chemists could not agree to close earlier of an evening, but several members replied that they were in the habit of closing about eight o'clock of an evening, although there were some who kept open until late. It was pointed out that a chemist desirous of closing at eight o'clock was placed at a disadvantage when in business near another chemist who kept open late because he was obliged to keep open later.—Mr. PEARCE remarked that the chemists of Kingston-on-Thames were in the habit of closing from two to six but the members were of opinion that that would not answer in Exeter.—Mr. MILTON said his assistants had instructions to keep open until eight, and he found that they did not lose much time. The subject was eventually dropped without any action being decided upon. Other matters connected with the trade were discussed, and the meeting closed with a vote of thanks to the Chairman for presiding.

HALIFAX AND DISTRICT CHEMISTS' ASSOCIATION.

A meeting of this Association was held on Thursday evening, July 14, at the Old Cock Hotel, Mr. SWIRE, Vice-President, in the chair.—The President, Mr. G. M. Cobb, sent a letter of apology, regretting his unavoidable absence.—The Hon. Secretary, Mr. H. C. BRIERLEY, said that a letter of

condolence had been sent from the Association to Mr. Farr, one of the oldest members, sympathising with him in his severe illness. A courteous reply had been received from Mr. Farr's daughter.—The Secretary of "Camwal" had written to say that all syphons from their Harrogate factory would in future have the name engraved on the glass.—The HON. SECRETARY then read two letters from the local M.P.'s, with reference to the Poisonous Substances Bill. He had informed them that it was the wish of the Halifax chemists that they should if possible oppose the Bill.—In reply, Mr. ALFRED ARNOLD, M.P., said he had carefully read the circular sent to him, and he should be glad to support the views contained therein.—Mr. ALFRED BILLSON, M.P., said he would look carefully into the matter, and that he was impressed with the statement of the case put before him, it seemed to be reasonable and wise, and he hoped to be able to give his vote on the Bill, if it came up, in accordance with them.—These replies were considered very satisfactory.

NOTTINGHAM AND NOTTS. CHEMISTS' ASSOCIATION.

A meeting of this Association was held on Friday evening, July 15, for the purpose of considering a resolution on the

Poisonous Substances Bill.

In the absence from home of the President, Mr. Richard Fitzhugh, the chair was occupied by the VICE-PRESIDENT, Mr. E. Gascoyne.—Mr. GASCOYNE, in introducing the subject to the meeting, said it required but few words from him, as every member of the Association was undoubtedly well informed on the matter. He believed that all of them were thoroughly opposed to the whole Bill, as being nothing but retrograde in character and a distinct violation of the words of the preamble of the Pharmacy Act, which read: "For the safety of the public," etc. He would, therefore, call upon Mr. Eberlin, the Secretary, to propose the following:—

That this meeting of the Nottingham and Notts. Chemists' Association resolves to oppose the "Poisonous Substances Bill" now before Parliament on the ground that it is subversive of the principles on which the Legislature has decided that the regulation of the sale of and dispensing of poisons should be conducted for the safety of the public, and instructs its Secretary to forward a copy of this resolution to each Member of Parliament for the city and county.

—Mr. LUMBY seconded the motion, which was carried unanimously.—The SECRETARY announced that he had received no less than twenty-six proxy votes in support of the resolution. Mr. Eberlin also read letters which had been received from Mr. J. H. Yoxhall, M.P. for West Nottingham; Lord Henry Bentinck, M.P. for South Nottingham; and Mr. J. Carvell Williams, M.P. for the Mansfield division, promising to give the matter their closest attention should it be necessary.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

The quarterly meeting of this Association was held on Wednesday, July 13. Mr. JAS. COCKS presided, and a large attendance included Messrs. C. J. Park, C. T. Weary, G. Breeze, H. D. Davey, P. A. Kelly, J. R. Johnson, J. D. Turney, O. A. Reade, F. W. Hunt, Morgan, J. W. B. Swainson, F. Maitland, etc. Messrs. C. J. Park and J. D. Turney were elected delegates to the British Pharmaceutical Conference at Belfast. Mr. J. D. TURNEY (Chairman of the Educational Committee) then distributed the prizes gained by the students at the recent examinations, as follows:—Pharmacy, 1st prize (presented by Mr. Jas. Cocks), H. Vibert; Materia Medica, 1st prize (presented by Mr. J. K. Bond), A. Downing; 2nd in both subjects (presented by Mr. R. F. Roper), W. Hellyer. Mr. Turney said he wished to congratulate the winner of the Herbarium Silver Medal, who was a member of Mr. Reade's class, he considered that the success was to a large extent due to the painstaking efforts which Mr. Reade had always displayed towards members of his class. With regard to the materia medica and pharmacy examinations, the papers sent in showed that the students had a thorough grasp of the respective subjects.—Mr. HELLYER proposed, and Mr. REYNOLDS seconded, a vote of thanks to Messrs. Turney, Reade, and Johnson, which was heartily carried.—Messrs. Reade and Johnson were unanimously elected nominees of the Association as teachers in pharmaceutical subjects at the Technical Schools.—Mr. COCKS referred to the approaching departure of Mr. Cantle for America, and it was unanimously resolved that the Secretary should write to Mr. Cantle expressing the regret of the Association at losing such a worthy member.

MEDICAL JOTTINGS.

MR. ERNEST HART'S SERVICES to the British Medical Association are to be commemorated by the foundation of a scholarship, which is to be endowed for the study of preventive medicine. It will be of the annual value of £200, and tenable for two years.

BARON HENRY DE ROTHSCHILD, a cadet of the Paris branch of the celebrated family of bankers, has recently passed his examination for the degree of Doctor of Medicine. His thesis was on the subject of Infant Feeding, and has been awarded the silver medal by the Academy of Medicine.

THE BRITISH MEDICAL ASSOCIATION has purchased from the Sutton trustees the freehold of the property held on lease by the Association, namely, the corner house, No. 429, Strand, and Nos. 2, 3, 4, and 5, Agar Street, covering 4352 superficial feet. The purchase money was £79,000, of which £41,000 was paid in cash and £38,000 remains on mortgage for ten years at 3 per cent. interest.

SIR WILLIAM BROADBENT, M.D., F.R.S., who since 1893 has been Physician in Ordinary to the Prince of Wales, has just been appointed Physician Extraordinary to the Queen in succession to the late Sir Richard Quain. It will be remembered that Dr. Broadbent, as he then was, attended the late Duke of Clarence in his last illness.

A RECENT NUMBER of the *Lancet* contains an interesting contribution on the sanitary institutions of Madrid. It includes a description of the Provincial Hospital, founded in 1587. This institution contains 1000 beds, and about 14,000 in-patients are received in the course of the year. It is very old, badly situated, and not built according to modern principles of hygiene, though in spite of these defects, epidemics do not spread within the hospital. During the last outbreak of smallpox in Madrid, many patients suffering from this disease were admitted, yet no one in the hospital caught the complaint. The hospital is kept scrupulously clean, but this is scarcely sufficient to atone for the defects of construction. There is one explanation given for this immunity. The hospital was built in days of wealth and luxurious extravagance, therefore to insure solidity the walls were made no less than six feet thick. As a consequence, it is said the wards remain unaffected by the heat of summer or the cold of winter. It is not necessary to light fires. The heat of the summer, stored in the thickness of the walls, reaches the wards by the time the winter comes on, and the walls have barely lost their heat when it is renewed by the returning spring. When sewage is thrown on the land the water, if gathered two yards below the surface, is found to be perfectly pure, and the walls of the Madrid Hospital are six feet thick. Would six feet of masonry have the same action as the soil of a well-organised sewage farm?

THE NEWLY-INSTITUTED Chair of Public Health in the University of Edinburgh has been filled by the appointment of Dr. Charles Hunter Stewart. He is forty-three years of age, and has had a distinguished career as a student in the University of which he has now become a professor. With Sir Douglas MacLagan he undertook in 1884 the organisation of the Public Health Laboratory, and since then has held a number of appointments in Edinburgh University. He has also devoted himself to original research in subjects connected with public health, and has studied in the laboratories of Munich and Amsterdam, and also at the Pasteur Institute in Paris.

SIR WILLIAM MACCORMAC, who was called in to attend the Prince of Wales after his accident, has just been re-elected President of the Royal College of Surgeons. Sir William was surgeon in charge of the Anglo-American Ambulance during the Franco-German war in 1870, and was present at the battle of Sedan. He has been the recipient of several foreign decorations. His contributions to surgical literature comprise several monographs and articles in well-known text-books, but his 'Notes and Recollections of an Ambulance Surgeon' was written for a wider circle of readers, and has been translated into German, French, Dutch, Spanish, Italian, and Japanese.

NOTICES TO CORRESPONDENTS.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ADVERTISEMENTS AND ORDERS for copies of the 'PHARMACEUTICAL JOURNAL' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers."

ARTICLES AND REPORTS sent for the Editor's approval should be accompanied by stamped directed envelopes, otherwise no guarantee can be given that they will be returned if not found suitable.

CORRESPONDENTS should write in ink, on one side of the paper only, and must authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

DRAWINGS FOR ILLUSTRATIONS should be executed twice the desired size; clean sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

NAMES AND FORMULÆ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

QUERIES addressed to the Editor will be replied to in the Journal as early as possible after receipt, though not necessarily in the next issue. Replies cannot be sent by post, even though stamped envelopes accompany the queries.

LETTERS TO THE EDITOR.

POISONOUS SUBSTANCES BILL.

Sir,—Having written to Mr. Thos. Burt, M.P. (Member for the borough of Morpeth), drawing his attention to the "Poisonous Substances Bill," at the same time pointing out to him the injustice it would be doing to us qualified chemists and druggists by its becoming law, I asked him to oppose its progress through the House of Commons. I also enclosed the copy of "Reasons Against the Bill," sent to me by the Pharmaceutical Society. I herewith enclose a copy of the reply received from him.

JAMES WHITTLE.

Morpeth, July 19th, 1898.

[COPY]

House of Commons,
July 18, 1898.

POISONOUS SUBSTANCES BILL.

My dear Sir,—I beg to acknowledge yours enclosing printed matter, all of which I have carefully read.

I shall be glad to give every attention to the subject when it comes before the House of Commons.

Very truly yours,
THOS. BURT.

Sir,—In answer to my request to our Member of Parliament (Alfred Baldwin, Esq., M.P. for the Bewdley division of Worcestershire), I received a courteous and favourable reply and opinion against the Bill. I beg to suggest for consideration the advisability of keeping, if possible, a record of opinions received from M.P.'s in answer to the applications of chemists to their respective Members of Parliament. I believe the Society has made several recommendations to the Privy Council to have carbolic acid scheduled. I think these and the refusals of the Privy Council to entertain them have never been sufficiently noticed by the press, and only inadequately brought to the notice of the general public, hence the unfounded charge against the Pharmaceutical Society of apathy and indifference to the matter.

Gt. Witley, July 19, 1898.

JOHN TWINBERROW, Ph.C.

LIQUOR STRYCHNINÆ HYDROCHLORIDI.

Sir,—The 1885 B.P. statement that the strength of the so-called 1 per cent. solutions was "about 1 in 100" has been corrected in the 1898 B.P., under the able published statement on the subject by Mr. C. A. Macpherson, to 1 gramme in 110 minims, i.e., an almost true volume percentage, water at 62° F. being the standard volume. Presuming that Mr. Martindale was well acquainted with that paper, I did not specially direct his attention to it, but I beg respectfully to do so now ([3], vol. xix., page 433, date December 1, 1888, *Pharmaceutical Journal*). "Near enough" is not a term that I should apply to any of the potent preparations of the B.P., because the most exact language attainable should invariably

be used in such a case and for this subject; I submit that it will be found in my note (*Pharmaceutical Journal*, June 25, 1898, page 587) and my letter (*Pharmaceutical Journal*, July 9, page 43). Permit me to add that this controversy has not arisen through straining at a gnat, because my conclusion, which I take it Mr. Martindale now admits, was that the 1898 solution was 20 per cent. weaker than the 1885; his original finding published with all the authority and influence of his 'Extra Pharmacopœia,' that it was 10 per cent. weaker—a difference which in potent preparations is very appreciable.

Edinburgh, July 18, 1898.

GEORGE LUNAN.

THE STRENGTH OF CHEMISTS IN PARLIAMENT.

Sir,—As one of a deputation that waited on Mr. Mendl, M.P. (who I am glad to say has been a strong supporter of the Pharmacy Acts Amendment Bill), *re* the Government Poisonous Substances Bill, I was particularly pleased with his final remark that concluded our interview, that was, "you chemists must be wonderfully well organised, as I found when there was a likelihood of the Bill coming on the majority of members had one of those papers in their hands" (alluding to those sent out by the Society). He also spoke of the great activity shown by our worthy President, Mr. Hills, which I thought was very comforting for the future, and a precedent which I hope will be followed should it at any time become necessary.

Stonehouse, Devon, July 15, 1898.

JAS. COCKS.

IS THE SALE OF POISONS A MONOPOLY?

Sir,—I observe in your "Annotations" a rebuke administered to chemists who think they are entitled to a monopoly. I do not know whether I am one of the recent letter writers to whom you refer, but it is certain that I have upon several occasions pointed out to the best of my ability that the general community never can get the best services of pharmacy so long as unqualified men are allowed the same privileges as qualified men. I never said that we were entitled to a monopoly, because we had been good enough to pass examinations, or that we claimed a monopoly as a reward for passing examinations. Such talk is only childish. The State has enacted certain laws, entirely in its own interests, by which it secures itself against the risks of unqualified men dealing in certain poisonous drugs, the nature and character of which they have an insufficient knowledge of. Can it therefore be said to be in the interest of the State that unqualified men should deal in those poisons, as was stated by an eminent judge some years ago? I do not see why our trade journals should constantly flare this word "monopoly" in our faces. It appears to me that it would be more dignified upon our part if we were to come before the people and say, "We have qualified ourselves in accordance with law to serve you, but so long as we are kept down by noisy advertising tradesmen, and still more noisy charlatans and quacks, the best services of the profession we have the honour to represent cannot be placed at your disposal. We love our profession and are willing to give our whole attention to it, but so long as you force us to divide that attention between the demands of professionalism, roaring advertising tradeism, and quackery you cannot get the best services of which pharmacy is capable." Talk such as this would, I believe, be intelligible to most men. It is quite plain that pharmacy occupies its present position mostly upon account of the fact that the people do not know anything about it. It has often enough been misapprehended, God knows, all over the country almost through every public agency, but it has never to my knowledge been fairly represented to the people. It appears to me, as I read in the public newspapers, that the journalist, the judge, the magistrate, the coroner, and the man in the street have each individually constructed a Pharmacy Act of his own, and the good Lord pity the unfortunate man who tries to bring order or sense out of them when they are all jumbled together. No profession can give its best services to the State so long as it is harassed by unqualified men, and I am quite sure that this will be the lesson taught to the people in the near future. Within the next twenty years I believe the professions will all have shaken themselves free from unqualified competition, and the State will be the benefiter thereby. It is in the highest interests of the State that medicines should be prescribed only by qualified medical men, dispensed only by qualified chemists, and as far as possible administered only by qualified nurses.

Dumfries, July 12, 1898.

JAMES REID.

CAMPHOR IN PILLS.

Sir,—In selecting an excipient for forming camphor into pills, the relative merits of different excipients being so variously advocated, four essential points must be borne in mind:—(a) solubility; (b) prevention of crumbling; (c) retention of shape, and (d) size of the pill. If we regard camphor as a concrete oil it will be perfectly obvious that castor oil alone will form a crumbly mass incapable of being rolled out, and this I have found in practice. Glycerin of tragacanth is an excipient which answers fairly well, but has the disadvantage of making too bulky a pill, besides rendering it rather soft and spongy. Curd soap, alcohol, and water, is another excipient recommended, but one which I have found to result in a mass that crumbles readily under the roller. A fourth suggestion has been the use of olive oil, yellow wax, and resin. This makes a fairly good pill, but the time occupied in making the excipient renders it objectionable on that account, not taking into consideration the insolubility of the mass. The excipient above all others giving an easily manipulated, firm, plastic mass, containing all the physical qualities of a good pill, is the following:

R. Camphor.....	gr. xxiv.
P. Saponis	gr. iii.
Ol Ricini	℥ v. or q.s.
M. ft. pil. xii.	

Turning now to pills containing, besides camphor, other compounds, such as ferrous sulphate, mercurous chloride, etc.; where soap is inadmissible, a good general excipient is that recommended by Mr. Barnard Proctor (slightly modified), viz.:

R. Camphor	gr. xxiv.
Ferrous Sulph.	gr. vi.
P. Amygdal. Co.	gr. xii.
Glycerin	q.s.
M.	

I lay no claim to originality, but have simply passed in review suggestions obtained from various sources.

Lewisham, July 15, 1898.

GRAHAM BOTT.

ANSWERS TO QUERIES.

Special Notice.—Scientific, technical, legal, and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms, and the registered number added in each instance should be quoted in any subsequent communication on the same subject.

NON-POISONOUS IRON MOULD EXTRACTOR.—Probably powdered citric acid will answer your purpose. It should be made into a paste with a little water and applied over the spot, keeping it damp for an hour or two, then washed out with water, followed by a little weak ammonia. This will also remove ink stains where these are caused by inks containing iron. [*Reply to A. M. J.*—14/1.]

WATERPROOFING FABRIC.—Unless we know what the "fabric" may be it is impossible to suggest a satisfactory waterproofing. Possibly the following *modus operandi* may be suggestive:—Dissolve soft soap, 4 ozs., strong solution of ammonia, 4 ozs., in rain water, 1 gallon. Soak the material in this for twenty-four hours and wring out nearly dry. Then plunge into a boiling bath of potash alum, 1 lb.; copper sulphate, 2 ozs.; water, 1 gallon. Press out thoroughly while hot, then dry. [*Reply to G. W. M.*—14/11.]

REMEDY FOR WOODLICE IN MUSHROOM BED.—We fear there is no way of driving out the woodlice from the manure after the mushrooms have appeared without making the latter taste. An emulsion of soft soap and paraffin sprayed over the infested places would answer in many cases but not in this instance. Your best way will probably be to trap them with long strips of brown paper bent over like a conduplicate leaf and smeared on one side with a mixture of treacle, foots sugar, and beer. They will crowd to this, when the papers can be lifted up and shaken over boiling water. Small flower-pots coated on the inside with the same mixture are also good traps. [*Reply to W. J.*—14/6.]

REPORT.—It is usually read at the opening of the School of Pharmacy in October. [Reply to L. B. T.—13/32.]

BOTANICAL.—Your specimen seems to have miscarried. Can you send a duplicate? [Reply to A. E. B.—12/31.]

NOTICE TO LEAVE.—A calendar month's notice is usually given. [Reply to E. J. R.—14/2.]

NON-CLOUDY BRILLIANTINE.—Castor oil, 4 fluid ounces; eau de Cologne, $\frac{1}{2}$ fluid ounce; oil of neroli, 10 minims; absolute alcohol to produce 10 fluid ounces. [Reply to COUNTRYMAN.—13/30.]

CLOUDY BRILLIANTINE.—Almond oil, $3\frac{1}{2}$ fluid ounces; glycerin, $1\frac{1}{2}$ fluid ounces; ess. bouquet, 4 fluid drachms; alcohol (90 per cent.) to produce 10 fluid ounces. [Reply to COUNTRYMAN.—13/30.]

BOTANICAL.—It is a leguminous plant, probably *Sutherlandia frutescens*, R. Br., but it is impossible to name with certainty in the absence of flowers and fruit. [Reply to KEENE.—13/17.]

FERRUM REDACTUM.—The only recent communication on the subject has been a note by W. F. Hay, on ferrum redactum in pills, in the Journal for May 11, 1895. [Reply to E. S. P.—13/28.]

BOTANICAL.—It appears to be *Lonicera hispidula*, Pall., a native of N. India and China. [Reply to W. J. W.—13/7, and E. W. H.—13/16.]

BOTANICAL.—The plant belongs to the Gesneraceæ, but a better specimen with leaves as well as flowers must be sent before the species can be determined. [Reply to G. B.—12/29.]

MINOR EXAMINATION.—Write to the Registrar, 17, Bloomsbury Square, London, W.C., for a copy of the pamphlet 'Advice to Students.' [Reply to T. W. R.—13/27.]

DRY SHAMPOO.—Borax, $\frac{1}{2}$ oz.; ammonium carbonate, $\frac{1}{2}$ oz.; tincture of quillaia, 2 fl. drms; rectified spirit, 5 oz.; oil of myrcia acris, 10 minims; oil of lavender, 10 minims; distilled water to produce 20 fl. oz. [Reply to COUNTRYMAN.—13/31.]

PROPRIETARY PILLS.—You may break stamped packets and retail the contents in small quantities, without payment of further duty, if the pills are simply wrapped in paper when handed to the purchaser, and not made into a "packet" by being secured with wax or string, or otherwise. [Reply to BENZENE.—13/31.]

BENZENE.—It must be kept in separate glass, earthenware, or metal vessels, each of which contains not more than one pint and is securely stoppered. The aggregate amount so kept must not exceed three gallons. [Reply to BENZENE.—13/31.]

DISPENSING DIFFICULTIES.—As the salts are evidently not wholly soluble in the quantity of fluid ordered, you should rub them to a fine powder before adding the infusion, and attach a "Shake the Bottle" label. [Reply to ALPHA.—13/25.]

SOCIETY'S ARMS.—Any person using armorial bearings, whether or not their use is claimed as a personal right, is bound to take out a licence at a cost of a guinea a year. But, apart from that, no individual is entitled to use the Pharmaceutical Society's coat of arms. [Reply to AJAX.—13/15.]

CAPSULE FILLING APPARATUS.—Messrs. A. and K. Robertson, Rodney Street, Canonmills, Edinburgh, make one and an illustrated description of a simple apparatus designed by Mr. J. A. Forret, of Edinburgh, will be found at page 283 of the last volume of the Journal. [Reply to GRAVITAS.—14/8.]

BRITISH COLUMBIA.—The local Pharmacy Act provides that persons who hold diplomas from the Pharmaceutical Society of Great Britain may be registered in British Columbia without passing a fresh examination, if approved of by the Board of Examiners for the province. You should submit your case to the Secretary of the Pharmaceutical Association of British Columbia, Victoria, British Columbia. [Reply to VANCOUVER.—13/23.]

THE ORIGINAL MAKER OF OLD BROWN WINDS & SOAP.—The soap was made by John Richardson and Son, soapmakers, of London, in 1781. But it was probably made before that date; in fact, it is likely to be a survival of the time when each housewife made her own soap. [Reply to W. H. B.—13/9.]

SOLUTION OF MERCURIC OXIDE IN NITRIC ACID.—There is more than enough nitric acid ordered to dissolve the prescribed quantity of mercuric oxide, even if the quantity of acid is taken by weight. If you measure it, as you probably do, there will be a still greater excess. The red crystals you note as not dissolving easily are probably nothing but some hard crystals of mercuric oxide. If you gently warm the liquid in a flask those will dissolve. [Reply to SOCIUS.—13/13.]

INFUSION OF SYCAMORE IN FRENCH PHARMACY.—We are not aware that the sycamore is used to any extent for making a tisane. Possibly your customer requires the popular "lime-tree flowers" infusion, which is used to an enormous extent in domestic medicine in France, and produces an infusion which is agreeable to take and acts as a powerful sudorific. This is official in the 'Codex' as Tisane de Tilleul, and is made by infusing dried lime flowers in 100 parts of boiling distilled water for 30 minutes, then straining. You can obtain the dried lime-tree flowers from Messrs. Potter and Clark. [Reply to G. A. T.—13/29.]

EAU DE COLOGNE.—Every practical perfumer has his own recipe for Cologne, and the published formulæ are innumerable. We give you two good working formulæ, which you may modify to suit your taste. No. 1: Oil of neroli, 30 minims; oil of petit grain, 10 minims; oil of bergamot, 2 drachms; terpeneless lemon oil, 10 minims; oil of thyme, 5 minims; oil of rosemary, 15 minims; alcohol (90 per cent.), to produce 1 pint. No. 2: Oil of bitter orange, 3 drachms; oil of neroli, 30 minims; oil of lemon, 60 minims; oil of bergamot, 60 minims; oil of French lavender, 10 minims; alcohol (90 per cent.) to make 20 fluid ounces. [Reply to COUNTRYMAN.—13/30.]

EFFECT OF ADDING ETHER TO EXT. IPECAC. LIQ.—The "slimy-alkaloidal deposit" that you notice when adding ether to ext. ipecac. liq. is not an unusual occurrence when ether is added to an alcoholic extract of drugs containing alkaloids. It merely indicates the precipitation of a substance insoluble in the added liquid, which in your case was ether. The precipitate may or may not contain alkaloid. If a little dilute sulphuric acid and water are first added, ether no longer causes precipitation, and on the addition of ammonia the emetine and cephaeline are extracted by the ether. In this way the determination of the alkaloids could be effected, and the method is worth attention by pharmaceutical students, as being preferable to the B.P. method, which is tedious and has lately been shown by H. Wilson to be also inaccurate (*P.J.*, lxi., p. 3). [Reply to INTER Nos.—14/7.]

INFORMATION WANTED.

ROSOLENE.—"Extension" would be glad to learn the address of the firm which supplies a preparation named "Rosolene" for cleansing purposes (13/26).

CORRECTION.

DR. HALE WHITE'S 'MATERIA MEDICA.'—In the notice of this book, printed at page 41, by a printer's error the price was wrongly given as 2s. 6d. instead of 7s. 6d.

OBITUARY.

IRELAND.—On July 1, William Ireland, Chemist and Druggist, Egremont. Aged 83.

BAYLY.—On July 7, Charles Jasper Bayly, Chemist and Druggist, Waltham Cross, Herts. Aged 77.

CHURCH.—On July 9, Joseph Only Curtis Church, Chemist and Druggist, Acle, Norfolk. Aged 78.

SOWRAY.—On July 10, Robert Duck Sowray, Chemist and Druggist, Liverpool. Aged 59.

MABBETT.—On July 11, George Drew Mabbett, Pharmaceutical Chemist, late of Colnbrook, Bucks. Aged 65.

DRAWBRIDGE.—On July 17, Joseph George Drawbridge, Chemist and Druggist, Liverpool. Aged 59. Mr. Drawbridge had been a member of the Pharmaceutical Society since 1875.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Tincture of Guaiacum as a Reagent. Pierre Breteau comments on the value of tincture of guaiacum as a reagent. Inasmuch as it strikes a blue colour in contact with blood, copper sulphate, prussic acid, phosphorus, and many other substances, it loses much of its importance as a reagent. Again, experimental conditions should be clearly laid down and strictly adhered to, or wide differences in the behaviour of this reagent will be noted. As an instance of this, Breteau calls attention to Van Deen's method of determining small quantities of blood by the use of tincture of guaiacum. The smallest trace of copper in the distilled water employed appreciably affects the results. One part of copper sulphate in 500,000 of water will strike a blue colour with tincture of guaiacum slowly in the cold, but more rapidly at 40° C.—*Journ. de Pharm. et de Chimie* [6], vii., 569.

Determination of Nitrites in Water. A new process by Lucien Robin, chemist in the Municipal Laboratory of Paris, is based on the fact that when pure potassium iodide is added to a solution of a nitrite in the presence of acetic acid, and set aside for a time, a definite quantity of free iodine is always liberated by a definite quantity of nitrous acid. By this method the water is filtered, if not perfectly limpid. In case it is coloured, aluminium sulphate and sodium carbonate are added in succession, as in the metaphenylenediamine process, or else 100 C.c. of the sample is mixed with 2 C.c. of glacial acetic acid, placed in a distilling flask, and 50 C.c. of distillate collected. Again, if hydrogen sulphide be present, it is necessary to treat 125 C.c. of the sample with a little silver sulphate, and filter; 100 C.c. of the filtrate is then distilled. Whichever way is adopted, 50 C.c. of the sample is mixed with 2 C.c. of a 20 per cent. solution of chemically pure potassium iodide. The solution is shaken, 2 C.c. of glacial acetic acid is added, and after further agitation the vessel is set aside for exactly half-an-hour. The free iodine is then determined by titration with a standardised solution of sodium hyposulphite prepared by diluting 50 C.c. of decinormal solution to a litre. Starch solution is used as an indicator. In this way 0.1 Mgm. of nitrous acid per litre may be detected. If, for some reason or other, the titration cannot be carried out at the end of half an hour, the decomposing action of the acetic acid and consequent liberation of iodine must be prevented by the addition of 10 C.c. of concentrated solution of potassium carbonate.—*Journ. de Pharm. et de Chimie* [6], vii., 575.

Assay of Belladonna. W. A. Puckner proposes the following modification of Keller's method for the assay of such alkaloidal drugs as belladonna and henbane, when comparatively large quantities of the drug are used. To 10 grammes of the drug, dried and powdered, and contained in a flask of 75 to 100 C.c. capacity, add 50 C.c. of the light chloroform ether mixture (as used by Keller, *Am. Journ. Pharm.*, 1894, p. 42) and 5 C.c. of ammonia water (10 per cent.). Cork well and shake at frequent intervals for one hour. Transfer to a small percolator, improvised by drawing out a 50 C.c. test-tube (20 Mm. diameter), and plugging with cotton-wool. Receive the percolate in a separator, rinse the flask twice with 25 C.c. of the chloroform-ether mixture, and transfer to percolator. Take enough of the ethereal

solution to represent 10 grammes of drug, and complete the assay by Keller's method.—*Pharm. Review*, xvi., 180.

Nutation of Helianthus Annuus. J. H. Schaffner has made observations on the nutation of *Helianthus*. There are four distinct periods in the daily process: (1) From shortly after sunrise, when the plant is nutating about 60° east, until sunset there is a gradual movement westward until the terminal bud faces west and the upper part of the stem nutates 90°; (2) from sunset until about 10 p.m., during which time the plant regains its vertical position and the leaves drop downward so that their apices point vertically towards the earth; (3) from 10 p.m. to 1 a.m., the period of repose; (4) from 1 a.m. until sunrise, a gradual turning eastward, accompanied by a rising of the leaves, by which they are again brought with their upper surfaces at right angles to the light. A moderate wind or cloudy weather has little or no effect on nutation, but continued drought has a marked effect; in rainy weather also nutation is scarcely noticeable. The removal of the terminal buds was without result, and cutting slices from the side of the stem, midway between the terminal bud and the central point of curvature, seemed to have no more effect on nutation than would follow from the mechanical interference caused by the wound. On cutting off the leaves, the effect was quite different. Plants thus treated immediately lost their power of nutation. From other experiments connected with delamination the conclusion is arrived at that the irritability which is responsible for the bending of the stem is not inherent in the stem itself, but the stimulus is received by the lamina of the leaf, and the impulse transmitted through the petiole to the stem produces a response from both these parts.—*Bot. Gazette*, xxv., 395.

Volatility of Synthetic Remedies. F. X. Moerk points out that certain of the newer remedies which he has examined, viz., exalgin, acetanilid, methacetin, and phenacetin, are volatile in the order given, which corresponds also to the order of their melting point.

This is of importance in determining their solubilities and estimating them quantitatively. Half a gramme each of exalgin, acetanilid, and phenacetin, exposed separately to a temperature of 85° C. for four hours, weighed respectively 0.1890, 0.4795 and 0.4990 gramme. Hence the possibility arises of detecting the presence of such substances as exalgin and phenacetin by taking advantage of their volatility.—*Am. Journ. Pharm.*, lxx., 335.

Structure of Myristicaceæ. In a very complete and elaborate monograph of this order published in the *Nova Acta Acad. Caes. Leopold-Carol.* (vol. lxxviii., pp. 1-680), illustrated by twenty-five plates, Herr O. Warburg gives full details, in the introduction, of its anatomical characters. The plants belonging to the order are characterised by the presence of sacs containing a reddish astringent kino, which becomes blood-red on exposure to the air. The hairs are very characteristic, being always branched sympodially. Oil-cells containing an essential oil are invariably present. The aril originates before the flower opens and before fertilisation. It is at first nothing but a thickening of the integument in the region of the hilum, the exostome taking a part in its formation. It contains in its cells an essential oil, a resinous substance, crystals of calcium oxalate, and in many species also a substance intermediate between dextrin and starch. The aril is greedily devoured by birds, the ripe seeds passing uninjured through the intestinal canal. All the species of Myristicaceæ appear to be cross-pollinated by the agency of insects.

ON EMETINE AND CEPHAELINE.

BY DR. B. H. PAUL AND A. J. COWNLEY.

Since the extraction of ipecacuanha bases has been undertaken by Messrs. Whiffen on a manufacturing scale and they have introduced the hydrobromide as the most suitable salt of emetine for medicinal and pharmaceutical use, we have, through their courtesy, been enabled to supply Dr. O. Hesse with a sufficient quantity of these substances for chemical examination. Dr. Hesse has very kindly given us the benefit of his valuable assistance in reference to the question as to the molecular weight of emetine and cephaeline, which had not been satisfactorily solved by the results of our earlier experiments. We desire to thank him for that, and, though we hesitate in accepting some of his conclusions, we are pleased to be able to add that his results practically corroborate those originally arrived at by ourselves in the isolation and investigation of these bases.

Before giving the results of Dr. Hesse's investigation, described in the following paper, it is desirable to recall the statement made in our original paper (*Ph. J.*, liv., 111), that the empirical formula $C_{15}H_{22}NO_2$, given to emetine by us, was decided upon as a simple expression of our analytical data, and also as being the formula that had been assigned to emetine by Glénard. The formula $C_{14}H_{20}NO_2$ was also provisionally adopted for cephaeline until it should be possible to obtain further indications as to the molecular weight than the platinum salt analysis afforded.

BY DR. O. HESSE.

Some uncertainty having been expressed as to the formulæ of the interesting bodies, to which Dr. Paul drew the attention of the Society, at the evening meeting of the Pharmaceutical Society, as reported in the *Pharmaceutical Journal*, No. 1430, p. 450, Dr. Paul kindly submitted specimens of emetine and cephaeline to me for comparative examination, for which I tender him my best thanks.

Emetine.

The specimen of emetine was a white powder, and completely agreed in properties with those assigned to it by Paul and Cownley. It dissolved readily in ether, chloroform, benzol, or alcohol, and its alcoholic solution gave no coloration with ferric chloride. It was insoluble in solutions of caustic or carbonated alkalies, but easily dissolved in dilute acetic acid. From the acetic acid solution potassium hydrate precipitated a white flocculent precipitate, insoluble in excess, but readily soluble in ether. Acetic anhydride dissolved emetine, but without effecting substitution.

COMPOSITION.—The substance dried at 100° was employed for elementary analysis, as the desiccator dried substance still contained a small amount of water (0.93 per cent.).

Gramme.	Gramme.	Gramme.
0.2125 dried at 100° gave	0.561 CO_2 and	0.158 H_2O .
0.219 " " " " "	0.578 " " "	0.1605 " "

PLATINUM SALT.—This was obtained as a fine yellow powder by precipitating the hydrochloric acid solution of the base with platinum chloride. It was dried at 120° .

The first preparation,	0.2955 gm.	gave 0.635 platinum.
" second " "	0.2835 " "	" 0.620 " "

DETERMINATION OF METHOXYL.—0.2279 gramme of the anhydrous substance gave, according to Zeisel's method, 0.409 gm. AgI.

MOLECULAR WEIGHT.—The determination by Beckmann's boiling point method was carried out in the apparatus described in the *Zeitschrift für Physikalische Chemie*, 8, 223.

15 grammes of ether employed :

Gramme.

0.177 of the desiccator dried substance gave increased boiling point	0.045°	=	"	552	molecular weight.	"	"	"	Mean =	548.
0.364 " "	0.095°	=	"	545	"	"	"	"		

25 grammes of chloroform used :

Gramme.

0.115 desiccator dried substance gave increased boiling point	0.032°	=	"	523	molecular weight.	"	"	"	Mean =	533.
0.299 " " " " "	0.076°	=	"	540	"	"	"	"		

As the substance employed contained 0.93 per cent. of water, the first mean value had to be reduced to 543, and the second to 528. From these results it would follow that the formula of emetine is $C_{30}H_{42}N_2O_4 = C_{26}H_{30}N_2(OCH_3)_4$.

The following results are those obtained for pure emetine :—

Emetine.	Glénard.		Paul & Cownley.		Hesse.	
C	72.43	72.08	72.23	71.80	72.00	71.98
H	8.64	8.59	8.71	9.02	8.11	8.14
N	5.28	5.42	—	5.75	—	—
OCH_3	—	—	—	—	23.68	—
Molecular Weight	—	—	—	—	543	528
Platinum	—	—	—	21.63	21.48	21.86

Emetine.	Paul and Cownley.		Found mean.
	$C_{30}H_{42}N_2O_4$	$C_{15}H_{22}NO_2$ or $C_{30}H_{44}N_2O_4$	
C	72.87	72.58	72.01
H	8.50	8.87	8.86
N	5.66	5.64	5.75
OCH_3	25.10	—	—
Molecular Weight ..	494	—	—
Platinum Salt	$C_{30}H_{42}N_2O_4, PtCl_6H_2$	—	—
Platinum	21.56	—	21.63

Cephaeline.

This consisted of small white needles containing 3 to 5.2 per cent. of hygroscopic water, which was entirely lost under the desiccator. It dissolved easily in ether, benzol, chloroform, or alcohol. Ferric chloride added in small quantity to an alcoholic solution of cephaeline gives a dark reddish-brown coloration. Cephaeline contains, therefore, phenolhydroxyl, and is consequently a phenol base; moreover it dissolves easily in caustic potash and is not extracted from the solution by ether. It dissolves also easily in acetic acid and is reprecipitated by cautious addition of caustic potash as a white precipitate that is soluble in excess; hence ether naturally extracts no cephaeline from the solution in caustic alkali. It is therefore on this peculiar behaviour of cephaeline with caustic alkali and ether that the separation of emetine and cephaeline depends.

COMPOSITION OF CEPHAELINE.—0.2000 gramme dried at 80° gave 0.5255 gramme CO_2 and 0.146 gramme H_2O .

PLATINUM SALT.—The base was dissolved in dilute hydrochloric acid and precipitated with platinum chloride, forming a yellow flocculent precipitate.

0.424 gramme dried at 120° gave 0.095 gramme platinum.

DETERMINATION OF METHOXYL.—0.215 gramme of the desiccator-dried substance gave, according to Zeisel's method, 0.279 gramme AgI.

0.208 gramme gave 0.266 gramme AgI.

MOLECULAR WEIGHT.—The determination by Beckmann's boiling point method gave the following results :—

15 grammes of ether taken.

0.082 gramme of substance gave increased boiling point	0.012°	=	"	981	molecular weight.	"	"	"	Mean	956.
0.169 " " " " "	0.025°	=	"	952	"	"	"	"		

Chloroform as solvent.

(1) 402	402
(2) 469	469

Cephaeline. Ethylic alcohol as solvent.

533	593	563
-----	-----	-----

The figures (1), (2), (3) signify that there was a first, second, and third addition of substance to the same solution.

As we have already stated, with the exception of ether the other solvents have a great colour changing action on the alkaloids.

These molecular weight determinations by Beckmann's method fairly agree with Dr. Hesse's results when chloroform and ethylic alcohol were employed as solvents; but the results obtained are open to the objection we have stated. It may be remarked that the combining value of the alkaloids will, of course, be unaffected whether we assume 248 and 234 or 496 and 468 to be correct. The former figures, as we have shown, have a monobasic value, but for a further conception of the constitution of these two interesting alkaloids we are inclined to await further results, such as may be obtained by a splitting up of the molecule.

In conclusion, it is noteworthy to draw attention to the characteristic suggestion of Dr. Hesse as to the probable existence of other alkaloids in ipecacuanha root, and to the fact that we have already noted in our previous papers the existence of a third alkaloid, but have not yet been supplied with it in sufficient quantity for a satisfactory examination.

In addition to the crystalline salts of emetine and cephaeline already obtained and described by us (*P. J.*, liv., 111 and 373) we have been enabled by the courtesy of Mr. W. G. Whiffen to make an examination of the commercial emetine hydrobromide, which is suggested as the most convenient salt of emetine for medicinal use. The following are the results obtained:—

	Commercial Emetine Hydrobromide. Crystalline.	Emetine Hydrobromide. Anhydrous at 100° C.	Calculated for $C_{15}H_{22}NO_2HBr$. Anhydrous Salt.
Water	11.09	—	—
HBr	22.01	24.75	24.62
Emetine ..	66.90	75.25	75.38
	100.	100.	100.

The commercial salt appears to approximate to a salt with two molecules of water, which requires according to theory—

Water	9.86
HBr	22.19
Emetine	67.95
	100.00

Emetine hydrobromide is a permanent salt undergoing no alteration in colour after being kept for some months. It is readily soluble in water, difficultly so in absolute alcohol or in chloroform, and much less soluble in water than emetine hydrochloride. It crystallises from water in beautiful silky tufts of needles, which on being separated and pressed on bibulous paper contained 33.08 per cent. of water, thus approximating to a salt having the composition represented by the formula $C_{15}H_{22}NO_2, HBr \cdot 9H_2O$, which requires by theory 32.99 per cent. of water of crystallisation. Emetine hydrobromide becomes anhydrous at 100° C. and effloresces on exposure to air, until it has the composition approximating to a salt with two molecules of water $C_{15}H_{22}NO_2, HBr \cdot 2H_2O$ when it remains constant.

WHAT IS A MICROSCOPE?*

BY T. E. WALLIS.

A microscope is an optical instrument for viewing small or minute objects. Small objects are seen by making them appear larger to the eye. We will briefly consider how this may be done.

The eye may be compared to a camera with a lens (the crystalline lens) in front and a screen (the retina) at the back; the lens forms an image of an object upon the retina, and a sensation of sight is conveyed to the brain by the optic nerve. It is then evident that the apparent size of an object depends upon the size of the image upon the retina, and also that, to increase the size of this image, the object must be brought nearer to the eye.

We do not always realise that an object is magnified when brought nearer to the eye, because we make allowance for distance. This may be shown by holding a coin before the eye at some distance, when it is seen to cover a certain small portion of the view; but if it is brought nearer to the eye a very large part of the view is hidden, thus showing that the coin appears larger, although we think it is the same size, because we allow for the distance. Again, when the moon is above our heads it appears of a certain size, and if measured by a suitable instrument it is found always to have the same size wherever it may be; but if we look at the moon when near the horizon the density of the atmosphere makes it appear comparatively dim and consequently further off, and as we view it we make allowance for the distance, and so think the moon is larger; hence the nearer we bring an object to the eye the more we magnify it. This method of magnification is not applicable if

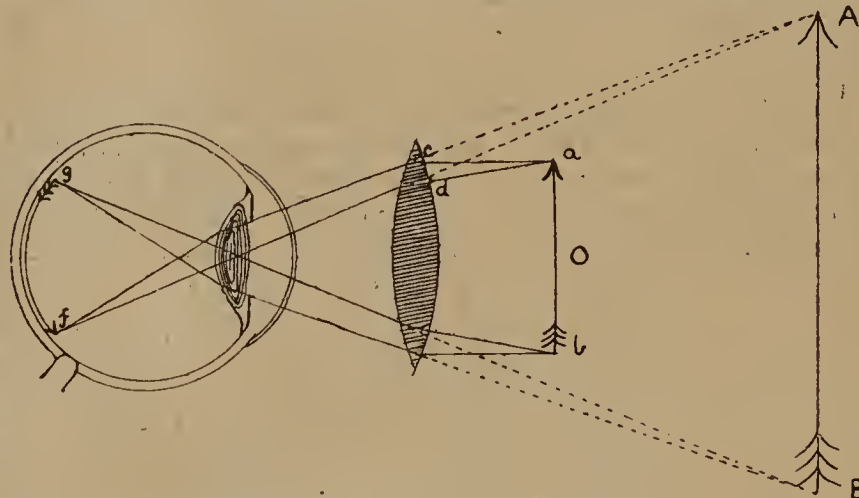


FIG. 1.—DIAGRAM OF SIMPLE MICROSCOPE.

the unaided eye is used to view an object, because a person with good sight cannot generally see an object distinctly at a less distance than six inches. This is explained by the fact that rays of light coming from an object must enter the eye almost parallel for distinct vision, and if the object is nearer than six inches the rays of light radiate at too great an angle. The best distance at which to see detail in any object is from six to ten inches. For this reason the tube length selected for English microscopes is ten inches, and for Continental microscopes six and a half inches.

Instruments of whatever kind which can be employed to make an object distinctly visible at a less distance than six inches have a claim to be called microscopes. The simplest device is to take a blackened card with a pin-hole pierced in it, and by looking through this hole objects may be seen at a much shorter distance than that required for normal vision. This may be shown by looking at some small print through the pin-hole, which enables one to read it distinctly at a short distance; but on removing the card, the printing appears blurred and almost invisible. Although an object may be magnified in this way, it is quite evident that the hole only allows a very small amount of light to enter the eye, and hence the image is not particularly clear or bright.

A better means of magnifying an object is to use a simple lens. It acts in the following way:—Diverging rays of light, such as a lamp or candle emits when allowed to pass through a lens, are reconverged to a point beyond the lens, and there form an image of the flame, which may be caught upon a screen, and is hence called a "real image." The magnifying power of a simple microscope (*i.e.*, an ordinary pocket lens) depends upon this property of bending the course of diverging rays to make them so nearly parallel that they can enter the eye for distinct vision. This will be easily understood from the accompanying figure.

* Read before the School of Pharmacy Students' Association.

From the point *a* in the object *O*, diverging rays *ac* and *ad* enter the lens *L*, and are converged by it so as to enter the eye almost parallel, and are brought to a focus at *f* on the retina. Rays from *b* are focussed at *g*, and every other point in the object is similarly focussed. If the rays entering the eye are produced till they meet, they appear to come from points *A* and *B* in *AB*, which is the apparent image of the object as apparently seen at the normal distance for distinct vision.

A more complicated instrument than the simple microscope is the compound microscope, the theory of which may be explained by supposing it is made of two lenses, as in the figure.

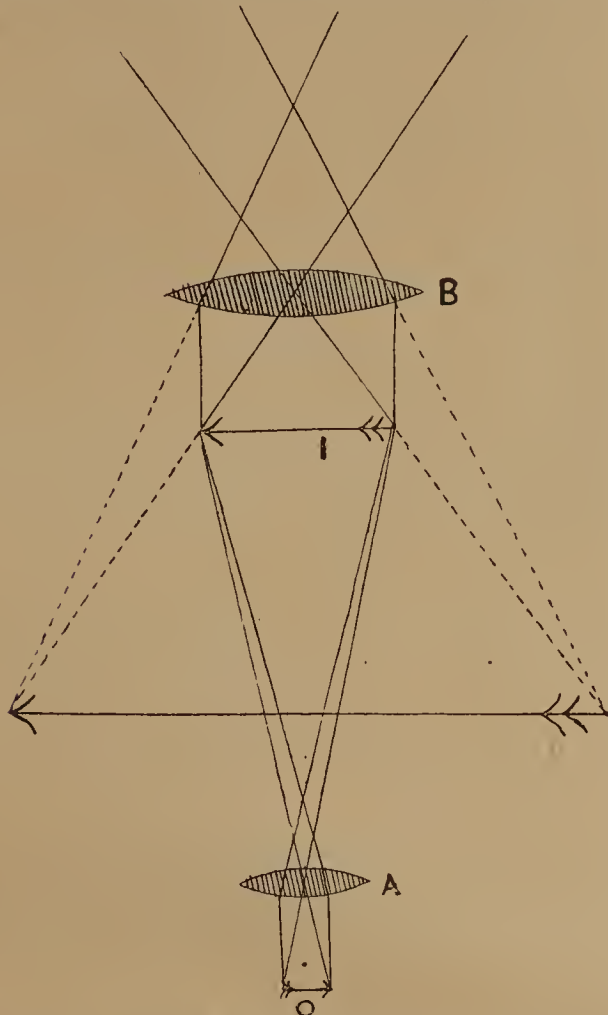


FIG. 2.—DIAGRAM OF PATH OF RAYS IN A COMPOUND MICROSCOPE FORMED OF TWO LENSES.

One of these lenses, *A*, is placed near the object *O*, at a distance a little longer than the focal length, and produces in the microscope tube a much enlarged real image, *I*. This image is again magnified by the lens *B*, which, being near the eye, is known as the ocular or eye-piece.

If single lenses perfectly performed their duty, the construction of a microscope would be a simple matter. Unfortunately, ordinary lenses are subject to several defects. There are three ways in which they fail.

1. Lenses are ground to spherical surfaces and consequently refract too much those rays which fall upon the edges of the lens. This causes the image formed by a reading glass to appear more or less blurred.

2. It also accounts for the fact that, when a print or other object on a flat surface is observed through an ordinary lens, the marginal parts appear distorted. These defects in a lens are due to the same cause, which is known as "spherical aberration."

3. When a ray of light is allowed to enter a prism and passes out on the other side, it is not only refracted, but the white light is also split up or analysed into its component colours. This band of colours is known as a spectrum and is formed because blue and violet rays are more easily refracted than red ones. This may be remembered from the fact that "violet" begins with a "v" and is very refracted, while "red" begins with an "r" and is rather refracted. A simple lens may be looked upon as being composed of two prisms placed base to base, and it will be easily understood from the diagram that the blue and violet rays are refracted to a point nearer the lens than that at which the red rays are focussed.

Consequently if the image is caught on a screen placed somewhat beyond the focus of the lens the predominant colour is red, and concentric rings of brown, yellow, green and blue are seen to be formed within the outer circle of light; similarly if the screen be

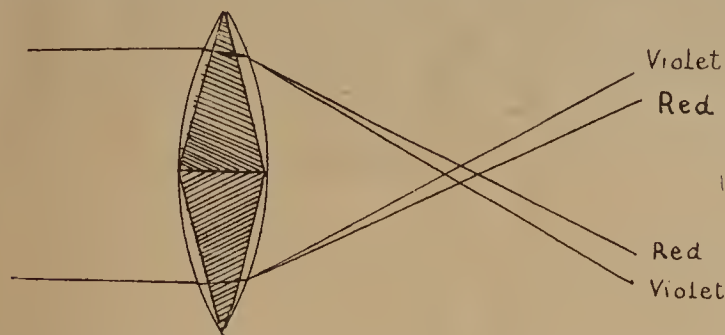


FIG. 3.—DIAGRAM ILLUSTRATING CHROMATIC ABERRATION OF A SIMPLE LENS.

held somewhat within the focus, the predominant colour is blue, while round the outside of the bright disc are seen concentric rings of green, yellow, brown and red light. This defect in a lens is known as "chromatic aberration."

These faults are not very disadvantageous for rough work with simple lenses, but are quite fatal to precise work with lenses of high magnifying power. To make a really useful microscope, these imperfections must to a great extent be remedied. It is evident that they are worse at the edges of a lens, and the simplest method of improvement that suggests itself is to stop all the lens except a small central portion; but in so doing, a large amount of light is blocked out, and the lens is also affected so that it will not so readily make closely-ruled lines distinctly visible. Aberration differs greatly in amount according to the inclination of the surfaces of lenses to the path of the rays. Thus the spherical aberration of a plano-convex lens in parallel rays is less than one-third, when the flat side is turned towards the focus, of what it is when the spherical surface is towards the focus. A reference to Fig. 4

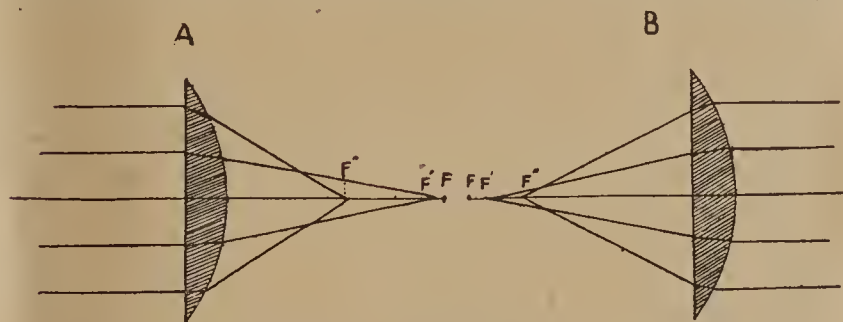


FIG. 4.—DIAGRAM ILLUSTRATING SPHERICAL ABERRATION OF A PLANO-CONVEX LENS.

will make this clear. The distance $F'F''$ represents the difference in spherical aberration of rays at the edge and centre of the lens; this length is much greater in *A* than in *B*. This fact is applied to the construction of microscope objectives by dividing the entire power among two or more lenses separated by a small space; by this means surfaces of different inclinations are presented to the rays, and the aberration due to one surface is largely corrected by that of another lens. This means of correction is also made use of in forming the ordinary Huyghenian eye-piece, which consists of two plano-convex lenses with a diaphragm between them. Another method for the correction of aberration is to form the separate lenses of different kinds of glass which differ greatly both in refractive and dispersive power. Thus a plano-convex lens may be formed of a flint-glass concave lens and a crown-glass biconvex lens; by this combination both chromatic and spherical aberration may be corrected, and the lens so formed is termed "achromatic."

From these facts it is readily seen that objectives should possess four qualities:—

1. DEFINITION.—Fine objects, such as the hairs on a fly's proboscis, should be clearly imaged, and the edges should be sharply marked and not at all woolly or indistinct.

2. FLATNESS OF THE FIELD.—On looking through a microscope the object viewed appears in a bright disc of light; this bright area is spoken of as the "field" of the microscope. When looking at a flat object, the parts at the edge of the field should be in focus at the same time as the centre of the object, and should not appear in any way blurred. If an objective answers tests of this nature

well, it shows that it has been properly corrected for spherical aberration.

3. RESOLUTION.—However great the magnifying power of a lens, and however good the light and correction of the objective, it is quite unable to separate or "resolve" markings of extreme fineness and very close together, unless it possesses a certain aperture, which is measured comparatively by the width of the angle of the outermost rays grasped by the objective. The numerical aperture N.A. of an objective, as published in opticians' lists, is obtained by

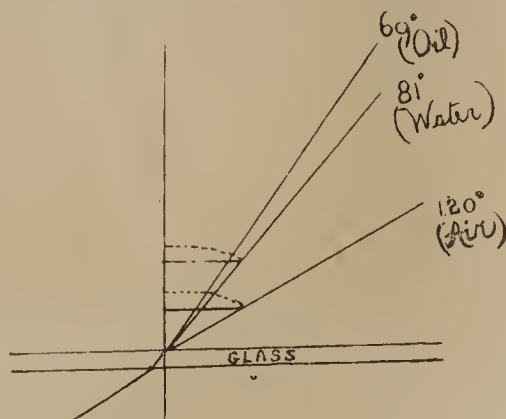


FIG. 5.—DIAGRAM SHOWING ANGLES OF EMERGENCE.

multiplying the sine of half the outside angle by the refractive index of the medium used. The aperture of an objective is tested by seeing whether it will distinctly separate the fine markings on the scales of various insects and on diatoms.

4. PENETRATION.—This is the power of showing the cubical content of a body under examination. This is not a desirable quality, but a good objective should show clearly one plane at a time, and on slightly altering the focus this plane should go out of view and another plane be clearly focussed.

A few words about "immersion objectives" may be suitably included here. If an object is placed on a glass slip without covering it with any medium, the largest angle of light that can enter the face of a dry lens must be less than 180° . Now, suppose the object mounted in Canada balsam, then a cone of rays emerging from the cover-glass into air is so refracted that its angle becomes much wider, and rays forming an angle greater than 80° cannot get out at all, but are totally reflected from the cover-glass. If, however, a drop of water is placed upon the cover-glass between it and the objective, an angle of 112° can emerge from the balsam, and if a drop of cedar oil is used, rays pass out without any refraction at all. The effect of using a drop of water or cedar oil may be understood from Fig. 5, which shows that an angle of 120° in air is reduced to 81° in water, and to 69° in cedar oil.

It is then evident that by this method of oil-immersion an objective is theoretically enabled to grasp any angle less than 180° in balsam, whereas an angle of 82° in balsam is the greatest a "dry" lens can grasp. From these facts it is quite clear that, with oil-immersion objectives, there is a great gain in illuminating power, making the image both brighter and more distinct; and also that correction of the objective for thickness of the cover-glass is entirely obviated.

(To be continued.)

TESTS FOR LEAD.—L. L. de Koninck compares the value of sulphuric acid and potassium chromate in testing for lead. He recommends that the lead be precipitated as sulphate, dissolved in a strongly ammoniacal solution of ammonium tartrate, and confirmed by reprecipitation either by excess of sulphuric acid or by the addition of a chromate (or dichromate). By the latter method small quantities of lead escape detection, unless suitable means are adopted. He recommends the addition of a few drops of acetic acid to the ammoniacal tartrate containing lead either before, or better, after the addition of the chromate. The acid is added to the solution in order first to neutralise the ammonia, and then to convert the chromate to dichromate; in this way an orange colour is developed. Sulphate and chromate of lead dissolve in ammonium tartrate only in the presence of free ammonia. In performing this test the formation of a white crystalline precipitate of ammonium tartrate may be disregarded.—*Bull. de l'Assoc. Belge des Chim.*, xii., 58.

SELECTED FORMULÆ.

EMULSION OF COD-LIVER AND CHOCOLATE.

Decoct. carrageen (2:100), 150; ol. jecor. aselli, 240; glycerin, 60; chocolate powder, 30; tinct. vanill., *q. s.* The chocolate powder is mixed with the mucilage, and heated until a smooth mass has formed. After cooling, the cod-liver oil is added, and the mixture beaten with an egg whisk.—*Zeit. d. Allg. oest. Apoth. Ver.*, lii., 7.

FORMALIN MOUTH WASH.

The following recipe is due to Ganz: 50 grammes of 40 per cent. formaldehyde are dissolved in 1000 grammes of spirit; tincture of benzoin, 200 grammes; tincture of myrrh, 50 grammes; oil of peppermint, 3 grammes; anise oil, 2 grammes; cassia oil, 1 gramme; cinnamon oil, 15 drops; and cochineal powder, 2 grammes, are mixed; the whole well stirred and filtered.—*Deutsch. Amer. Apoth. Zeit.*, xviii., 1430, after *Drog. Ztg.*

MEDICINAL MOUTH SOAP.

Medicinal soap, 30 grammes; glycerin, 30 grammes; alcohol (90 per cent.), 15 grammes; salicylic acid, 1 gramme. Peppermint water and colouring matter as required.—*Zahnzt. Rund.*, vi., 3933.

TAMARIND PASTILLES.

Fol. sennæ, 34 grammes; confect. citri, 6 grammes; confect. aurant., 9 grammes; pulp. tamarind dep., 50 grammes; cardamon, 0.75 gramme; sacch. alb., 116 grammes; ol. rosar., ol. caryoph. aa gtt. 3; divide in pastill., 52. The pastilles are covered with cocoa butter and vanilla sugar and dusted over with pulv. benzoin.—*Zeit. des Allgem. oester. Apoth. Ver.*, li., 893.

MALT BONBONS.

Ten parts of sugar are boiled with 4 parts water, the latter being mixed with the necessary volume of extract of malt. The mixture is boiled on an open fire until a sample dipped into ice water is brittle. It must not be boiled too long or it acquires marked bitter taste. When ready, the mass is poured out on to a marble slab, and cut up into squares.—*Zeit. des allgem. Oest. Apoth. Ver.*, li., 893.

WRITING INK FOR ZINC SHEETING.

Potassium chlorate, 1; copper sulphate, 1, are dissolved in 18 parts of warm water, and a little mucilage is added. Write on a clean zinc sheet with this mixture and wash off the writing in a short time.—*Zeit. des Allg. oest. Apoth. Ver.*, li., 893, after *Pharm. Ztg.*

MIXTURE IN DIFFICULT DENTITION.

Sodium bromide, 50 centigrammes; orange-flower water, syrup of ether, of each 30 grammes; distilled water, 120 grammes. For external use. Rub the child's gums with the mixture several times a day, after nursing.—*Pediatrics*, v., 46.

OINTMENT FOR ECZEMA.

Formalin, 25 centigrammes; zinc oxide and French chalk, of each 25 grammes; vaseline, to make 100 grammes.—*Monatsch. für Dermatolog. through Pediat.*, v., 45.

PEILE'S ANTITETANIC PILL.

As a safeguard in such accidents as are likely to result in tetanus, Dr. H. G. Croly recommends the use of the following antitetanic pill due to Peile:—Calomel, 12 grains; ext. aloes, 12 grains; James's powder (true), 12 grains; extract of opium, 3 grains. Make twelve pills, one to be taken every three hours.—*Med. Press*, cxvi., 26.

CRACKING COAL FOR CUTTING GLASS.

Powdered charcoal, 90; nitre, 2; benzoin, 1; powdered tragacanth, 2. Mix in fine powder, mass with water, roll into pencils and dry. Let one of these, when ignited, pass slowly over the glass, and cause a drop of water to fall in the hot parts, when it cracks. The crack may be led in any desired direction by means of the burning pencil.—*Sci. Amer.*, lxxviii., 55.

LACQUER FOR METAL WARE.

Shellac, 16 parts; dragon's blood, 4; turmeric powder, 1; methylated spirit, 320. Allow the mixture to settle, and filter.—*N. Erf. u. Erf.*, through *Zahntech. Reform.*, xvii., 459.

PARLIAMENTARY NOTES.

THE PHARMACY ACTS AMENDMENT ACT was one of the 110 Acts which received the Royal assent on Monday, the 25th inst., at 3 p.m. The assent was given by Commission in the House of Lords, the "faithful Commons" being in due attendance to a very limited extent. The Bill is now an Act, and every registered chemist of Great Britain is eligible to join the Pharmaceutical Society as a "Member" and offer himself for election to the Council of the Society. The grade of "Associate" is abolished, and no invidious distinction is now drawn between those who have secured a qualification under the Pharmacy Act, 1868.

PLAYING WITH ADULTERATION LEGISLATION.—The President of the Local Government Board cannot be said to have added to his reputation—unless the term be used in its least complimentary sense—by his new Bill; "to make better provision against the adulteration of agricultural and horticultural produce." The Bill deals almost entirely with milk and butter, and the right honourable gentleman, in a long explanation of his views, had the audacity to state that the Sale of Food and Drugs Acts, 1875 and 1879, were adequate to effect the purposes for which they were enacted. This too, in face of the findings of the long-winded Committees which have investigated the state of the law relating to adulteration; and regardless, too, of the fact that Mr. Chaplin himself, in his own peculiar way, acknowledged the inadequacy of the present state of the law so recently as last year by introducing a moribund Food and Drugs Bill during the expiring moments of the last Session. Truly the Chief of the Local Government Board should have a brilliant future before him in the paths of statesmanship. Moreover, his expressed belief that this latest bantling might be included in the category of non-contentious measures is so deliciously cool that it is worthy of a parliamentary Swiveller.

THE BILL proposes to establish the Chief Chemist at Somerset House as the sole authority on butter and milk and injurious additions thereto or fraudulent abstractions therefrom. The Board of Reference which figured in former Bills has disappeared, because Mr. Chaplin deems it cumbrous (and he should be an eminent judge in that respect). In its place are to be set up Regulations of the Board of Agriculture, which body has already endeared itself in the heart of the nation by regulations on another vexed matter. The Board is to determine such nice points as "What is impoverishment?" as well as to define "adulteration"; and the sanguine member for Sleaford thinks that such a plan will do away with those annoying differences between official and non-official analysts. It may do, but those whose business leads them to deal in the substances aimed at by the Bill doubtless consider they know more about the technicalities of the subject than the combined staffs of Somerset House and Whitehall Place.

ONE GOOD FEATURE may be noted. The Bill foreshadows a division in the treatment of food and drug adulteration; for the fact that a separate measure is thought expedient for agricultural produce constitutes a good argument for promoting a separate Bill for drugs. If the logic of such an idea should ever be made to penetrate a ministerial head, it is to be hoped that it will not be associated with Board of Agriculture Regulations. The difficulties surrounding the satisfactory administration of the law as to adulteration can only be dealt with by experts, and the most superlatively excellent Agricultural Department ever fed by competitive examination could not grow an ideal Court of Reference. The Bill has not yet been read a second time.

PROTECTION IN DEGREES.—An interesting attempt to support home-grown academic degrees is embodied in Mr. Sidebotham's (Hyde) Bill to regulate the use of University degrees, which was read a first time on the 22nd, and will appear on the paper again on Bank Holiday. The sponsors are Mr. Carson (M.A., Dublin), Dr. Farquharson (M.D., Edin.), Sir W. Houldsworth (who does not exhibit his degree), Sir J. Lubbock (who is smothered with degrees), Mr. MacNeill (Ch.Ch., Oxon), and Sir William Priestley (M.D., Edin.). The idea seems to be that foreign competition in Ph.D.'s, M.D.'s, and similar distinctions is too much of a good thing when the public becomes so confused as to be unable to distinguish between Dr. Smith who graduated at London, and Dr. Brown who purchased his

diploma at Pumpernickel or Higginopolis. It is, therefore, suggested that any person using affixes indicating the possession of a degree shall, unless he be a graduate of a University of Great Britain or Ireland, clearly state the source of the degree. The maximum penalty for not doing so is "forty shillings or a month." No honest graduate of a continental university is likely to object to the proposal, but there is ground for assuming that the Bill may do for foreign degrees what the Merchandise Marks Act has done for foreign merchandise—namely, give them bold advertisement and bring them into undesired popularity. As the project would do nothing to prohibit the use of bogus titles we are not very much enamoured of it.

ON BEHALF OF THE UNQUALIFIED.—Mr. Logan (Leicester) on Tuesday asked Mr. Balfour to consider the woes of the unqualified medical assistants who had been deprived of a livelihood by the recent action of the General Medical Council in prohibiting the employment of such assistants by medical men. Mr. Balfour, in reply, said that the action of the Council might, in certain cases, have the effect which Mr. Logan deplored; but he was advised that there was no restriction to the employment of unqualified assistants under the immediate supervision of qualified practitioners, nor was there any fear that the resolution of the Medical Council would interfere with the training of medical pupils. Quite gratuitously the right hon. gentleman added that the Privy Council had no jurisdiction in the matter, and that the Medical Council dealt with each case on its merits.

THE LONDON TEACHING UNIVERSITY is practically assured, the Commissioners Bill having passed its third reading in the Commons in the small hours on Monday, after a long and hot fight.

ANTISEPTIC DRESSINGS.*

SERUM SUBLIMATE GAUZE, 5 PER MILLE.—Purified gauze, 100. Moisten with a solution of corrosive sublimate, 0.6; serum of horse blood, 60; distilled water, 90. Rub the sublimate with the serum and dilute the solution thus obtained with the water. Press the wet gauze until the weight is 225, then dry in the air in the dark. Serum sublimate solution may be replaced by mercury albuminate obtained with white of egg.

SAL ALEMBROTH GAUZE.—Purified gauze, 100. Moisten with a solution containing ammonium chloride, 0.1; sublimate, 0.25; distilled water, 150. Press to the weight 225 and dry in the dark. Other medicated gauzes are made in a similar manner.

ABSORBENT COTTON WOOL.—Ordinary cotton wool is boiled for 30 minutes in a 5 per cent. solution of soda or potash, washed freely, and plunged in a 5 per cent. solution of chlorinated lime, again washed, transferred to an acid bath, washed, steeped in an alkali bath for 20 minutes, and finally washed and dried. This cotton alone should be used for the medicated cottons described below.

MERCURIC IODIDE COTTON.—Moisten 100 of absorbent cotton with a solution of mercuric iodide, 0.8; potassium iodide, 0.03 glycerin, 12; in distilled water, 240. Dry.

STERILISATION OF CATGUT BY HOFMEISTER'S METHOD.—The crude catgut rolled on bobbins is first hardened for 24 hours in a 4 per cent. solution of formalin. It is then boiled in water for 10 minutes, and finally preserved in a solution of alcohol, 1000; glycerin, 50; sublimate, 1.

IODISED COTTON.—Moisten absorbent cotton, 100, with a solution of iodine, 10; potassium iodide, 10; glycerin, 120 (?); alcohol, 40, and dry. [This proportion of glycerin must be an error. It is impossible to dry the wool containing more than its own weight of glycerin.—Ed. *Ph. J.*] Or take iodine, 10, wrap in blotting paper, and place in the bottom of a wide-mouthed jar, fill the jar with absorbent cotton, 100, and heat on the water bath, first removing the cork to allow the expanded air to escape, then heat to 100° C., close tightly, and cool quickly.

ASEPTIC SILK THREADS.—To prepare Lister's carbolised silk, colourless threads of silk are plunged in a mixture of white wax 1; crystallised phenol, 10; and left until cold; they are then withdrawn, wiped on a clean cloth, and preserved in a solution of phenol, 1; glycerin, 9; alcohol, 90 p. c., 10.

ODOFORM SILK.—Colourless silk threads rolled on glass are placed in a solution of iodoform, 1; ether, 9; for two days, then dried and kept in yellow glass bottles.

* *Bulletin Général de Thérapeutique.*

REVIEWS AND NOTICES OF BOOKS.

A COURSE OF PRACTICAL CHEMISTRY OR QUALITATIVE CHEMICAL ANALYSIS. By the late W. G. VALENTIN, F.C.S. Edited and revised by Dr. W. R. Hodgkinson, F.R.S.E., F.I.C., etc. Ninth edition. Pp. 403. Price 9s. London: J. and A. Churchill. 1898.

Valentin's 'Practical Chemistry' is well known as one of the best works of its kind that can be placed in the hands of a student who desires by conscientious work to become acquainted with the operations of analytical chemistry. Originally devised by the late Mr. Valentin for his students in the old Royal College of Chemistry as the basis of work to be carried out by each student, the publication of edition after edition of this book, culminating in the ninth edition now issued, shows how the value of the instruction therein contained is appreciated by teachers and students. Teaching in a laboratory, as enunciated by the author in the preface to the original edition, must be controlled by a daily examination and verification of the progress made by each student, and this ideal of the duty of a chemical teacher originally conceived by Valentin's master, Hofmann, was scrupulously followed by his pupil. It is to be regretted that such principles of laboratory instruction are not now more general, although it is true that "this can obviously only be done in the case of a large practical class by expending much labour and time upon this all-important part of the laboratory work."

In this edition the plan of the work is the same as in previous editions. Some alterations and additions have been made as modern chemistry requires, and it now includes a chapter on quantitative and volumetric analysis. The course of instruction indicated throughout is that of dealing with each metal of a group in such a manner that the student performs the characteristic reactions and then carries out a scheme of qualitative analysis of each group by a systematic method of separation, and the methods chosen are, as a rule, those which are suitable for the quantitative work which will subsequently engage the attention of the student. The tabular form of expressing and arranging chemical reactions is no doubt a most useful way of embodying methods of separation of the various metals and acids, but it is to be remembered that "on no account should a student use any tabular directions without first having made himself practically acquainted with the details of the reactions; and to counteract any pernicious influence which the use of tables might have, the student should exercise and learn to draw up tables for the several processes of separation which are frequently possible." The several methods of writing chemical formulæ introduced in previous editions have been deleted and the student is therefore spared the thick type formulæ which were at one time peculiar to one school of chemistry. The insertion of the Lemniscate diagram of synthesis of elements in a student's text-book, without further explanation than that the diagram is intended to picture the probable condensation, due to cooling and motion in space, of an original molecule, and referring the student to Crookes' presidential address, Chemical Society, 1888, and of the names only of Argon and Helium in a list of the elements, are perhaps rather extreme instances of bringing a work up to date. It is, however, satisfactory to acknowledge the practical and sensible views of the Editor in inserting in the list of elements a column of atomic weights "commonly used." It is refreshing sometimes to be reminded that a super-refinement is possible in practical chemical operations and that more errors may occur in manipulation than can be satisfied by assuming the atomic weight of oxygen as 15.96 or 15.88 than 16, or carbon as 11.97 or 11.91 than 12, and so on through the

entire list of the atomic weights of elements, determinations more or less open to criticism, as Scott has lately pointed out with regard to carbon.

The new chapter on quantitative analysis contains extremely useful details, as usually obtained in analytical operations, although, strange to say, the weighing results in nearly all the examples are placed in reverse order, and weighing to 0.0002 gramme on a balance responding to 0.01 gramme, which is said to suffice for the exercises given, or even on a balance sensitive to 0.001 gramme, is a non-laudable attempt at accuracy, which partakes more or less of guess work. Such pretensions to accuracy in ordinary analytical operations are no doubt to be attributed to the example set by Fresenius, who, in many of his published analyses, carried out the result to the fifth place of decimals, which, while rather impressive to the lay mind, has to most chemists nothing more than a quotential value. It may be noted that the determination of carbon and hydrogen in the manner here described would not yield very accurate results without further modifications, and a more suitable method of determining nitrogen than by a combustion in hydrogen might have been given. The final chapter on the alkaloids would have been better omitted. Alkaloidal work requires special study, and should not be brought in at the tail end of a book treating of inorganic chemical analysis, and then dismissed in a matter of seven pages. Six alkaloids—morphine and narcotine, quinine and cinchonine, strychnine and brucine—only are described, and in so perfunctory a manner that the student can obtain no possible advantage from this portion of the book. Moreover, it is not a good definition to state that "most alkaloids are of vegetable origin and nearly all contain nitrogen," for it would be interesting to know which are the alkaloids that do not contain nitrogen.

The work is concluded with about 350 questions on practical and theoretical chemistry, which when satisfactorily answered by the student, after conscientious laboratory practice, he may consider himself as possessing some knowledge of practical inorganic chemistry. Dr. Hodgkinson is to be congratulated on this new edition of "Valentin."

CHEMICAL ANALYSIS, QUALITATIVE AND QUANTITATIVE. By WILLIAM BRIGGS, M.A., LL.B., F.C.S., and R. W. STEWART, D.Sc., Lond. Pp. 128. Price 3s. 6d. London: W. B. Clive, University Correspondence College Press. 1898.

This book mainly deals with qualitative analysis, the only portion that is quantitative consisting of fourteen pages on volumetric analysis. The information afforded is accurate and covers the ground usual in treatises on this subject, but in a more concise and systematic manner than is generally the case, as might be expected from the joint labours of two University graduates who are evidently acquainted with the examination wants of students. The student is very properly urged to clearly understand the chemical reactions involved in the analytical operations and to make it a rule to express the various reactions by means of equations. As it is intended for students who are able to obtain little or no assistance from a teacher, the book will be useful, although carrying out analytical operations "with no resources but his own" will be found to be uphill work to the most zealous student.

PRACTICAL ORGANIC CHEMISTRY. By GEORGE GEORGE, F.C.S., Assistant Master at Allan Glen's Technical School, Glasgow. Pp. 96. Price 1s. 6d. London: W. B. Clive, University Correspondence College Press. 1898.

This book is intended principally for the use of students preparing for the elementary or advanced stage of the Science and Art Examinations in practical organic chemistry. It describes

methods of determining melting and boiling points, of detecting the more commonly occurring organic acids, grape and cane sugar, glycerin, aniline, morphine, urea, etc., when singly or in mixtures, and the preparation of a few of the test reagents. It also contains the examination papers set by the Science and Art Department in practical organic chemistry for the last ten years. Sound practical illustrations are given of the work necessary to be carried out by students who desire to be successful at the practical organic chemistry examinations held under the South Kensington scheme, such as it is, of scientific education. The book is evidently written by one conversant with his subject, as is shown more particularly by the methods given for taking melting and boiling points, and students can depend on the various tests and methods of analysis as those most suitable for the purpose.

GARDNER'S HOUSEHOLD MEDICINE AND SICK ROOM GUIDE. Edited and revised by W. H. C. STAVELEY, F.R.C.S. Demy 8vo. Pp. 511. Price 8s. 6d. Thirteenth edition. London: Smith, Elder and Co., 1898.

This work is "expressly adapted for the use of families, missionaries, and colonists." The preface informs us that "the first edition of the work, written by the late Dr. John Gardner, was published in the year 1861. He aimed at providing the non-professional reader with a book which, without encroaching on the proper provinces of a physician or surgeon, would enable him to recognise the more common diseases and indicate a line of treatment which could be safely carried out." In the present edition the rudiments of anatomy and physiology are first described, and later the means of preserving health. A book of this character demands great care in the selection of the subject matter in order to avoid arousing morbid fears in the readers. In the present volume the selection of matter is judicious. The section that deals with the hygiene of daily life is very well done, and there is a short but useful section dealing with the special hygiene required in the tropics. Under the heading "Feeding of the sick" useful tables are given. The sections on first aid to the wounded and injured and on poisoning are also good. The limitations of this class of work are most prominent in the part of the work dealing with surgical affections. The attempt to describe the treatment of genu valgum and lateral curvature of the spine is not likely to help any reader whether lay or medical. Within its limitations, however, the book will serve a useful purpose, more especially in districts where medical men are few.

RESPIRATORY EXERCISES IN THE TREATMENT OF DISEASE, NOTABLY OF THE HEART, LUNGS, AND DIGESTIVE SYSTEMS. By HARRY CAMPBELL, M.D., B.S. Lond. Demy 8vo. Pp. 200. Price 8s. 6d. London: Baillière, Tindall and Cox. 1898.

The value of respiratory exercises of late years has been made prominent in the Nauheim treatment of heart disease. Dr. Campbell states in his preface that "This work is the outgrowth of a larger one on the mechanical treatment of heart disease, a subject which has occupied my thoughts from the very outset of my medical career. It was not until the book was well advanced that I became aware that I had been in a measure forestalled by the physicians of Nauheim." The first nineteen chapters are devoted to the consideration of the physiological principles involved. This, the major part of the book, is characterised by great thoroughness, the established facts of physiology being fully and lucidly stated; the author's views being given in the form of commentaries. Special phases of respiration, as in talking, shouting, singing, etc., are fully considered. With regard to singing the author writes: "I am not

as a physician greatly concerned with the method of breathing employed, provided it be not the exaggerated collar-bone type, which I emphatically deprecate. On the whole I am inclined to recommend the costo-abdominal type. It should be observed that when the diaphragm is actively used the effect on the abdomino-pelvic viscera is greater than is otherwise the case. From the medical standpoint singing is a most important exercise, both by virtue of its influence on the emotions, on the respiratory movements, and on the development of the lungs." Chapter XX. is devoted to the description of the various kinds of respiratory exercises. These are classified as "active breathing exercises, active breathing exercises conjoined with other exercises, passive breathing exercises, and exercises for the developing of the abdominal muscles." The remaining chapters deal with the practical application of respiratory exercises in cases of lung, heart, and nervous disease. Dr. Campbell's work constitutes a valuable and most interesting contribution to medical literature.

SURGICAL TECHNICS IN HOSPITAL PRACTICE. By K. W. MONSARRAT, M.B., F.R.C.S.E. Pp. 132. Price 3s. net. Bristol: John Wright and Co. 1898.

This little work, consisting of short essays, is intended for junior men—house-surgeons, students, dressers, and others engaged in hospital work. "In writing them the author has attempted to systematise the routine duties of surgical hospital practice, and the general plan adopted has been to discuss, in order, the duties of the patient from the beginning to the end of his course of treatment." The all-important matter of disinfection of the surgeon's hands is well described. The section dealing with it concludes: "The third stage is the immersion in antiseptic lotion; the one recommended is a 1-500 watery lotion of biniodide of mercury. Put shortly, the advantages of this lotion are efficiency as a disinfectant, slight toxicity, absence of irritating properties, and the fact that it does not tarnish metal nor form albuminates in contact with the blood and other tissue fluids. The hands require immersion in this for about three minutes, and, of course, are not dried when taken out."

This recommendation is a good one, though it is doubtful whether the biniodide is quite as inactive to steel instruments as the author states. Concerning the surgeon's operating outfit, the author writes: "The most suitable dress for the operating theatre is, without a doubt, a linen overall sterilised by heat; and after each occasion on which it is used, it, of course, returns to the laundry and the steriliser. Some hospitals do not, however, possess the necessary steriliser, though, happily, their number is decreasing rapidly. In this case the best dress is one made of 'jaconette,' reaching from above the collar to below the knees, and buttoned behind at the neck and waist; the sleeves should be attached and reach half-way down the upper arm, being finished off with elastic." The charge of the patient before and after operation, the operation theatre and operations, the modifications of details required for special cases, are dealt with clearly and succinctly in separate chapters. Then follow chapters on the dressings, on drainage and instruments. In describing the sterilisation of silk for ligatures, the author states that they should be boiled in soda solution. This is apparently a slip, for such a course would rot the silk. The usual plan is to boil the silk in 5 per cent. carbolic solution. On the whole the book is admirably put together, and will prove of great utility not only to those for whom it has been published, but also to busy practitioners.

PHARMACY ACTS AMENDMENT ACT, 1898.

As briefly announced in last week's Journal, the Pharmacy Acts Amendment Bill was read a third time and passed on Thursday, July 21. In connection therewith we are desired by the President of the Pharmaceutical Society to publish the following letter from Lord Hardwicke's private secretary and an excerpt from the notes of the Official Reporter to the House of Lords:—

(COPY OF LETTER.)

9, CAVENDISH SQUARE, W.

22nd JULY, 1898.

DEAR MR. HILLS,

I am directed by Lord Hardwicke to say that, as the Lord Chancellor's speech was not reported in any of the papers, he got the Official Reporter to send it to him, and also that he has the Lord Chancellor's permission to send it on to you, in case you would like to send it to the press.

Yours faithfully,

W. HILLS, ESQ.

F. R. COCKBURN.

(EXCERPT FROM REPORT.)

THE LORD CHANCELLOR (THE EARL OF HALSBURY): My lords, I have thought it proper to put down an amendment to this Bill in consequence of representations that have been made to me as to the effect produced by recent decisions in the Courts that the provisions of the Pharmacy Acts do not apply to the case of companies. Those Acts expressly deal with persons only, and it has been held that the word "person" in those Acts does not include a corporation. Numerous instances have been brought to my attention of companies formed for the purpose of carrying on the business of chemists by persons who are not themselves qualified within the meaning of the Pharmacy Acts, and it is also stated that there are companies carrying on the general business of stores, and including a drug store amongst their operations, who cannot be brought within the penalties imposed by these Acts upon unqualified persons. It, therefore, became clear to me that some amendment of the law was desired, and it appeared at first sight as if the Bill of the noble Earl offered an opportunity for such legislation. I find, however, that this Bill is confined to England, and that the amendment which I proposed to make would not extend to Ireland, where, as I am informed, the evil is even greater than in this country. I am also told that some undertaking was given in the other House of Parliament that this Bill, as applying to the internal affairs only of the Pharmaceutical Society, should not include any contentious matter. I do not altogether approve of such undertakings being given in one House so as to bind the other, but as I understand that my proposed amendment would wreck the Bill I cannot proceed with it. I wish to add that the evil in question is one which appears in a still more objectionable form in relation to the medical profession, and of course any amendment of the Pharmacy Acts cannot deal with that still more important branch of the subject. I should be glad to see a favourable opportunity of dealing with the question generally, not only as regards the Pharmacy Acts, but also in relation to the Medical Act. Under the circumstances, however, I will not move the amendment of which I had given notice.

The amendment of which the Lord Chancellor had given notice was as follows:—

A company may carry on the business of a pharmaceutical chemist or chemist and druggist if and so long as the business is *bona fide* conducted by a manager or assistant being a duly registered pharmaceutical chemist or chemist and druggist, but, subject as aforesaid, Sections 1 and 15 of the Pharmacy Act, 1868, shall apply in the case of a company in like manner as they apply in the case of an individual.

The amendment having been withdrawn, the Bill was read a third time and passed, on the motion of the Earl of Hardwicke. The Royal Assent to the measure was subsequently received by Commission on Monday last, and the Pharmacy Acts Amendment Act, 1898, is now part of the law of the realm.

NOTE ON THE ANALYSIS OF FIVE SAMPLES OF NATAL TEA.

BY C. EDWARD SAGE, F.C.S., PH.C.

There have been very few analyses of Natal tea published, and the following figures, which have been obtained with five samples of known authenticity, supplied me by C. E. Walkey, Esq., of Durban, should be of interest when compared with the results obtained with China, Indian, and Ceylon teas.

The samples examined were contained in lead foil packages and comprised the following varieties:—(1) Flowery Pekoe, (2) Golden Pekoe, (3) Pekoe Souchong, (4) Pekoe, (5) Broken Pekoe, all of which were grown upon estates in the neighbourhood of Stanger.

The soil on which they were grown was principally a light grey loam, with a substratum of grey sandstone, situated about 700 feet above sea-level. The samples were all of 1897 season's gathering.

The determination of the undermentioned constituents yielded the following results:—

Sample.	1.	2.	3.	4.	5.
	p. c.	p. c.	p. c.	p. c.	p. c.
Caffeine.....	2.95	2.78	3.34	2.94	3.08
Tannin.....	8.1	10.8	10.7	8.9	6.7
Vegetable extractive matter.....	24.61	23.54	19.32	24.91	22.62
Inorganic extractive matter.....	4.24	4.45	4.95	4.46	4.38
Total extracted by water.....	39.90	41.57	38.31	41.21	36.78
Moisture.....	8.19	7.95	9.19	9.36	9.57
Ash.....	5.30	5.25	5.51	5.63	5.26

The figures for caffeine were obtained by exhaustion with boiling water and shaking out with chloroform, after removal of astringent matter; and the tannin was determined by a modification of Löwenthal's process, which gives a much higher figure with Indian teas than those recorded above.

The ash in each case contained a notable proportion of manganese, and the following figures show the results of the determination of other factors.

Sample.	1.	2.	3.	4.	5.
	p. c.	p. c.	p. c.	p. c.	p. c.
Total ash.....	5.30	5.25	5.51	5.63	5.26
Insoluble ash.....	1.91	1.98	1.92	1.98	1.82
Soluble ash.....	3.39	3.27	3.59	3.65	3.44
Alkalinity of ash calculated as K ₂ O.	1.43	1.27	1.53	1.40	1.23

Natal tea has found little favour in the English market in the past, owing to the fact that the shipments which have reached the London market have been only indifferently prepared and imperfectly fired, but I am assured that the largest growers are content with supplying the South African market only, and that none of the best brands have been sent to England. The large growers now possess all the necessary and most modern machinery and cure their crops in the same way as the growers on the Assam estates, and from the above results it seems that their products are likely to find favour in the English market, owing to the low proportion of astringent matter which they contain as compared with Indian teas.

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COMPANIES AND QUALIFICATION.

WITHIN the last few weeks there has been in both Houses of Parliament very decided recognition of the fact that the state of the law relating to the practice of pharmacy is extremely unsatisfactory and requires amendment. That fact has long been painfully apparent to those engaged in the business, though it has not been generally much recognised. The somewhat unexpected reference to this subject by the LORD CHANCELLOR and Lord HERSCHELL, when the Pharmacy Bill was before the Standing Committee of the House of Lords, affords satisfactory evidence, however, that it has not been overlooked and that there is now a prospect of obtaining consideration of the much needed amendment of pharmacy law. The efforts made in that direction may be much facilitated, if advantage be taken of the useful Act which has now received the Royal assent, affording every person on the Register of Chemists and Druggists opportunity of sharing, equally with other members of the craft, in the work of an organisation possessing power of self-government unequalled in any other occupation of a similar nature. If that opportunity be properly used some nearer approach may be made to the original object of the Society, by establishing such a qualification for the practice of pharmacy as would be at once, for the public, a guarantee of competence and for those carrying on the business of chemists and druggists, a corresponding protection. The partial success attained in that direction under the Act of 1852, constituted a mere oasis in the desert of unregulated chemist-and-druggistry, while the mis-application of free trade ideas obscured all other considerations and the idea of protection, on the basis of educational qualification, was scouted as fantastic. When, still later the general state of the practice of pharmacy had been declared "a disgrace to the country and to the Legislature" and the advantages of organised incorporation were irresistibly forced upon the attention of chemists and druggists, the provisions for effecting improvement were so watered down that the qualification conferred under the Act of 1868, instead of realising the Society's object, had reference only to a small portion of the chemist and druggist's business: instead of placing exclusively in his hands the semi-professional work of compounding, dispensing, and supplying drugs and medicinal preparations, it left him in the main open to the purely trading competition of grocers and general store-keepers.

On the first intimation by the LORD CHANCELLOR that he thought amendment of the Pharmacy Acts necessary, special reference was made to the legal decision as to companies being outside the scope of those Acts; but it did not go beyond suggesting the common-sense view that a company should be liable to penalties for infringement as much as an individual. As a company is incapable of the personal qualification held by that decision to be necessary, there was some reason for the inference that the LORD CHANCELLOR desired to extend the application of the word "person" and thus to prevent companies from carrying on the business of a chemist and druggist. That there is need of some means for effecting that object cannot be denied, and that need was further illustrated by Lord HERSCHELL's mention of "one-man companies" as a mode of evading the statutory obligations attaching to the business of a chemist and druggist. Lord HARDWICKE's acquiescence in the suggestion of amendment in that sense was, so far, perfectly natural and, if the object of the Bill before the House had not been confined to the internal affairs of the Pharmaceutical Society, such amendment might have been practicable. But that was not the case; moreover, when the clause, drafted by the LORD CHANCELLOR, appeared some days later, it proved to be of such a nature as would recognise the legality of company trading, even in its worst form of the "bogus" or one-man company, while giving legislative sanction to the vicious practice of lending individual qualification for the purpose of evading and defeating the real intention of the Pharmacy Acts. That such an object was not contemplated by the LORD CHANCELLOR in proposing amendment of the law—or, indeed, by Lord HERSCHELL in supporting that proposition—appears evident from the remarks made by His Lordship, when, in deference to representations made to him, he withdrew the amendment, mainly on the ground that it might impede the passing of the Bill before the House. To suppose that the Pharmaceutical Society—irrespective of the agreed non-contentious nature of the Bill—could have done otherwise than oppose the clause as it stood, would involve the assumption that it is willing to forget its own history, to ignore the spirit of the Pharmacy Acts and to assist in placing persons qualified under them in a position to become the mere servants and tools of antagonistic combinations which are at least outside the law, if they are not actually illegal. Such a decadent compact would invite increased company domination, making the last state of the craft worse than the first.

It will therefore be noted with satisfaction by readers of this Journal that the LORD CHANCELLOR still adheres to his opinion that amendment of the law is needed in regard to the evil of company trading, as it affects the practice of pharmacy and, in a still more objectionable form, the medical profession. Holding that opinion he desires to see a favourable opportunity of dealing with the subject generally, not only as regards the Pharmacy Acts, but also in relation to the Medical Act. In an article on this subject entitled "Companies as Practitioners," the *British Medical Journal*, last week, expressed the opinion that in view of the difficulty of discriminating between a company formed for some legitimate purpose and one formed with the object of evading the restrictions or escaping the penalties enforceable against individuals in regard to occupations requiring personal qualification, there does not appear to be any hope of preventing, at the outset, the incorporation of such improper

companies. In support of that view an account was given of the unsuccessful efforts made to induce the President and the Departmental Committee of the Board of Trade to provide a remedy for the evil. The task must be undertaken from a different point of view, and reference was made to the action of the LORD CHANCELLOR in connection with the Pharmacy Bill as offering a better prospect. One of the chief difficulties to be overcome is the dread of monopoly so artfully fostered by the supporters of companies. But in the case of occupations such as the practice of medicine or surgery, dentistry, the veterinary art, or the practice of pharmacy, requiring special knowledge and technical skill for the proper performance of the functions appertaining to them, deprecation of monopoly on free trade principles has no reasonable applicability. Statutory limitation of the exercise of those functions to persons certified to possess the requisite competence is justifiable, as having for its object the interest of the public. On that account alone it is the duty of the State to prevent evasion and to punish infringement of the law relating to qualifications. But as regards persons acquiescing in the demand for qualification to exercise a particular calling, there is another reason for enforcing the legislative restrictions, for they and the State may be regarded as parties to a contract, securing, on the one hand, efficiency in the public interest and, on the other, freedom from the competition of unqualified persons. It appears to be on such lines that amendment of the Pharmacy Acts and even of the Acts relating to medical, dental, and veterinary practice, should be approached. With due regard for maintenance of the value of qualifications, either by mutual loyalty or the exercise of repressive censorship within the ranks of professional bodies, it should be possible for their representative organisations to join in the demand for legislation, so as to expel from consideration the misleading bogie of monopoly, counteract the mischievous precedent of the decision in the case of the London and Provincial Supply Association and provide a remedy for the systematic evasion by which the trail of the company "limited" is being spread over all those occupations.

A VENEZUELAN PHARMACOPŒIA.

THE latest addition to the list of the world's pharmacopœias is the 'Farmacopea Venezolana,' published at Caracas, this year. The work has been edited by Dr. FRANCISCO A. RISQUEZ, approved by the Medical Council of the Republic and declared authoritative by the National Executive of Venezuela. The book is sent out in paper covers, and it contains 466 pages, of which 26, constituting the index, are printed on coloured paper to distinguish them from the text. In the preface, which is comparatively brief, reasons are given for the existence of the work; the steps taken in connection with its production are also explained in detail. Following the preface is a page of abbreviations of proper names used in the work, next a page of notable errata, another of minor errors, then a list of contents occupying three pages. The language adopted in this pharmacopœia is the vernacular, *i.e.*, Spanish, but synonyms are given in Latin. Unfortunately, however, those synonyms are not indexed, so that their utility is wasted to a considerable extent. The book is divided into four parts, the first consisting of thirty pages and dealing with *nociones preliminares*, including weights and measures, tables of densities, a

comparative table of temperatures indicated by the three thermometers, a table showing the solubilities of the principal substances employed in medicine, together with lists of maximum doses, incompatibilities and reagents. Metric weights and measures alone are used in the body of the work, but in the preface are given the approximate equivalents of what are apparently assumed to be the English weights and measures used in prescriptions, though there would seem to be some confusion between the denominations of avoirdupois and apothecaries weights.

The second part of the work, extending to 141 pages, is devoted to simple medicaments (*drogas simples*), including the acids and other chemical substances as well as vegetable materia medica. In the monographs in this section the Latin synonyms are followed by descriptions of the characters of the substances, after which their properties and uses are briefly summarised. The names of chemicals are followed by their symbols, and, in some cases, the method of preparation is given. Metallic compounds are dealt with under the general headings of the respective metals. Thus, under "Calcio—(Ca)" are described calcium carbonate, chloride, hypophosphite, phosphate, oxide, sulphide, sulphate, and hypochlorite. In like manner the compounds of iron and potassium occupy nearly four large octavo pages for each metal, and those of mercury and sodium some three pages each. Amongst the substances mentioned in this part of the book are: Aniline, antipyrin, apiol, apomorphine, aristol, asaprol, betol, bromoform, chloralamide, curare, diastase, divi-divi, ethyl bromide and chloride, exalgine, guarana, guaiacol, hæmoglobin, hypnal, hypnone, ichthyol, ingluvin, iodol, kairine, kava-kava, lysol, maté, methyl chloride, naphthalin, naphthol, pancreatin, peptone, phenacetin, pyridine, quinoline, resorcin, saccharin, simaruba, sulphonal, thalline, terpin, terpinol, trypsin, and xylo.

Galenical pharmacy is the subject of part three, consisting of 196 pages. This section commences with brief paragraphs on calcination, clarification, dialysis, distillation, filtration, solution, and numerous other operations more or less familiar to the pharmacist, then follows the official formulary in which, as already stated, metric weights and measures are used exclusively. Where the same process is resorted to for the preparation of a number of similar preparations, the same plan is adopted as in the French 'Codex.' Thus, tincture of aconite root is directed to be prepared by macerating the fresh root in an equal weight of alcohol (90°), and at the end of the monograph it is stated that thirteen other tinctures, including those of aconite leaves, arnica flowers, belladonna root, and digitalis leaves, are to be prepared in a similar manner. The last part of the book gives particulars concerning various medicated waters. These are classified as gaseous acidulated waters, alkaline waters, ferruginous, saline and sulphurated waters. In a few instances instructions are given for preparing the waters, but in most cases only the approximate composition of the natural water is stated. At the end of this section of the book information is given respecting the laws of the Republic relating to medicine and pharmacy, with extracts from the Penal Code and a list of substances which may only be supplied when ordered by a medical practitioner. There are also lists of proprietary medicinal preparations (*medicinas patentadas*) approved by the Medical Council and of similar preparations, presumably in common use, which have not as yet been submitted for the approval of that body.

ANNOTATIONS.

THE PHARMACY ACTS AMENDMENT ACT, 1898, is now an accomplished fact, and any registered chemist and druggist is eligible to be elected a "Member" of the Pharmaceutical Society on the same terms as pharmaceutical chemists, and with the same rights and privileges when elected. One of the original intentions of the founders of the Society is thus realised, a standing grievance of chemists and druggists who have passed the qualifying examination is removed, and it may be hoped that the result will tend equally to the benefit of the Society and of the craft. The new Act comes into force on Monday next, and every person who, at the time it passed, was a subscribing "Student" of the Pharmaceutical Society, will, in accordance with the terms of the Act, be duly registered as a "Student-Associate." The existing "Associates" must, if they desire to retain their connection with the Society after the current year, apply to be elected as "Members," whilst "Associates in Business" will probably be elected as "Members" without the necessity of a formal application in each case. But before fully carrying out the new arrangements, an entire revision of the existing Bye-laws will be necessary, and as the requisite Bye-laws must be read on three separate occasions at meetings of the Council, then confirmed at a Special General Meeting of the Society, and finally approved by the Privy Council, it is obvious that some time must elapse before everything is in proper working order. But with the beginning of the year 1899 all these details will doubtless have been successfully arranged, and let us hope that the Pharmaceutical Society will then proceed along the path of progress with brighter prospects than at any former period of its existence.

A SPECIAL ISSUE OF THE JOURNAL will be published the week after next in connection with the Conference at Belfast and, as a means of disseminating amongst the whole craft information regarding the changes in the law affecting pharmacists, a copy of that issue of the Journal will be sent to everyone whose name appears upon the Register of Chemists and Druggists. The total circulation will exceed 17,000, and this will be an exceptional means of addressing as wide a circle of the trade as possible. On professional, business, or political grounds, this opportunity should therefore not be neglected. A full report will be given of the proceedings of the Conference at Belfast, including the whole of the papers read at that meeting, in addition to much other matter of special interest to chemists and druggists.

AN UNFORTUNATE POISONING CASE is reported from Windsor, which appears to reflect blame upon the chemist's assistant involved in the affair, though it is far from clear that he was actually responsible for what took place. According to the evidence, a woman who was a confirmed laudanum drinker went to the pharmacy conducted by Mr. J. G. Everett, and his qualified assistant supplied her, as he thought, with six drachms of laudanum. But shortly after swallowing this, the woman became seriously ill, was removed to the local infirmary, and died within two hours after several attacks of convulsions. The post-mortem examination showed that death was due to strychnine poisoning, and on the assumption that the assistant had accidentally supplied tincture of nux vomica instead of laudanum, the jury returned a verdict of manslaughter by misadventure. The bottle which had contained the poison was quite empty when found, and the case against the accused was mainly based on the fact that, at the inquest, he acknowledged the poss-

bility that he might inadvertently have taken the tincture from the wrong bottle, as both tinctures were kept on the same shelf. The accused was committed for trial on the coroner's warrant, but when brought before the magistrates he was immediately discharged, in accordance with the provision of the law which states that "no punishment or forfeiture shall be incurred by any person who shall kill another by misfortune." Great sympathy has been expressed locally with Mr. Everett and his assistant, and testimony is freely borne to the high character of the latter and to his skill and care as a dispenser. Whether or not he was actually at fault in this matter, it is to be hoped that the unfortunate occurrence may have no lasting effect upon his career, other than that of exceptionally impressing him with the necessity of exercising extreme care in dealing with poisons.

THE MORAL POINTED BY THE CASE appears to be that it is unsafe, under any circumstances, to keep bottles containing potent poisonous liquids on the same shelf in the pharmacy as less poisonous ones. And it is because of this aspect of the matter that so many prominent pharmacists have always protested against the imposition of cast-iron regulations with regard to the keeping of poisons. If all scheduled poisons were to be kept in the same locked cupboard the risk of error would be greatly enhanced, as compared with the prevailing system. At present only the more potent substances are relegated to the poison cupboard, and others take their place, preferably in special bottles with distinctive labels, on the ordinary shelves. The risk of error is thus reduced to a minimum and, with the constant watchfulness which is the first duty of the pharmacist, is practically non-existent. In Mr. Everett's case it is reported that twenty-one bottles containing poisonous liquids stood upon the same shelf, and that only one bottle intervened between those containing the tinctures of laudanum and nux vomica. If that statement be correct, and the bottles are similar in size and shape, the necessity of increased care is obvious, and the arrangement can only be described as an unfortunate one for the pharmacist and his assistants. The bad habit of taking down bottles without looking at their labels is so easily acquired by negligent persons that, in the case of poisonous preparations differing greatly in potency, and resembling each other in appearance, it is safer to have them separated by a considerable distance. But the best safeguard of all is to make a point, whenever dealing with poisonous liquids, of looking carefully at the labels on the bottles, and also paying intelligent attention to the general characters of the contents. Moreover, it should invariably be regarded as extremely unsafe to attempt to converse with customers whilst taking down bottles from the shelves. This is a fruitful cause of error and should be avoided consistently.

THE PRESENCE OF ARSENIC IN WOOL, as a result of using arsenical preparations for dipping sheep, and the consequent possibility that, when spun into fabrics or carpets, etc., sufficient arsenic may remain to be injurious to health, appears to have been much exaggerated by Mr. J. H. Pearse, the Chairman of the Kidderminster Chamber of Commerce, in a recent letter to the *Lancet*. While he states that, it is nearly, if not quite, impossible to buy any sheep's wool—home or foreign grown—which does not contain arsenic, Mr. Robertson, a manufacturer of both arsenical and carbolic preparations for sheep-dipping, writing from Oban, states that, although the great majority of sheep are dipped with an arsenical preparation, a very large number are dipped with other preparations—principally of carbolic acid, next tobacco, and a considerable number with a mixture of lime and sulphur. He also adds that one-fifth of his entire output last year was the car-

bolic preparation, and that 80 per cent. of it was exported to the Colonies and South America.

THE EXCEEDINGLY SHADOWY NATURE of the privileges of duly registered members of the medical profession has been pointed out by Dr. T. R. Henderson in last week's *Lancet* and contrasted with the more adequate protection afforded by law to duly enrolled solicitors against unscrupulous competition on the part of those whose names have never appeared in the 'Law List,' or whose misconduct has entailed their removal from it. Why, he asks, should duly registered members of a profession not a whit less honourable, be obliged to share the right of practice with anyone possessed of sufficient self-assurance to make a show of professional skill and sufficient cunning to keep within the generously defined bounds imposed by the existing law? The same question may be asked by registered chemists and druggists in regard to the invasion of their business by companies.

CARBOLIC ACID has been the cause of yet another death which might have been avoided if the deadly fluid were only scheduled under the Pharmacy Act, 1868. A death from consumption had occurred at Stoke Newington, and the mother of the deceased youth purchased some carbolic acid to expose in the room where the body lay. A "medicine bottle" was sent for the poison, and the seller placed no label upon it. A few days later the woman was taken ill, the medical man in attendance sent her some medicine resembling the carbolic acid in colour, both bottles stood awhile on the same shelf, and the usual result followed. For the husband of the patient administered a dose of what he believed to be the medicine, but it proved to be carbolic acid, and the patient died. At the inquest the Coroner remarked that it is one of the misfortunes of the age that carbolic acid is not on the list of poisons that have been scheduled, and the jury expressed the opinion that its sale ought to be restricted to chemists only. This death may fairly be attributed to the persistent refusal of the permanent officials of the Privy Council to protect the British public in this respect, for so many years past.

PITY THE POOR IMPERIAL INSTITUTE! is the cry now raised by the *Times*. It is pointed out in a pathetic article in that influential organ that for some time the Institute has been struggling with financial difficulties, and that widely divergent opinions exist as to the method, or even as to the possibility, of meeting them. "So-called friends of the people question, indeed, whether they should be met at all. In their opinion the Imperial Institute is a white elephant, and they doubt if the English climate is suited to that class of cattle." This view, it is thought, will hardly commend itself to the country at large, but we may fairly ask, Why not? For what has the Institute done that it was intended to do? Nothing, as those who are running the concern well know, and as the withdrawal of assistance by the Colonies goes to prove! The *Times* writer thinks it is unfortunate that the Institute, while embodying an Imperial idea, has not been recognised as a subject for Imperial support. Presumably the Treasury is opposed to the creation of well-paid sinecures for individuals who are well able to work for a living and pay their own expenses. We are told that after the first flush of enthusiasm (?) accompanying the establishment of the Institute three means presented themselves for justifying its existence, and earning an income, within the scope of its original design. "It might turn itself into a permanent show-house and huge advertising agency for the wares of India and the colonies and lease its superficial area at a handsome figure per square foot, as had been done by the Colonial and Indian Exhibition. Or it might take itself seriously, and

become the central economic museum for the Empire, the great sample-room for the mineral and vegetable products and manufactures of the British race. The third alternative was to develop it on the social side and make it a sort of universal club for colonists and all others whom it could attract by a low subscription and an easy entrance." Whilst acknowledging that there was distinctly money in the first and third plans, the inspired writer for the *Times* audaciously asserts that "to the credit of the managing body it chose the better path." If anyone could believe that statement, it should not be difficult for him to credit all the nonsense about the great benefits that have accrued to India in return for the enormous sum she has sunk in the bottomless pit at South Kensington. It is worthy of note, however, that even the writer of the bombast referred to is compelled to acknowledge that of all the advantages India has reaped "no better example could be given than the exhaustive inquiry by Professor (*sic*) Wyndham Dunstan, F.R.S., into the coal supply of India, appended to the 1898 report," Little as that is, however, so overcome is the enthusiastic writer that he hopes to return to "this admirable piece of research" on a future occasion. Apparently he believes in holding on to the bone he has found in the rubbish heap, lacking anything better to go on with.

WHY NOT WOMEN CHEMISTS? asks a weekly paper of the genus "scrap." And we answer, No reason whatever! There were women engaged in business as chemists and druggists before the Pharmacy Act passed in 1868, and there have been more or less of them ever since. No restriction has ever been placed in the way of women desiring to become registered chemists. The only wonder is the ignorance that enables the lay press to find so much novelty in the idea of women dispensers. Another weekly paper, called the *Ladies' Home*, informs its readers that "the examinations for chemists in England are held by the Society of Apothecaries of London and the Pharmaceutical Society of Great Britain." This, of course, is one of those misleading half-truths that are apt to give rise to much trouble. The Society of Apothecaries has no power, in this respect, but to grant pretty certificates to foolish persons who choose to pay the fee demanded and waste three guineas in that way, and are also able to pass a very second-rate examination. It is greatly to be feared that the notion is spreading among a certain class that the Apothecaries' Assistants' Examination serves as a short cut to a useful qualification, but, as a matter of fact, the successful candidate at that examination has no right to do anything which he was forbidden by the law to do before he spent his three guineas and got so little in return for his money. The examinations conducted by the Pharmaceutical Society under the control of the Privy Council alone entitle those who pass them to call themselves chemists, and such persons alone are entitled to keep open shop for retailing, dispensing, or compounding poisons, or to assume or use the title of chemist. The Apothecaries' Society's fiction about its assistants' qualification has been maintained too long; even if it were an impetuous body increasing its failing revenue by such unworthy means as the sale of ornamental certificates, accompanied by the pretence of a qualification, it should at least have the decency to cease lowering its dignity in so unworthy a fashion.

THE EASTMAN PHOTOGRAPHIC MATERIALS COMPANY, LIMITED, referring to the *Solio* appeal case in the House of Lords, point out that the company was refused registration of the word "*Solio*" in 1895 by the Registrar of Trade Marks, and that decision was upheld successively by the Board of Trade, Justice Kekewich's Court, and the Court of Appeal. The Eastman Company persevered

and paid all costs in every instance, as well as in the final appeal to the House of Lords, which has now reversed the decision of the previous Courts. The word was originally refused on the ground that it was derived from "Sol" (the sun), and that as it was possible to print silver paper in sunlight, the word was descriptive, and so, under the Patents, Designs, and Trade Marks Act, not permissible as a trade mark. This decision was based on a reading of the Act, which held that a trade mark must not only be invented but, even if invented, it must also be in no way descriptive of the goods. The House of Lords has now decided, however, that a registrable word, if it is truly an invented word, may contain skilful allusion to the nature of the goods referred to. But to be held as an invention, a word must not be merely two known words strung together, nor a known word of the language with a slightly modified ending. So long as a new invented word is used and the public are not robbed of the use of a descriptive word which is the property of the community, the object of the Act is attained. It appears that, as a matter of fact, the origin of the word "Solio" had nothing to do with "Sol" (the sun). It arose through an official submitting to one of the principals of the firm the word "Soho"—the business then being conducted in Soho Square. This was misread as "Solio," and so it came to be established. Lord Halsbury, the Lord Chancellor (who is a distinguished amateur photographer), himself happened to be a user of the Eastman Company's "Solio" printing-out paper, and he made a statement to that effect, and added that it never in the world occurred to him that there was anything descriptive in the name. In fact, as Lord Herschell pointed out, there is just as much reason why the word "Solio" should be taken to refer to boots (from the sole), or to agricultural implements (from the Latin "Solum," the ground).

THE PREVENTION OF CONSUMPTION is a most laudable object, and Mr. Malcolm Morris is to be congratulated upon the satisfactory response to his appeal to organise a national boycott against the disease. He has enlisted the sympathy of the leaders of the medical profession, and a circular letter has been issued by the President of the Royal College of Physicians, the President of the Royal College of Surgeons, and Sir William Broadbent, in which they call attention to an association which has been formed with the object of preventing the spread of the most fatal disease to which mankind is subject. They point out that it has gradually become definitely known that tuberculous disease, of which pulmonary consumption, or phthisis, is an example, is not inherent in the constitution, but is communicated indirectly from pre-existing cases, and the principal methods by which it is spread have been identified. Tuberculous disease, which in one or other of its forms is responsible for at least one in ten of the deaths from all causes, and, according to some calculations, for one in six of the deaths among adults, is therefore preventable. For this the education of the public is needed in the methods of prevention and eradication, and the stimulation of individual effort in carrying them out. The objects of the Association are the dissemination of information, the arousing of public feeling as to the necessity for defensive measures, and the provision of sanatoria, which will be both preventative and curative, for the open air treatment of consumption. In order to enlist the co-operation of large numbers, the annual subscription for membership has been fixed at 5s., and the donation for life membership at £5 5s. All members will receive a full description of the measures which are proposed, and information as to the organisation of the Association. The offices of the Association are at 20, Hanover Square, W., where members can now be at once enrolled.

THE POISONOUS SUBSTANCES BILL still continues to interest the lay press, and the London *Echo* appears to have been successful in having a chat with a pharmacist, who had committed to memory the first column of our last week's "Annotations," and retailed them to the newspaper man as his own wisdom, unless indeed there is a very ingenious adapter of paragraphs on the staff of that newspaper. For the only way suggested by the pharmacist, echoing the *P. J.*, in which carbolic acid can be placed beyond the reach of people disposed to misuse it, is that it should be added to the Schedule of the Pharmacy Act of 1868. That, he thinks, would be sufficient, provided the Act could also be amended. Such amendment, he contends, is necessary, because "at the present time the Pharmacy Act of 1868 is evaded with the greatest ease by joint-stock companies, photographic dealers, and others who are not qualified chemists." With regard to the term monopoly, that, he states, in a *P. J.* echo, "would be as much misapplied as if applied to the restriction of the practices of the law or medicine." Another *P. J.* echo is the following paraphrase:—"The man in the street would, of course, like to purchase what he wants whenever and wherever he chose. But in the case of poisons the Legislature has wisely provided that only those competent to deal with poison should sell it." A little more originality was displayed in the pharmacist's concluding remarks, wherein he said that "the administration of medicine forms an important factor in medical treatment; considerable scientific knowledge is required in recognising the chemical and physical relationships of drugs, while the medical profession and the public are entirely at the mercy of the pharmacist. Its practice by irresponsible corporations, large or small, should not be tolerated." But even those words strike us as being strangely familiar.

MOUNTED SPECIMENS FOR THE MICROSCOPE are difficult to prepare for permanent preservation, expensive to purchase, and apt to accumulate and be in the way when their immediate purpose has been served. Much interest, therefore, should attach to the proposal of Mr. C. Baker, High Holborn, London, to start a department for lending such specimens on much the same lines as a lending library. It is thought there can be no doubt such an arrangement would greatly enlarge the range of most amateur microscopists, especially beginners and those who, living in the country, are precluded from joining any of the microscopical clubs or societies, except as corresponding members. As the latter will, it is anticipated, form the bulk of the subscribers, should the undertaking prove a success, Mr. Baker has arranged for the subscription to include postage both ways. The annual subscription will be one guinea, payable in advance. For that sum each subscriber will have the right of borrowing some two hundred and fifty specimens in twelve deliveries, that is to say, twenty-four slides posted monthly for the year, or the same number of slides posted each fortnight for the winter months only. In order to save subscribers as much trouble as possible it is proposed to send the specimens in special boxes with double wrappings, the inner one of which will be stamped and addressed for return, so that the subscriber has only to re-wrap the parcel and post it. Should sufficient subscribers send in their names, steps will at once be taken to compile a catalogue especially for this department, so that subscribers may choose as far as possible the specimens they wish to see. This, however, would not be possible until the undertaking is an assured success. Readers of the Journal desiring to subscribe should communicate with Mr. Baker at once, and they will receive notice in due course when the minimum number, consistent with the idea being a business success, have sent in their names.

British Pharmaceutical Conference

Meeting at Belfast.



Albert Memorial, Belfast.

It is so long since the pharmacists of the three kingdoms held their annual scientific picnic in Erin that it may be news to many that the British Pharmaceutical Conference is about to visit Ireland for the second time in its history. On the former occasion twenty years ago, Dublin was the place of assembly, and the late G. F. Schacht presided over the meeting; on Tuesday week Dr. Symes will take the chair at Belfast, the northern capital of the Green Isle. Situated at the mouth of the river Lagan, the city of Belfast is partly in Antrim and partly in County Down. According to the excellent little guide

to the North of Ireland published by the Belfast and Northern Counties Railway, a copy of which should be procured by everyone visiting Belfast, the name of the city is said to be derived from *Beal-Fearsat*, signifying "the mouth of the ford"; a name anciently applied to the district now occupied by Belfast. The ford is supposed to have been situated near the place where the Albert Memorial now stands. Castle Place marks the site of the castle built by the De Courcey family about the thirteenth century. In the year 1888 Belfast was created a city, and in 1892 the title of Lord Mayor was conferred upon its Chief Magistrate. The boundary of the city was extended by the Belfast Corporation Act of 1896, and the estimated population of Greater Belfast for the present year is 304,610.

The progress of the city has been strikingly rapid, and in addition to the magnificent squares and great works of art, the visitor will see, in the numerous mills, in the busy streets, in the bright, well-dressed shops, in the clang and din of the shipyards, and in the plain but massive linen warehouses, sufficient justification for calling Belfast the commercial capital of Ireland, just as Glasgow is with good reason termed the commercial capital of Scotland. "It is the principal seat of the Irish linen industry. The great Transatlantic steamers for the White Star Line were built at Queen's Island shipyards, on the banks of the Lagan. An extensive foreign and colonial export trade is done in mineral or aerated waters, and in cured hams and bacon sides. Whiskey and tobacco are very largely manufactured, the duty paid on these articles amounting annually to an enormous sum. Belfast returns four members of Parliament, and has 43,550 voters on the Parliamentary Register (1898). The police force, including officers numbers a little over 900 men."

As in the case of Glasgow, Belfast is best seen in its streets, shops, warehouses, and other buildings, and as the city possesses a most complete, efficient, and well-managed tram service, a very convenient, and at the same time economical, way of viewing it is to make a survey from the top of a tramcar. In the handy little "guide" already mentioned the following table is given of

a short tramway tour through Belfast, with such descriptive notes of each route as will enable the visitor to see the characteristic features of the city with a minimum of trouble:—

SHORT TRAMWAY TOUR THROUGH BELFAST.

- (1) Castle Junction to Northern Counties Railway, via Royal Avenue.
- (2) Northern Counties Railway, via Corporation Street (change at Castle Junction), to Shankill Road (as far as Northumberland Street).
Walk along Northumberland Street to Junction of Divis Street and Falls Road (in 5 minutes).
- (3) Falls Road to Station Street (end of Queen's Bridge), via Castle Junction. (Here change.)
- (4) Station Street to Lisburn Road. Change at Castle Junction to tram going via Bedford Street to Balmoral (as far as Methodist College).
Walk from Lisburn Road to Botanic Gardens Park (in 4 minutes), via College Gardens Avenue, in front of Methodist College.
- (5) Botanic Gardens Park to Antrim Road (Terminus, Chichester Park), via Great Victoria Street. (Take Crumlin Road tram and change at Carlisle Circus to one for Antrim Road.)

Approximate time, 1½ hours; Cost, 10d.

Though the tour does not by any means extend over the whole of the tram lines, the routes have been chosen that they give the traveller, in as short a time as possible, a fairly good idea of the various aspects of the city. There is also plenty of variety, for while the routes all have something common to one another, each has, at the same time, something peculiar and characteristic. Route 1 takes the traveller through some of the business avenues of the city; 2, into the mill and artisan district; 3, to the shipping in the harbour; 4, past the offices and warehouses of the linen merchants; and 5, to districts containing the colleges and suburban residences.

The opening meeting of the Conference will be held in the Library of Queen's College on Tuesday, August 9, when welcomes will be offered by the Lord Mayor of Belfast on behalf of the citizens, and by the Rev. Thos. Hamilton, D.D., President of Queen's College, on behalf of his College.

Queen's College was founded in 1845, and lectures are there given in the faculties of arts, medicine, law, and engineering. In the Natural History and Anatomical Museums there are fine collections, and the Examination Hall contains a number of paintings, among which are an ancient portrait of Milton, one of Henry VIII. when a child, and a copy of Titian's "Assassination of St. Peter, Martyr," the value of which has been estimated at five thousand pounds. There is an extensive view from the Tower of the College embracing the city, Belfast Lough, and surrounding country.

After the presidential address has been duly delivered by Dr. Symes, the reading and discussion of papers will commence and continue until 4 p.m., with the usual break for luncheon at 1 p.m. As the luncheon will be served in the Examination Hall of Queen's College, no time will be lost in this connection, a very desirable thing in view of the large number of papers to be read and the extensive programme arranged by the local committee.

Afternoon tea will also be served in Queen's College, after which there will be a drive to Giant's Ring, Purdysburn, Ormeau Park, etc. The Giant's Ring is an immense earthen "rath" or rampart—eighty feet wide at the base—surrounding the remains of what is supposed to have been a huge cromlech; Ormeau Park is very

near to Queen's College, and bordered on one side by the river Lagan. Returning from the drive, at 8 p.m. there will be a reception by the President of the Conference and Mrs. Symes, and a conversazione at Queen's College. Amongst the attractions on this occasion will be a demonstration of radiography, an exhibition of early and rare Irish herbals and other works by Mr. R. M. Young, J.P., and vocal and instrumental music, whilst light refreshments will be served as usual on such occasions.

On Wednesday, August 10, the close of the day's business will be immediately followed at 3.30 p.m. by a garden party in the Botanic Gardens Park, by invitation of the Lord Mayor and Lady Mayoress. The Botanic Gardens Park has an extent of about 17 acres, and is tastefully laid out. Until recently the ground belonged to a company, but the City Corporation having purchased it, the park was formally opened to the public in March, 1895. It contains a fine conservatory and fernery, and a large exhibition hall, which is used occasionally for balls and meetings. The garden party will conclude about 6.30 p.m., and the usual smoking concert and ladies' drawing-room concert will be held subsequently at the headquarters of the Conference—the Grand Central Hotel.

The excursion to Larne, Garron Tower, and Parkmore on Thursday, August 11, will be the great feature of the Conference on the social side. The party will leave Belfast by the train for Larne Harbour departing from the Northern Counties Railway Station, York Road, at 9.5 a.m. Soon after leaving York Road terminus the city is left behind and a fine view obtained of the Cave Hill and of Belfast Lough, the opposite shores of which are in County Down. The first station passed is at Greencastle, a village which is continuous with Upper Whitehouse. The first cotton mill in Ireland was erected at the latter place more than a century ago. The remains of a house, called King William's ruins, which lie, on the right of the railway, in Lower Whitehouse, are said to mark the site of one of the resting-places of King William III. when on his march to the Boyne. In the *Ulster Journal of Archaeology* for 1853 it is stated

that the King's forces disembarked at the Old Whitehouse, or what is better known as Macedon Point, and from Whitehouse the King is said to have driven over the strand to Belfast.

Leaving the sea-shore and passing first through a short tunnel, then between embankments covered with laurel and fir trees, the train reaches Whiteabbey, then crosses a bridge over Glenavana, and arrives at Jordanstown, whence fine views of Belfast

Lough and the hills of Down can be obtained. Next comes Greenisland, formerly called Carrickfergus Junction, after leaving which is seen the Knockagh Hill, which forms part of the margin of the great basaltic plateau of Antrim. The hill used to be the habitat of wild goats, but within quite recent years they have become extinct. Golf links have been laid out on the slopes, and

there is a splendid view from the top of the hill. The next station is Trooper's Lane, from which point a good view is obtained of the mouth of Belfast Lough, whilst in the distance the spire of St. Nicholas' Church, and of the square tower of the ancient castle at Carrickfergus can be seen.

Carrickfergus or Carrick was in olden times one of the most important places in the province. The incorporation of the borough with all the privileges of a county is supposed to date from the reign of King John, and King James I. gave a charter to

the town investing the government of the Corporation in a "Mayor, Sheriff, Aldermen, Burgesses, and Commonality," but Carrickfergus was deprived of its old Corporation, with all its mediæval grandeur, by the Municipal Corporations Act passed early in the present reign. The erection of the Castle, which is the most striking object in the place, has been attributed by some to John de Courcey, by others to Hugh de Lacy, but both probably had a share in its construction. Kilroot is the next station after leaving Carrickfergus, and near it are the remains of a church in which Dean Swift used to preach. Kilroot Point lies a little

beyond the station, and evidence of a raised beach may be observed along the coast where the shelly gravels are to be seen, resting on stiff bluish estuarine clays, of older date, with oyster shells. As the train sweeps round the bay beyond the point, veins of gypsum appear in the slopes of red marls upon the left. These slopes are succeeded by precipitous heights covered with rough grass and gorse bushes. The train next passes through a short tunnel under the promontory of Whitehead, on emerging from which can be seen in a quarry, on the left, a specimen of the columnar structure, so wonderfully developed at the Giant's Causeway, a great mass of basalt overlaying the limestone.

Whitehead Station stands at the head of the peninsula called Island Magee and at the mouth of Belfast Lough, of which it commands a fine view. The ivy-covered ruins of Castle Chichester are near Whitehead Station. Island Magee commences near Whitehead Station, and trends in a north-westerly direction for about seven miles. It is separated from the mainland by Larne Lough, near the head of which stands Ballycarry Station. On the east side of Island



Queen's College, Belfast.



Grand Central Hotel, Belfast.

Magee are situated the Gobbins, a bold precipitous range of cliffs, about three miles from Ballycarry Station. They consist of great masses of basalt, extending along the shore for about a mile and a quarter, and rising sheer from the sea to a height of nearly two hundred and fifty feet. The rocks are penetrated by a number of caves and constitute the home of flocks of sea birds. Taken altogether, they are claimed to present one of the grandest displays of cliff scenery on the north-east coast of Ireland.

Near Magheramore Station will be seen the extensive limeworks belonging to Lord Magheramore, whence are shipped large quantities of lime. Lord Magheramore's residence is seen shortly after leaving the station, and a fine view of Larne Lough is subsequently obtained as the train approaches Glynn, a village at the foot of Glenoe Water. Then comes the town of Larne, which was at one time a seaport of considerable importance. It is situated near the mouth of Larne Lough and on the Inver River, or, as it is sometimes called, Larne Water. The town gradually rose under the protection of Olderfleet Castle, remains of which still exist on the Curran at the Harbour. By the establishment of the Royal Mail and shortest sea route between Great Britain and Ireland, through the port of Larne, the town has been raised to a position of considerable importance. The harbour is sheltered and commodious, and the depth even at low water is sufficient to float the largest Transatlantic vessels. Steamers ply regularly between the port and Stranraer, Glasgow, Ayr, and Liverpool, in addition to which a large number of cargo vessels are annually cleared.

The visitors will alight at Larne Harbour Station, where coaches will be in waiting to convey them to Garron Tower, where there is an imposing headland—Garron Point—formed of limestone and basaltic rocks. Botanists and geologists will find a splendid hunting ground along the road which passes through Glenarm and Carnlough, with fine scenery all the way. After a drive of twenty miles along the Antrim Coast luncheon will be served at Garron Tower, a castellated mansion belonging to Lord Herbert Vane Tempest, whence there is a magnificent prospect. After luncheon, coach will be taken for Glenariff, where woods and waterfalls abound, and an hour is to be devoted to exploring the beauties of the district. Progress being resumed, the party will then proceed to Parkmore, whence the return journey to Belfast will be made by train, after tea has been served.

After crossing a moorland tract between Parkmore and Cargan, a beautiful valley expands itself between the latter station and Cross Roads. Several small roadside stations are then passed, and as the train approaches Ballymena a fine view of Slemish Mountain is obtained. Ballymena is a thriving business town of more than nine thousand inhabitants, built on both sides of the Braid Water. It is largely engaged in the manufacture of linen, in flax-spinning, in ham and bacon curing, and in the production of damasks, cambric handkerchiefs, and embroidered goods. It also carries on an extensive trade with England and Scotland. Buyers from Belfast attend the market on Saturdays, for the purchase of linen, some of which is produced by hand-loom weavers in the rural cottages. The turrets of Ballymena Castle and the square tower of the parish church are easily distinguished from the train. Leaving Ballymena, peat bogs will be observed on both sides of the line between Kellswater and Cookstown Junction stations, and as the train approaches Antrim glimpses may be obtained of Lough Neagh and the famous Round Tower. Shane's Castle, the seat of Lord O'Neill, is near Antrim, and the town itself is on the Six-Mile-Water, close to which stands Antrim Castle, the seat of Lord Massereene.

Beyond Antrim are the railway ballast pits at Moylena, especially interesting to geologists, and the scanty remains of an ancient

abbey will be seen near the picturesquely situated village of Muckamore, as the train passes the railway siding of that name. The train then crosses the Six-Mile-Water, and after passing Dunadry, Templepatrick (adjacent to Castle Upton, the seat of Lord Templetown), Doagh, and Ballyclare Junction stations, Greenisland station is reached once more, and, after a short run of seven miles, Belfast will be reached once more.

The arrangements for Friday, August 12, include visits to Messrs. Harland and Wolff's ship-building yard, the York Street spinning mills, the Belfast rope-works, Messrs. Gallaher and Co.'s tobacco factory, and other works of interest. For those who desire to go further afield, tickets will be issued at reduced rates to Portrush and the Giant's Causeway, whilst inexpensive tours by road and rail can be arranged in various directions. Particulars of the botany and geology of County Antrim, of golf links, cycling tours, etc., will be found in the sixpenny 'Guide to the Belfast and Northern Counties Railway,' which has been freely utilised in the compilation of the foregoing notes.

SPECIAL CONFERENCE ARRANGEMENTS.

Tickets.—No. 1 book of tickets, 10s. 6d. each, will admit to Conference, luncheon, drive, smoking concert, and ladies' drawing-room concert. No. 2 book of tickets, 10s. 6d. each, will include railway and coach fares, luncheon and tea on Thursday. Application for tickets and hotel accommodation must be made to Mr. R. W. M'Knight, Hon. Local Secretary, 1, Carlisle Circus, Belfast, before August 1.

Hotels.—The Grand Central, Royal Avenue, has been selected as headquarters; the Avenue, the Imperial, the Shaftesbury, and the Linen Hall Hotels, are also recommended by the Local Committee at the meeting.

Guide Books to Belfast and the Conference programme will be distributed free, and Mr. Jones, L.P.S.I., of Rostrevor, has kindly offered to present each member visiting the Conference with a copy of his "Guide to Rostrevor and District."

Portrush and the Giant's Causeway.—The Manager of the Northern Counties Railway Company will issue tickets at reduced fares to Portrush for the Giant's Causeway: Return, First Class, 4s.; Return, from Friday or Saturday to Monday, 10s., paid at Station; if fifty are guaranteed, 7s. 6d. each. Combined railway and hotel fares to Portrush, from Friday to Monday, 40s.; from Saturday to Monday 30s.

Cycling.—The coast road from Larne to Parkmore is most suitable for cycling.

Means of Transit.—The ways of getting to Belfast are numerous, and the choice of a route must depend largely upon the position of the original point of departure. It may be mentioned, however, that special terms are being offered by the Belfast and Mersey Steamship Co., Ltd., 14, Water Street, Liverpool. Thus they are offering special terms to convey members of the Conference and their friends by the first-class passenger steamer "Caledonian" from George's Dock, Liverpool, on Tuesday, August 2, at 9.30 p.m.; Thursday, August 4, at 10.30 p.m.; or Saturday, August 6, at 12 p.m., returning from Belfast on any Monday, Wednesday, or Friday evening within two months. The special return saloon fare, including comfortable sleeping accommodation, will be 10s. each passenger, and good berths will be reserved on application. Copies of a dainty little pamphlet, entitled 'Peeps at Irish Scenery,' will be sent gratis by this firm.

DENTAL NOTES.

ANODYNE FOR TOOTHACHE.

Howe recommends the following anodyne:—One part carbolic crystals and 3 parts menthol are melted together; the light amber coloured, aromatic fluid which results has a burning, but not caustic taste, it is readily soluble in alcohol, ether, chloroform, and most oils, and has the property of dissolving iodoform and aristol. The solution is said to possess strongly antiseptic properties, but is specially valuable for its anæsthetic action, especially in the case of painful tooth-pulps.—*Zahnt. Reform.*, xvii., 45.

A GOOD GOLD SOLDER.

It is recommended by Pessa that one part of S. S. White's No. 9 18 carat gold solder and 4 parts of a gold coin of 21.6 carat (American, German, or French currency) should be melted together. The result is stated to be a good solder of 21 carat, of exactly the same colour as gold coins.—*Zahnt. Reform.*, xvii., 449/50, after *Zeit. f. ang. Microscopy.*

THE USE OF CHLORAL CAMPHOR.

In cases of operations of the mouth, where it is, for various reasons, not advisable to use a cocaine or other poisonous solution, Harlan recommends chloral camphor to be applied to the edges of the tooth root. This application continued for some time enables an otherwise painful operation to be performed with hardly any discomfort to the patient.—*Corresp.-blatt f. Zahn.*, xxvii., 93, after *Dental Office Laboratory.*

PAINLESS ARSENICAL PASTE FOR DESTROYING PULP.

Dubois recommends a caustic paste of the following composition:—Arsenious acid, 0.5; eserine, 0.2; cocaine, 0.2; massed into a plastic condition with chloroform. The violent pains which follow from the use of morphine, creosote, and phenol are entirely absent when this compound is used, and the killing of the pulp is obtained more or less quickly.—*Zahn. Reform.*, xviii., 13.

METAL DIES.

Dr. Wm. H. Steele gives a description in the *Ohio Dental Journal* of his method of obtaining a perfect metal die of a badly undercut or rough model. The materials required are: A good smooth plaster model, a jar of paste, fine Spanish whiting, fine powdered chalk, a medium stiff flat brush for soapstone, stereotyper's blacking paper-filling tissue, No. 1, extra white, facing tissue, No. 1, extra cream, and some smooth heavy tea lead. The paste is prepared with 2½ ounces of rye flour, 3½ ounces of starch, ½ teaspoonful of powdered alum, and 2 quarts of soft water. Mix together thoroughly, then add cold water and mix until the mass becomes the consistency of thick cream. Then gradually add the remainder of water, which must be boiling hot, stirring well to prevent lumps; continue stirring until it begins to boil, and set aside to cool; when cold, strain through a fine sieve or cloth, when it should look like jelly. When ready for work add Spanish whiting until thick enough to spread with plaster brush. To make the paper matrix and plaster mould: when the plaster model is fully set go over entire surface with the soft brush and soapstone, rub with finger to remove surplus, and give a gloss to model. Cut a piece of the heavy blacking paper large enough to entirely cover plaster model, also cut from two to five pieces of the No. 1 white tissue, same size for filling (the rougher the model the more sheets will be needed to make a smooth matrix), also a sheet of the cream tissue facing paper, and a piece of sheet lead same size as paper. Soak the piece of heavy paper in water, dry off the surface with blotting paper, coat evenly with paste, and apply sheet of No. 1 tissue, continue with the paste and paper until the requisite number of sheets have been built up, paste on a sheet of cream tissue facing, being careful to avoid wrinkles. Now dust the surface with a bag of fine powdered whiting, oil the plaster model lightly, and quickly apply the prepared paper, smooth surface of model, beginning in the centre, smooth down snugly to the model. Now cut a piece of tea lead large enough to entirely cover the paper, press it down into the centre of arch, slit wherever necessary to avoid folds or wrinkles, being careful to have it hug the paper closely all over, oil the lead, place in casting ring, and pour with plaster. If the plaster mould is to be removed in sections to avoid an undercut, pour it with this object in view, making guides where necessary, so parts will fit together accurately. When the plaster is hard,

place it in the drying oven for a few minutes (model side up), until the paper matrix is hard enough to separate; then remove the plaster model. Now wet the top edge of the paper matrix and plaster mould; mix thin plaster and build all around the edge to prevent the paper drawing away from the investment when pouring. Place the prepared mould back in the oven, and, when the matrix becomes hot, pour the metal. Use good clean metal; do not have it too hot, and the result will be a fine, clean cut, smooth die. To ascertain the right heat for pouring, fold a piece of white paper and dip into the ladle; if it comes a straw colour, it is just right. Be careful the matrix is dry and warm before pouring.

REGULATION OF TEETH.

When the central incisors stand apart, dry the teeth and wrap No. 5 linen thread round them three or four times and tie it. By the next day the shrinkage of the thread will have drawn the teeth together. If necessary retaining band, soldered together, can be afterwards cemented to the teeth.

REMOVING PULPS.

In removing pulps in anterior roots, after cutting off crown for pivoting, lay a little cocaine hydrochloride on the exposed nerve, allowing it to remain for a few minutes, then gently and slowly work it in with a fine point, after which the nerve can be extracted with a brooch without any pain.

PINS FOR CROWNS.

Mr. C. S. Reed, in the *Journ. British Dent. Assn.*, describes his method of making triangular pins for crowns as follows:—These pins are made by soldering together two wedge-shaped pieces of plate of No. 8 gauge. One piece of metal must be slightly wider than the other. The larger piece is placed flat on the soldering block, the other is then placed on its edge, along the mid line of the broader piece; point being to point, the pieces are then soldered together. The result is a piece of T metal tapering to a point at one end. The root is prepared by reducing the canal in the usual way and then enlarging in three directions with a long fine fissure bur, to receive the angular pin. The canal then presents a T-shaped orifice, into which the T-shaped pin just fits. The crown is then fitted by one of many methods known to us. The advantages of this pin are: (1) absence of rotation; (2) great strength—angular metal being considered the strongest possible; (3) disposition of the greatest strength where most needed—that is—where the crown and root approximate; (4) ease and economy of construction—it being possible to make the pins of scraps of plate left in the usual course of work. The pins, if necessary, may be barbed by cutting with a sharp knife towards the point of the wedge, along the three edges of the pins.

ANÆSTHETIC EFFECT OF COCAINE.

The anæsthetic effect of cocaine is materially increased if the liquid be slightly heated—90° F.—before injecting. Anæsthesia sets in sooner, lasts longer, and is more decided. A weaker solution than usual may be employed with less risk of cocaine poisoning.—*Dental Digest.*

DECOLORATION OF ALUMINIUM.

Aluminium may be restored to its white colour by washing with a mixture of 30 Gm. of borax dissolved in 1000 Gm. of water, with a few drops of ammonia added.—*Amer. Druggist.*

AVOIDING PATIENTS' BREATH.

Dentists could save themselves much from the unpleasantness and unhealthfulness of inhaling their patients' breath while performing long operations in gold fillings, when the rubber dam is applied, by placing a sheet of paper from gold-foil book before the patient's nose, securing it under the dam and elastic fasteners. It also prevents the moisture from breath coming in direct contact with the gold while packing. This makes it equally agreeable to the patient.—Dr. G. H. Reynolds, *Dominion Dental Journal.*

MOULDING SAND.

Take ordinary bath-brick, finely powdered, add about 40 per cent. to your moulding sand. It makes a cohesive, compact and sharp impression.—*Ibid.*

NOTICES TO CORRESPONDENTS.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ADVERTISEMENTS AND ORDERS for copies of the 'PHARMACEUTICAL JOURNAL' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers."

ARTICLES AND REPORTS sent for the Editor's approval should be accompanied by stamped directed envelopes, otherwise no guarantee can be given that they will be returned if not found suitable.

CORRESPONDENTS should write in ink, on one side of the paper only, and must authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

DRAWINGS FOR ILLUSTRATIONS should be executed twice the desired size; clean sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

NAMES AND FORMULÆ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

QUERIES addressed to the Editor will be replied to in the Journal as early as possible after receipt, though not necessarily in the next issue. Replies cannot be sent by post, even though stamped envelopes accompany the queries.

LETTERS TO THE EDITOR.

THE HERBARIUM COMPETITION.

Sir,—Would it not be wise to arrange for the exhibition of the contributions sent in for the herbarium competition in the rooms of the North British Branch, Edinburgh? It seems to me it would prove of great interest to students in this part, and might stimulate more of them to compete in future.

Dundee, July 23, 1898.

W. C. (138/32).

COLORATION OF ARSENIC.

Sir,—It is evident from frequent cases of poisoning by liquid weed-killer that an amendment of the regulations relating to the sale of arsenic is necessary. At present soot and indigo are the only colouring substances recommended, and neither of these is any use in a dilute solution. If aniline green or blue were added in such proportion as to give a decided tint to even the weakest solution there would be no chance of accidental poisoning, such as happened at Crieff last week.

Dundee, July 23, 1898.

W. C. (138/31).

CAMPHOR IN PILLS.

Sir,—In your last week's issue you had a letter from Mr. Graham Bott on the subject of camphor in pills. Would he or some other authority give the best excipient for the following?—

R Quin. Sulphur	Gr. xxiv.
Ext. Bellad.	Gr. vi.
Camphoræ	ʒi.
M. ft pil. xxiv.	

St. Ives, Hunts, July 26, 1898.

F. C. BARTON.

MR. GLYN-JONES ON ADULTERATION.

Sir,—Mr. Glyn-Jones writing to the Journal on the recent prosecution of his firm for selling lime water below the standard strength, endeavours to evade in wordy language the main issue of the case, which is simply this: "Was the lime water sold of proper strength?" It was clearly proved that it was deficient in strength. The fact that there may be a certain amount of alteration under certain circumstances is not a sufficient or satisfactory answer, as it is evident that most drugs and chemicals would deteriorate if precautions were not taken to guard against this. If in a preparation so readily made, at so trifling a cost and requiring so little skill, there is no care displayed, how can one expect to have the many other costly and skilled preparations properly manufactured. To form a fund for the purpose of evading the

Food and Drugs Act by technical defence seems to be a very poor scheme for protecting pharmaceutical qualification. The remedy lies in the personal superintendence of the careful pharmacist.

July 20, 1898.

FAIR-PLAY (138/19).

ANSWERS TO QUERIES.

Special Notice.—Scientific, technical, legal, and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms, and the registered number added in each instance should be quoted in any subsequent communication on the same subject.

MACERATION.—It is not intended that the product should be made up to any definite volume. [Reply to J. L. F.—14/3.]

NAME ON LABEL.—The name of the proprietor must appear on the labels if scheduled poisons are sold. [Reply to BETA.—14/14.]

DISPENSERS ON STEAMERS.—We are not aware that there are any such positions as you inquire about. [Reply to MARITIME.—14/15.]

SAMPLE OF ORE.—We are unable to assist you in this matter: Send a specimen, with full particulars, to some dealer in minerals. [Reply to E. J. E.—14/10.]

DEVELOPER.—The formula you send does not appear in either of our photographic supplements—April 2 and May 7 last—though several tried formulæ for developers were given therein. You must add more water if solution is incomplete. [Reply to HYPO.—14/9.]

SAL VOLATICA IN BOILER.—Probably ammon. carb. is what is meant, as it used to be called sal volatile cornu cervi, as of course you know. Probably it would cause a deposit to form on the crack, but we should not recommend such a means of stopping up a defect in a boiler. It would be better to have it properly remedied. [Reply to W. J.—14/5.]

CORRECTION.

LIQUOR STRYCHNINÆ HYDROCHLORIDI.—Mr. George Lunan asks us to correct an obvious error in the fourth line of his letter published last week, where the word gramme appears instead of grain.

OBITUARY.

USHER.—On July 13, Richard Usher, Bodicote. Aged 57. Mr. Usher was widely known as a cultivator of medicinal herbs, his business connections extending to all parts of the Kingdom. He was a member of the Banbury Board of Guardians and of the Rural District Council.

SHAW.—On July 14, William Bourne Shaw, Chemist and Druggist, Handsworth. Aged 46.

MAYHEW.—On July 24, Charles Naunton Mayhew, Chemist and Druggist, Beccles. Aged 67.

VAN VOORST.—On July 24, John Van Voorst, Utrecht House, Clapham. Aged 94. Mr. van Voorst was, it is believed, the *doyen* of London publishers. Born of a Dutch family settled in England for several generations, he passed six years in the house of Messrs. Longmans, and started business on his own account about 1832 in Paternoster Row. He was for many years the publisher of Attfield's 'Chemistry,' and amongst his undertakings of importance were Yarrell's 'British Fishes,' begun in 1835, followed by Bell's 'British Quadrupeds' in 1836, and by Yarrell's 'British Birds' in 1837. These and works on British Crustacea, zoophytes, starfishes, etc., are recognised classics on the natural history of our islands, and the 'British Birds' reached its fourth edition in 1871. Though Mr. van Voorst published many other works, it was in connection with the name of Yarrell that he was best known, and he was one of the executors of that eminent naturalist. He retired from business in 1886.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

The results of an investigation recently carried out by Dr. A. P. Luff as to the value of certain drugs in the treatment of gout throw considerable doubt upon the views held concerning the efficacy of alkalies as remedial agents in that disease, so far as regards the removal of uric acid from the system by their solvent action. From Dr. Luff's experiments it appears that neither potassium or sodium bicarbonates, lithium carbonate, potassium or lithium citrates, or sodium phosphate exercise the slightest influence in delaying the conversion of quadriurate into biurate. A similar conclusion was drawn from experiments with salicylates, piperazine, and lysidine. None of these substances were found to increase the solvent power of the blood for sodium biurate, and hence it is inferred that their administration to gouty subjects with the object of removing uratic deposits in the joints and tissues appears to be useless.

T. E. Stillman records the results of experiments dealing with the action of nitric acid on aluminium. In thick sheets the metal is scarcely at all attacked, and only slowly on raising the temperature. But in thin layers the following results have been obtained, using a hundred times (by weight) as much acid as aluminium:—

Temperature.	Density of Acid.	Duration of Experiment.	Proportion of Aluminium Dissolved.
20° C.	1.15	7 days	94.2
20 "	1.35	7 "	89.0
20 "	1.46	7 "	12.0
100 "	1.15	20 minutes	100.0
100 "	1.35	30 "	100.0
100 "	1.46	2 hours	100.0

—*Journ. de Pharm. et de Chim.* [6], vii., 592.

P. and S. Curie have isolated a substance from pitch-blende which appears to contain a hitherto unknown metal, very similar to bismuth in its analytical properties. The supposed new metal, which is named "polonium," owes its discovery to the new method of investigation by the rays discovered by Becquerel. It was observed that whilst minerals containing uranium and thorium are very active from the point of view of the emission of those rays, the activity in some instances was even greater than that of uranium and thorium. On the supposition, therefore, that some more active substance was present than either of those two metals, an attempt was made to isolate it. On attacking the pitch-blende with acids and treating the resulting solution with sulphuretted hydrogen, the uranium and thorium remained in solution. The precipitated sulphides were then subjected to treatment, and ultimately the supposed new metal remained associated with bismuth. It could only be partially separated from the bismuth, and its activity is claimed to be four hundred times greater than that of uranium.—*Comp. rend.*, cxxvii., 175.

As produced by Bineau, by bringing together ammonia with hydrogen selenide, this compound was a white crystalline solid, which was readily decomposed by water in the presence of air. V. Lenher and E. F. Smith now announce that they have been able to crystallise it from a solution in black, anhydrous, Vol. LXI. (FOURTH SERIES, VOL. VII.) No. 1467.

orthorhombic prisms. An ammoniacal solution of ammonium molybdate was saturated with hydrogen selenide gas and the dark red solution yielded the black crystals when carefully concentrated in a vacuum over sulphuric acid. The residue consisted of ammonium molybdate, metallic selenium, and the crystals of ammonium selenide. When separated as completely as possible from the selenium and extracted for several days with pure carbon disulphide, the purified crystalline mass proved to be stable in air and dissolved readily in water, the freshly-made solution precipitating selenides from neutral or alkaline solutions of metallic salts. On exposure to air the solution decomposed, black selenium separating.—*Journ. Am. Chem. Soc.*, xx., 277.

Fiji Rubber.

In response to a request from Kew for specimens of all plants yielding a milky juice, samples of Fiji rubber have been received and examined. The first samples received proved entirely valueless; but the second, received in March last, were more promising. This rubber is obtained from *Alstonia plumosa*, which is described as abounding in the forests, and likely to prove a useful rubber-producing plant. Judging from the specimen of rubber received, however, the preparation of the article seems to have become almost a lost art, for the specimen was soft and viscid on the outside, with little or no elasticity, and practically without value. A specimen received later was not so viscid, but gradually became hard and inelastic. A sample of rubber from a tree known as "Baka" (*Ficus obliqua*, Forst. f.) has also been received, and, although not sufficiently coagulated, is regarded as suitable for mixing purposes. A substance obtained from the "Ban" tree, possibly a member of the Sapotaceæ, but, in the absence of flowers, otherwise indeterminable, was slightly elastic. Other specimens, obtained from the "Wasalili" (*Carruthersia scandens*, Seem.) and the "Malawaci" (*Trophis anthropophagorum*, Seem.), were entirely deficient of elastic properties, and reported to be of no commercial value.—*Kew Bulletin*, 139, 154.

Biology of the Uredineæ.

In a review of the present position of our knowledge respecting the biology of the Uredineæ, Dr. H. Klebahn gives a summary of the most recent observations. The existence has been established of "biological species," or "species sorores," i.e., of groups in which the æidioforms are scarcely distinguishable from one another, while the uredoforms and teleutoforms present appreciable differences. Of these groups of biological species, the following may be regarded as having been established: *Peridermium Pini f. acicola* comprises at least nine or ten morphologically indistinguishable or scarcely distinguishable species belonging to the genus *Coleosporium*, recognised only by cultivation on their teleutospore hosts. *Cocoma laricis* consists, in like manner, of four or five species, whose teleutospores are species of *Melampsora* parasitic on birches, poplars, and willows. On *Phalaris arundinacea* are a series of puccinioforms of the type of *Puccinia sessilis*, distinguished from one another by their æidioforms, which occur on species of *Convallaria*, *Leucojum*, *Allium*, *Orchis*, and *Arum*. Among the Uredineæ of cereal crops are several series of biologically distinct forms; and this is the case also with the rusts of other grasses and those of species of *Carex*.—*Bot. Zeitung*, 1898, 2te Abtheil, p. 145.

Bacterial Diseases of Plants.

In the reports of the various experimental stations in the United States are papers respecting the diseases of cultivated crops and fruit trees caused by the attacks of various species of *Schizomycetes*, which are summarised by Professor J. C. Arthur (*Bot. Gazette*, 1898, p. 461). A new bacterial disease of sweet corn is described, attacking the plant

chiefly at the time of flowering, clogging the fibrovascular bundles of the stem. The olive-knot, or tuberculosis of the olive, is ascribed to the attacks of *Bacillus oleæ*. Sig. F. Cavara (*Le stazione sperim. agrar. Ital.*, vol. xxx., p. 482) describes the following bacterial diseases of the grape-vine:—Tuberculosis, produced by *Bacillus ampelopsoræ*; necrosis, caused by *Bacillus cubobianus*. Necrosis of the mulberry is due to two different *Schizomyces*: one of them resembling *B. vitivorus* and identical with *B. cubobianus*, the other a new chromogenous species, *Bacillus mori carneus*. Tuberculosis of the peach is caused by the attacks of a hitherto undescribed species, *Clostridium persicæ tuberculosis*.

Two forms of artificial indiarubber, one from France, the other from Germany, are described in the *Engineer*. Textiloid, the French form, consists mainly of resinoline, obtained by treating oil with three or four times its bulk of metallic carbonates, then with nitric acid, afterwards saponifying, precipitating by means of acid, and dissolving in alcohol or ether. A hundred parts of the resinoline are mixed with twenty of zinc oxide, manganese, etc., and sixty parts of methylated spirit; after several hours the mass is kneaded for one hour or more and finally compressed. The German substitute is prepared by the oxidation of linseed oil, to which is subsequently added prepared jute refuse or similar textile refuse. By this means a substance is produced which is claimed to possess many of the qualities of genuine indiarubber and to be capable of being manufactured into various articles hitherto made of indiarubber.

The formation of lenticels is thus described by M. Devaux. The tissue produced on the outside of the generating layer always consists exclusively of true bark. The rounded cells, which enter into the composition of the bark, represent cells of the phelloderm which have increased more or less in size and have become separated from one another. They are developed from a phellogen situated at the internal limit of the layer of bark which lies above them. The generating layer, which is formed below the rounded cells, is a new layer of phellogen intercalated within the phelloderm and producing regeneration. The generating layer of lenticels is not usually a permanent layer; it ceases to be active as soon as a new layer is formed lower down in the phelloderm, or often also in the primary cortex. The only true bark of lenticels, with centripetal development, is represented by the layers known as the intermediate rays or closing layers—that is to say, by suberised cells much more closely united, and having all the essential characters of true bark.—*Procès Verbal Soc. Sci. Phys. et Nat. Bordeaux*, 1898, p. 27.

In advocating the practice of boiling all water (and milk) of uncertain purity, Professor Bizzozero combats the prejudice against boiled water as a beverage. He maintains that the “taste” frequently complained of in boiled water is really caused by the kettle, and can scarcely be due to the absence of CO₂ or dissolved air, of which water from wells of great depth often contains very little.—*Practitioner*, lxi., 63.

A sample of black wax (malam Kjongting) from the Dutch East Indies has been examined by E. H. Blitz. The author finds that the coloration is due to a large number of pollen grains contained in the wax. The colouring matter is dissolved by petroleum ether, ether and alcohol. The wax appears shining black in a reflected light, more or less dark brown in a transmitted light. The odour is similar to honey, the

taste slightly aromatic. The wax is dissolved by chloroform with the exception of the pollen grains; it is almost insoluble in alcohol. The melting point is very low, viz., 54° C. The specific gravity is 0.978; the iodine number, 69.06; the acid number, 34.3; the saponification number, 78.5; the ester number, 43.25.—*Pharm. Ztg.*, xliii., 404, after *Uederl. Tijdschr. voor Pharm.*, 35.

Artificially Decolorised Wines.

The usual diphenylamine sulphate solution, used to detect nitrates, has been found by A. Bimm to afford a means of detecting artificial white wines, which have been produced by decolorising normally red wines by means of animal charcoal; 2 C.c. of the solution are placed in a small porcelain capsule, so as to give a layer of liquid 4 or 5 Mm. deep, 6 drops of wine are then allowed to run down the sides, when, if the wine has been treated with animal charcoal, a marked blue ring will be formed. Natural white wines will not give this reaction. The solution obtained by washing commercial animal charcoal with water was found to give the characteristic reaction for nitrates with all the usual reagents.—*Journ. Pharm. Chim.* [6], viii., 9.

Iodine in Pig's Thyroid.

Tambach finds that in the case of the pig the absolute amount of iodine in the whole gland of a pig is always the same, irrespective of district or locality. The amount of albuminoids capable of extraction vary, however, considerably, both with the season of the year and the origin of the animal. The albuminoids containing iodine can be almost completely extracted from the glands by water. Of the total amount of iodine present, about 96 per cent. exists as a very stable combination, and which is separated by precipitants of albumin, such as alcohol, acids, etc. About 4 per cent. of iodine is contained in the filtrate from the latter; of this 2 per cent. is soluble in water, and freely parts with its iodine; the other is a very stable compound, also soluble in water. Thyro-iodine is not contained free in the gland. The iodine-albumin compounds do not liberate thyro-iodine either on digestion with artificial gastric juice or with pancreatin. On the contrary, they change to digestion products, which retain the iodine in the same combination as the original substances. The separation of thyro-iodine only results after destruction of the albumin molecule, but even then the whole of the iodine is not set free as thyro-iodine. There are several distinct combinations of iodine and albumin present in the glands. This is shown by the circumstance that only a portion yields thyro-iodine, while another portion produces peptone-like bodies which are soluble in water and contain less iodine. These latter do not yield any thyro-iodine after repeated treatment with 10 per cent. sulphuric acid or 5 per cent. soda solution. The therapeutic effect of the fresh gland, or of its extracts, is no doubt due to the absorption of the above-mentioned digestion products containing iodine, and not to the liberation and consequent absorption of thyro-iodine.—*Pharm. Centralh.*, xxxix., 574.

Vapour of Metals.

Dr. W. J. Russell finds that certain metals, at ordinary temperatures, appear to give off vapour which affects a sensitive photographic plate. This vapour can be carried along by a current of air, and even after passing through thin sheets of gelatin, celluloid, etc., is able to produce clear pictures of the surface of the metal from which it came. Nickel is very active in this respect, cobalt only very slightly so, copper and iron are practically inactive.—*Chemical News*, lxxvii., 167.

THE FOURTH BRITISH PHARMACOPŒIA.

BY J. C. HYSLOP, PH.C.

(Continued from page 52.)

With respect to aqua rosæ we have at length a well-merited recognition of the fact that the commercial article, imported from the best manufacturers of the South of Europe, gives us all we can desire as to uniform purity and strength. As with aqua aurantii floris, this is well defined as being "a saturated solution of the essential oil of the fresh flowers." One naturally asks why aqua sambuci is not thus definitely dealt with. The water distilled from fresh elder flowers will keep good for twelve months. Abundance of elder flowers are at hand every springtime, why should the effete salted stuff be allowed as an alternative?

Aquæ anethi, anisi, carui, cinnamomi, fœniculi, menthæ piperitæ, menthæ viridis, et pimentæ, are all unstable products when distilled either from the herbs or from their oils mixed with ordinary water.

When we consider what a complicated mixture (chemically) "good natural potable water" is at its best, no wonder that the result of a stew should eventuate in the production of multifarious impurities that show up more or less in the distillate and render the product unstable and untrustworthy.

The alternative mode of preparation sanctioned for these waters for use in India and other tropical countries is by far the better one, but the best of all seems to be that adopted in the U.S.P. An essential oil is well distributed amongst the filaments of twice its weight of cotton-wool and washed out again with 500 times its weight of distilled water by a process of slow percolation, the result being everything that can be desired—a saturated solution of the essential oil in pure water that retains its brightness and its strength as long as could reasonably be desired. Why this example of our Transatlantic brethren has not been followed, at least for the alternative process, seems a mystery. Powdered phosphate of calcium may be as insoluble in both oil and water as is the cotton wool, but it certainly cannot be relied upon as much for its cleanness. Before leaving the subject of the waters one cannot but express unlimited satisfaction that our national standard and guide is at length freed from the burden of a ten-gallon copper still for the preparation of distilled water. There is now no reason whatever why the pharmacist everywhere should not invest in a small still to be kept solely for use over the smokeless flame of a good gas stove for the preparation of his own aqua destillata. The uncertain character of this indispensable commodity and stinginess in its use lie at the bottom of much bad pharmacy. It should be employed whenever water is necessary for medicaments intended for either internal or for external exhibition. Carbolic acid lotion prepared with pure water has quite a different character from that containing the impurities of the best potable water; these soon display themselves in the form of a dirtiness on the inside of the containing vessel, and, though small, the percentage of impurity is often enough to sully the fair fame of the dispenser in the eyes of discerning people.

The chronic difficulty as to lime water being not up to its proper strength is usually from the same cause. One cannot prepare anything like a saturated solution of lime except pure water is used. Nor, having pure water, can one get the best result with ordinary bricklayers' lime; one must have pure lime obtained from the manufacturing chemist.

And, speaking of lime water, it may be as well to mention in this connection that the addition of tragacanth mucilage to "black mercurial lotion" is practically a mistake. So is trituration. At the School of Pharmacy in olden time we used to learn

that the less calomel was rubbed about the better; however, as to the gum, the black sediment which it is desired to distribute as equally as possible through the liquid by the merest shake is by the agency of the gum tragacanth formed into clots, which segregate in a manner to refine the solution of calcium chloride and produce the very opposite effect. A little acacia mucilage would not be as bad, but after several trials the following formula is offered as being the best that has yet been devised:—

℞ Hyd. subchlor. xxx. gr.
Liq. calcis sacch. v. fl. ʒ.

Shake together and add aq. destill. ad x. ʒ.

Tragacanth has been of late rather too much in vogue as a panacea for a certain class of dispensing difficulties; it should be regarded with the utmost caution. There is one case in which it seems to answer admirably the purpose intended—that of *mistura cretæ*. Here the intractable clottiness of the sediment is just the kind of bad condition that this kind of gum seems created to neutralise by a kind of a "*similia similibus curantur*" action. At last we have a good "chalk mixture" which deserves to become very popular, and which may surely be prescribed as well as dispensed by the intelligent pharmacist for the benefit of suffering infantile humanity without offence to anyone.

Strange it is that commerce will oft run counter to science and persist in its opposition to the bitter end, though no one can doubt as to the result or as to the wisdom of the weaker making it up with the stronger as soon as possible. A great lot of nonsense has been written—and there is a danger of more—as to the "liquores concentrati," because, forsooth, the compilers have not forced Nature into the methods uniform of trade. Why this has been the damaging mark set against the so-called "concentrated infusions" from the first—the bringing them by fair or foul means to the favourite 1 to 7 strength, a concession merely to the indolence of the dispenser, both mentally and physically. One can understand the necessity there is that the skilled physician has at hand an easy scale of dosage, a subject lying quite on the outer fringe of the vast domain of problems he must often have to laboriously solve in the diagnosis of the sufferer's condition and requirements. Dosage is a sort of neutral zone where physician and dispenser meet. But if the chief concerns of the one lie deeper and more intricate, so do those of the other, but in other directions. The chief work of the pharmacist is to detect the kind and determine the quantities of the endless variety of virtues scattered around us from Nature's lap. What solvents are the best to extract these for the convenience alike of prescriber and dispenser, what processes to employ, and what are the ever-varying proportions and conditions in which each will most readily yield its active constituents to the various menstrua that science teaches us to use, with a view to the keeping qualities, the effective action, and the elegance of the resulting preparations. In all this we are ever confronted with the fact that Nature abhors uniformity, that in the exercise of art we must ever revere her mandates if we desire to bring that art to perfection. The objections raised against the liq. concentrati on the score of convenience and uniformity of strength are just on all fours with those about the six different strengths of alcohol that a pharmacist is now supposed to keep at hand. It used to be so convenient to know that all tinctures must be prepared either with S.V.R. or with S.V.T., and no thought used to arise as to the ignorance and the waste that was condoned in the childish procedure.

It is to be hoped, therefore, that the liq. concentrati—10 in number—may be added to in the near future, not as a substitute for the corresponding infusa, but that in course of time prescribers may become so accustomed to their use as to discard the less satisfactory preparations.

One cannot see why the Research Laboratory of the Pharmaceutical Society should not be at times utilised for important investigations connected with the art of pharmacy, as it has been with relation to the science of chemistry, so that some *ex cathedra* pronouncement might be available for the compilers of the Pharmacopœia in the future with respect to preparations where knotty points want clearing up.

A sort of liq. aurantii concentratus has been prepared by the writer for some few years past, which seems very satisfactory, as follows.

From clean "fine cut" dried orange peel, exhaust the oily matter by a three days' maceration in absolute alcohol; filter off the tincture and set aside. Turn the contents of the filter into a covered pot containing boiling distilled water, remove from the source of heat, and macerate for two hours. Strain, express strongly, and mix the two solutions, shake together, set aside for a few hours, and filter the decanted nearly clear portion through a paper filter.

This is made just five times the strength of inf. aurantii P.B. Strength of alcohol in the finished product 1 in 5.

Since the appearance of the Pharmacopœia a liq. gentianæ conc. comp. has been attempted on the same lines, and seems to answer very well. The chief variation being that half the proportion of dried lemon peel takes the place of the fresh ordered for the infusion of gentian, this with the orange peel being macerated in alcohol as above, a little plain alcohol used to wash the mark on filtration, and mixed with the resulting tincture. The contents of the filter, together with fine cut gentian root, is thrown into the pot of boiling distilled water, macerated, strained, and finished off in like manner. The proportion of ingredients are calculated for the same strength, 1 part to 5 of distilled water makes a beautiful imitation of inf. gent. co. It has a high sp. gr., which, together with the alcohol, seems to add to its keeping qualities.

WHAT IS A MICROSCOPE?*

BY T. E. WALLIS.

(Concluded from page 102.)

Now that the lenses used in constructing a modern microscope have been discussed, it will be convenient to consider the combined effect of those lenses in producing an image. This may be easily understood from the accompanying figure, which also shows the action of the Huyghenian eye-piece.

The object O is magnified by the object glass which forms a large image at *a a*; this image is in reality never formed, but the image-forming rays are caught by the field lens *f f* of the eye-piece and are converged to form an image at *b b* in the diaphragm of the eye-piece. This image is magnified by the eye lens *e e* and appears to the observer of the size shown at X Z.

Having briefly considered the optical part of the microscope, we should devote a short time to the stand or fitting in which the lenses are fixed and by means of which they are manipulated. The different parts are best taken separately:—

1. **THE FOOT.**—This is the base on which the whole instrument is supported. The best style of base is a wide tripod, which has the advantage of giving a wide and firm base without undue weight. A similar kind of foot is the claw-foot, which covers a slightly less area than the tripod, but is otherwise very similar. The smaller span of the foot makes the base less steady, but the instrument can be packed into a smaller case, and hence is more convenient for persons who have to carry an instrument about. The third kind of foot is the horse-shoe foot, which is narrower than the claw-foot, and hence much less stable. This foot is frequently made firmer by weighting it with lead; but although the instrument is made steadier, it is at the same time made clumsier, and it is better to make an instrument with a low centre of gravity without addition of material than to insure stability by simply increasing the mass of metal used.

2. **THE STAGE** is the support for holding the object and for enabling one to easily manipulate it beneath the lens. It should be pierced with a hole to admit light from below, and this hole should not be too small, but of about an inch in diameter. A more convenient form is the horse-shoe stage, in which the opening is cut quite out to the front of the stage, and which possesses the advantage of enabling one to manipulate a slide with the forefinger. A plain stage is usually fitted with two spring clips to

hold the slide in position; but these clips are often in the way of the operator, and a much more useful appliance is the sliding bar, which enables one to systematically search a slide, and for ordinary use is to be preferred to a complicated mechanical stage.

3. **THE TUBE OR BODY** is the support for the magnifying lenses, and is made of two lengths, viz., the Continental length of 160 Mm., and the English length of 250 Mm. Modern microscopes are usually fitted with a draw-tube to enable lenses corrected for either length to be used. The screw for receiving the objectives is

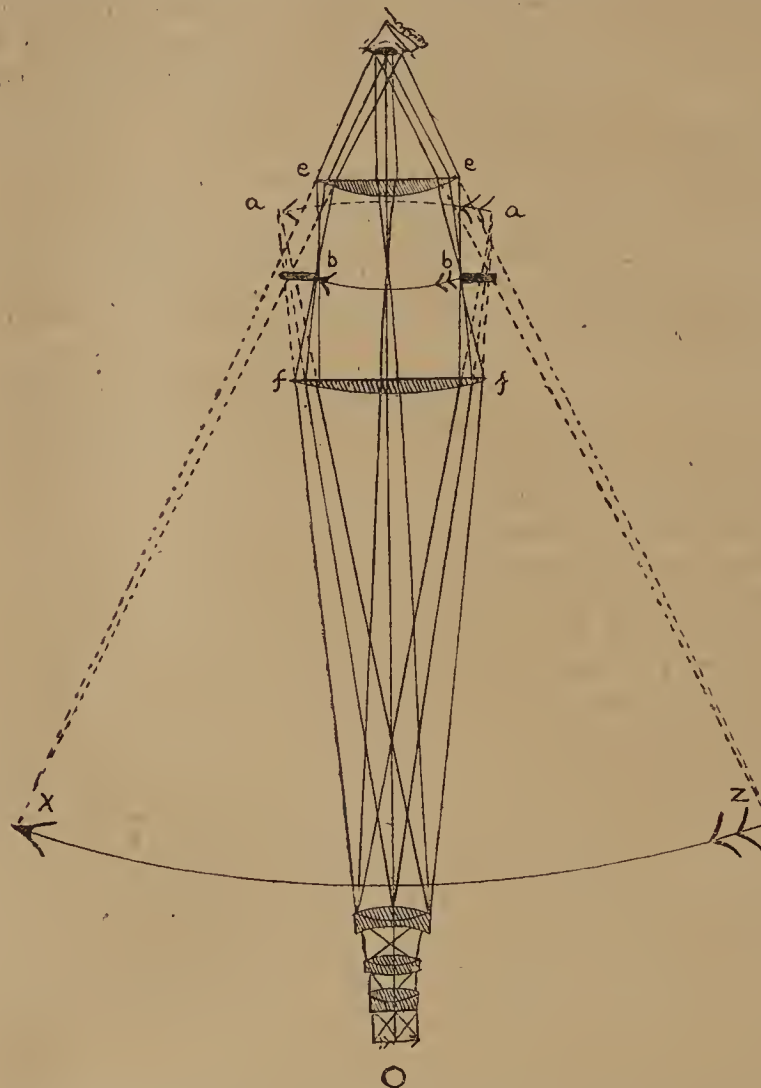


FIG. 6.—Diagram of path of rays through the lenses of a modern microscope.

always made of one pattern, so that any objectives the microscopist requires may be easily fitted. The eye-piece slides into the top of the tube.

4. **THE COARSE ADJUSTMENT** is an arrangement for roughly focussing the lenses. It usually consists of a rack and pinion, with

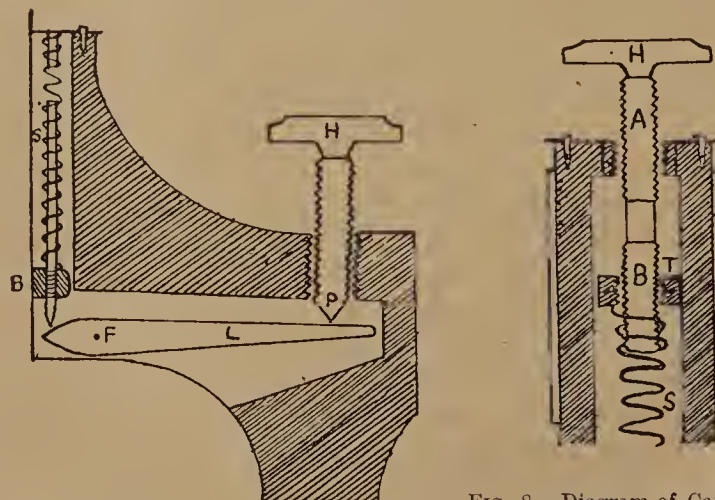


FIG. 7.—Diagram of fine adjustment by a lever.

FIG. 8.—Diagram of Campbell's differential screw.

diagonal rackwork to make it move without undue jerking. It should work so well that a $\frac{1}{4}$ in. or $\frac{1}{8}$ in. objective can be focussed without using the fine adjustment.

* Read before the School of Pharmacy Students' Association.

5. THE FINE ADJUSTMENT is a contrivance for more accurately focussing lenses of high magnifying power. It is sometimes made to move the nose-piece only, but as this interferes with the correction of the objectives, it is usually constructed to move the entire body. Of this adjustment there are three varieties we will briefly consider.

(a) A lever of the first order with a long arm and a short one. By turning the milled head H, the hardened steel point P moves the lever L about the fulcrum F, and raises or lowers the block B, which is attached to the body of the instrument; a spring S keeps the working parts in contact. The disadvantage of this form lies in the fact that the whole frictional wear acts upon the point P; but this is much lessened by the length of the lever L, which also gives a very slow and smooth movement to the fine adjustment.

(b) The fine adjustment in many stands is worked by a direct acting micrometer screw, which, to give a slight movement, must have a very fine thread, upon which friction or rough handling tells greatly.

(c) Campbell's differential screw is a modification of the ordinary micrometer screw, which enables one to obtain a fine movement with a screw of coarser thread. Its construction and method of action will be easily understood from Fig. 8. The upper part A of the screw has twenty threads to the inch and works through a plate in the top of the pillar of the microscope; the lower part B of the screw has twenty-five threads to the inch and works in the opposite direction to A. It also carries the travelling socket T, which is fixed to the microscope tube; S is a spring to keep the working parts in contact. It will be readily seen that by turning the milled head H through one revolution, the socket T is depressed $\frac{1}{20}$ th of an inch, due to the screw A, and is raised $\frac{1}{25}$ th of an inch due to the screw B, the total effect therefore, of one revolution is to move the socket T through $\frac{1}{20}$ th - $\frac{1}{25}$ th = $\frac{1}{100}$ of an inch. This is undoubtedly the smoothest and most delicate device for fine adjustment by a direct acting screw, and if good and carefully used will stand a large amount of wear. Its great advantage lies in the fact that a very fine movement can be obtained with a correspondingly coarse thread.

6. THE MIRROR.—Another essential is a good mirror to reflect light upon the slide; it should be of a good size, and have a plane mirror on one side and a concave one on the other.

7. THE SUBSTAGE.—A really efficient microscope should be provided with some sort of substage, which is an appliance to enable one to add apparatus for improving or modifying the illumination. There are two forms commonly used:—

(a) A plain "underfitting," or tube which is adapted to cheaper microscopes, and is a spring tube of standard gauge, which screws on to the underside of the stage. This is a useful appliance, and enables one to use a substage condenser when a more elaborate substage would be too expensive.

(b) A compound substage is a much better form, and is fitted with focussing and centering adjustments. It consists of a metal ring of standard gauge, which can be racked by a milled head so as to exactly focus the light upon the object, and the light can be precisely centered with the objective by using the two centering screws which are placed at right angles in the frame of the metal ring.

This concludes the description of the stand, and the next subject which calls for attention is the method of illumination. The first essential is a good source of light; either daylight or a lamp may be used. Daylight is the most pleasant source of light, especially when working with low powers. The majority of students, however, have little opportunity for day work, hence an artificial light is necessary. The best form of lamp is an ordinary oil-lamp with a half-inch flat wick, and all light should be carefully screened from the eyes and upper side of the stage (unless wanted there) by using a plain cardboard lamp shade. The reservoir should be shallow, so that, when required, the light may be placed on a low level; if the light is wanted higher up, the lamp may be easily raised by standing it on blocks of wood. Most microscope makers sell special lamps, which are useful for critical work, and which differ from an ordinary lamp in that the chimney is made of sheet iron and has a flat glass slide let into the front of it. By this means the use of a shade is avoided, and the image of the flame is not distorted as it is when the rays of light pass through an ordinary curved lamp chimney. They are also generally mounted on a stand with an arrangement for raising or lowering the lamp at will. These lamps are necessarily rather expensive, and for all ordinary purposes a plain paraffin-oil lamp answers perfectly.

When using a lamp, a bull's-eye condenser is advantageously employed to give a parallel beam of light from the edge of a lamp flame. It must be placed at about its focal distance from the lamp flame with the flat side turned towards it, and should be adjusted to throw the parallel beam of rays upon the plane mirror, which reflects it into the microscope objective. This condenser is a plano-convex lens mounted on a brass stand, and is hence called the "bull's-eye" or "stand condenser" to distinguish it from the substage condenser.

The substage condenser is composed of a combination of two or

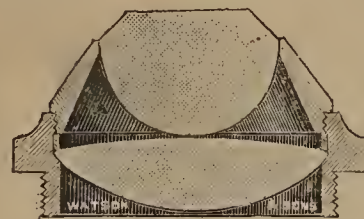


FIG. 9.—Diagram of optical part of Abbe illuminator, 1.2 N.A.

three lenses, and fits into the substage already described; its use is to enable the operator to exactly focus an image of the lamp flame upon the object under examination, and the principle upon which it depends may be briefly explained as follows:—

Objects are seen by diverging cones of rays from every point of their surface, and images of the objects are produced by reconverging these cones of rays to corresponding points in the image. When a transparent object is viewed by transmitted light it is evident that some rays will pass straight through the object into the objective, while others are caught by the object and go to form the image. The rays direct from the source of light are focussed behind the objective, while those from the object are imaged in the eye-piece, and thus the image is blurred with confused light. To overcome this, the condenser is made to focus the source of light upon the object when rays from the source of light and image rays from the object both diverge from the same point; crossing of the two kinds of rays is thus prevented; we get the object more brilliantly illuminated, and the image is clearer and more distinct.

The pieces of illuminating apparatus hitherto considered have been devised to increase the illumination, but sometimes it is just as harmful to have too much light as to have too little. Thus many fine markings or striations can scarcely be seen with a full light, while if part of the light is shut off so as to throw the irregularities of the object into stronger light and shade, fine markings are more clearly visible. For this purpose a diaphragm is used; the most convenient form is the iris diaphragm, which enables one to adjust the size of the opening to a nicety. A revolving disc of metal with holes of various diameters pierced in it is also commonly fitted below the microscope stage.

Another means of altering or modifying the light to suit special objects is to use "stops," which may easily be made from pieces of blackened cardboard. By using an oblique pencil or cone of light to illuminate the object fine striations are much more sharply thrown into relief by intensifying the shadows. By this means markings scarcely visible otherwise may be altered into something which can be seen, but which does not give a true idea of the object. Various forms of stops are made to give different oblique pencils of light, and they are put in below the condenser on a little arm provided for the purpose and called a "stop-carrier."



FIG. 10.—Diagram of stops for oblique illumination.

The plain central stop A gives oblique rays all round the axis; B will give a single oblique pencil of light, and C will give two pencils at right angles. The stop D gives a single oblique pencil which is shallower but much wider than that given by B.

Another important use of stops in conjunction with a condenser is to give objects the appearance of being self-luminous upon a dark ground. A plain central stop is put into the stop-carrier and the condenser is racked back till the field appears black and the object stands out brightly. The principle may be thus explained:—

All rays passing through the centre of the condenser are cut off and the remaining peripheral rays are focussed upon the object; but being so very oblique, all direct rays are thrown quite outside the front lens of the objective so that the ground appears dark. The object, however, catches and scatters some of the rays and thus has the appearance of being self-luminous. Many objects, such as minute seeds (poppy and henbane), when illuminated in the ordinary way do not appear strikingly beautiful; but by applying the device just described they assume a really astonishing beauty. Special stops are used for special purposes; thus the eye of a blow-fly can be shown to consist of numerous separate lenses by inserting in the substage a stop with a small star cut out of its centre. Then by careful focussing the image of the eye goes out of sight, and instead a bright star of light is distinctly seen in the place of each lens or facet.

We have now considered most of the details of construction of a microscope suitable for any ordinary botanical or pharmaceutical work, and a few words about general arrangements for work will not be out of place. If the microscopist has not a special table for his microscope it is useful to have a board with a bead round the edge. The board should be about eighteen inches long and fifteen inches wide; the microscope is placed upon the board and the lamp in the left hand corner; the bull's eye is adjusted between the lamp and the plane mirror, which throws a parallel beam of light into the condenser. For high powers the edge of the flame should be used, and for low powers the flat of the flame; with a condenser the plane mirror should always be used, and with low powers the upper lens of the condenser may be screwed off. By using the board, the lamp bull's-eye, and microscope are kept in the same relative position, and they are less likely to be displaced by accident; the bead serves to keep any slides, objectives, or other pieces of apparatus from rolling off onto the floor. If the undersurface of the board is covered with baize, it may be passed from one person to another by sliding the whole apparatus along the polished top of a table, which will not be damaged, neither will the adjustments of the lamp and microscope be displaced. The milled heads should always be turned by holding them between the finger and thumb, and exerting pressure equally on both sides of the head; they should never be turned by pressing the thumb against one side only. A higher power than that required to show detail in the object should never be used, and when working with a high power it is often useful to view the object first with a low power. For this purpose a double nose-piece or objective changer is a useful addition, and to a practical worker almost indispensable. Much care should be taken to see that the object is properly illuminated, as the clearness of the image depends quite as much upon this as upon careful and accurate focussing. When working with low powers and a condenser an uncomfortable glare of light is frequently seen in the field; this may be subdued, and the work rendered much less tiring to the eyes by putting a slip of finely ground glass below the slide under examination.

DETERMINATION OF SUCCINIC ACID IN THE PRESENCE OF TARTARIC AND LACTIC ACIDS.—When a concentrated solution of silver nitrate is added to a neutral solution of the mixed salts of these acids, succinic is entirely precipitated, tartaric acid partially, while lactic acid remains in solution. F. Bourdas, Joulin, and Rackowski avail themselves of the different solubility of these silver salts for the quantitative determination of succinic acid in the presence of lactates and tartrates. The solution of the three acids in the free state is exactly neutralised with 1/10 normal KOH solution, the number of C.c. thus used being noted. An excess of concentrated silver nitrate solution is then added, and the precipitate washed until the washings give no reaction for silver with neutral chromate; the residue thus obtained is pure silver succinate. This is washed into a flask, and one or two drops of neutral potassium chromate are added, which converts the silver succinate into chromate. Sufficient $\frac{\text{NaCl}}{10\text{N}}$ solution is then run in to produce a white precipitate suspended in a yellowish liquid. The excess of $\frac{\text{NaCl}}{10\text{N}}$ solution is titrated back with $\frac{\text{AgNO}_3}{10\text{N}}$ solution, the difference in the two amounts of solution indicating the silver solution used up by the succinic acid. One C.c. of $\frac{\text{AgNO}_3}{10\text{N}}$ solution is equivalent to 0.0059 gramme of succinic acid.—*Journ. de Pharm.* [6], vii., 417.

REVIEWS AND NOTICES OF BOOKS.

ST. THOMAS'S HOSPITAL REPORTS, 1897. Edited by Dr. HECTOR MACKENZIE and Mr. G. H. MAKINS. Pp. 499. London: J. and A. Churchill.

This volume, besides a great amount of well-classified statistical information, contains many interesting original articles, among which are several of general interest. Thus Dr. T. D. Acland writes on "Compulsory Vaccination," in which the arguments for and against are judicially and fairly considered. The article is well worth reading by everyone who is interested in this important subject. The lessons of recent epidemics, as at Dewsbury, Leicester, and Gloucester, are carefully and temperately analysed, the result showing the efficacy of vaccination in diminishing the death-rate from small-pox.

Two cases of abdominal actinomycosis are recorded by Mr. G. H. Makins. One patient was a woman, aged 25, in whom the ray-fungus attacked the vermiform appendix, and caused its perforation and the formation of an abscess in the abdomen and secondary foci in the liver. This patient succumbed to the disease. The second case was that of a farm labourer, aged 33, whose symptoms began with pain in January, 1897; this was followed by the formation of a thickening in the region of the vermiform appendix, for which he was admitted into hospital on March 21. In spite of surgical treatment, the area of induration increased, and though an examination of the tissue lining one of the tracks left by the draining of an abscess gave a negative result, the patient was put on iodide of potassium, which has been found, when perseveringly used, to arrest the progress of this disease. The extent of the induration began to diminish under the influence of the drug, and a little later it became necessary to open some new abscesses, and from the examination of scrapings examined at that time Mr. Shattock was able to report that the ray-fungus was present. The diagnosis was thus confirmed, and the use of iodide was continued in increased doses; the patient taking 5iss. per diem without any interference with his general health. The treatment had the happiest result, seeing that in August, 1897, the patient was practically convalescent. Actinomycosis is not uncommon in calves, causing in them ulceration of the tongue and tumours in the lower jaw. Neither of the patients could, however, be shown to have been exposed to direct infection from calves. Another and perhaps commoner mode of infection by the ray-fungus is by eating fresh grain in the autumn, and both Mr. Makins' patients were shown to have been exposed to this source of infection.

Dr. T. G. Brodie contributes a paper on the "Chemical Nature of the Antitoxins." After sketching the attempts of Brieger and Boer to isolate the antitoxins of diphtheria and tetanus, attempts which failed from the impossibility experienced of separating them from proteids, the author relates his own observations.

The German observers found that dried serum retained its antitoxic properties, but Brodie found that the more complete the drying the more difficult is the re-solution of the serum, and that after complete drying the latter loses some of its power. Touching the nature of the antitoxin, the author observes: "One of the first questions that we would wish to decide is as to whether the antitoxin is a proteid. . . . In the first place we find that just as a proteid is coagulated and loses its distinctive qualities when its solution is heated above a certain point, so, too, we find that a solution of diphtheria antitoxin heated above 75° C. at once loses its antitoxic properties."

"I found that the diphtheritic antitoxin was completely precipitated by adding alcohol or acetone to its solution in quantity sufficient to precipitate all the proteids. If the bulky precipitate thus obtained be at once filtered off from the coagulating fluid, it is readily soluble either in water or dilute saline solutions. In such solution the antitoxin is found in undiminished amount, none has been lost; though if the precipitant be kept for a longer time in contact with the precipitate, I found that more and more of the antitoxin was destroyed, and accompanying this more and more of the proteid is coagulated; so that it will no longer redissolve in water or saline solution. Other experiments also pointed to the antitoxin being itself a proteid. One observation made by Smirnow in 1894 is against it. This observer found that by submitting a solution of diphtheria toxin to the action of the constant current, the toxin was converted into antitoxin, the strength of the latter being in proportion to the initial strength of the toxin.

KING'S COLLEGE HOSPITAL REPORTS, 1897. Edited by Drs. NESTOR TIRARD, JOHN PHILLIPS, W. D. HALLIBURTON, and Mr. WATSON CHEYNE. Pp. 334. London: Adlard and Sons.

The first article in this volume is an obituary notice of the late Sir George Johnson, F.R.S., whose life and labours ceased on June 3, 1896. His work on diseases of the kidneys and on cholera will always hold an honourable place among the classics of medicine. He reached the mature age of 70 years, and in the course of his professional career he occupied some of the highest places of honour that are open to medical men; amongst other distinctions he was appointed Physician Extraordinary to the Queen in 1889, and the honour of knighthood was conferred upon him in 1892.

In a later portion of the volume Mr. Malcolm McHardy gives a description of an unusually well-arranged theatre for ophthalmic operations, which was erected in 1897 as a memorial to the deceased physician and teacher.

Among the original articles that are contained in this volume are: "Hæmaturia and Allied Conditions," by Dr. Nestor Tirard; "An Unusual Variety of Vesico-Vaginal Fistula," by Dr. John Phillips; "Graves' Disease," by S. Raymond Crawford. The report of the surgical department is carefully drawn up by the surgeons and the Surgical Registrar to the hospital, and it forms a readable and practically useful section of the book, being in the form of a short report of interesting cases, and a full list of all fatal surgical cases. The reports of the medical and obstetrical, and those of the special and pathological departments are done in an equally instructive manner, so that the volume is worthy of the series to which it belongs, and forms a valuable contribution to the post-graduate teaching of the medical school, as well as a record of continued good work of the hospital.

THE MIDDLESEX HOSPITAL REPORTS, 1896. Edited by Dr. F. J. WETHERHEAD, Mr. JOHN MURRAY, and Dr. A. F. VOELCKER. Pp. 306. Price 2s. 6d. net. London: H. K. Lewis.

These reports contain, in a well-classified form, a digest of the history of all cases under treatment at the hospital for the year 1895. "The report of the diphtheria cases for 1895 is of special interest, as during this period the diphtheria antitoxin was employed as a routine method of treatment. The remedy was obtained from the British Institute of Preventive Medicine. The results, as shown below, are sufficiently striking in themselves, and no comments are necessary."

This is the introductory paragraph to the report on the diphtheria cases numbering thirty-four admitted in 1895. The death rate was 17.64 per cent. The lowest death rate in the previous five years being 26.66, which was in 1894, when antitoxin was given in nine out of forty-five cases. In the years previous to 1894, when no antitoxin was given, the lowest death rate was 35.71 per cent. As usual the benefit of antitoxin is seen most markedly in cases in which tracheotomy was required on account of urgent dyspnoea. Out of eleven cases so treated seven recovered, a very high percentage. Abstracts of the clinical notes on the cases treated in the wards are given under the headings of the disease. Thus under "enteric fever," "appendicitis," a list of clinical records of great value to workers are put down. Cases of unusual nature rightly receive separate consideration. The editors are to be congratulated upon the way in which they have done their work.

ST. BARTHOLOMEW'S HOSPITAL REPORTS, Vol. xxxiii., 1897. Edited by NORMAN MOORE, M.D., and W. J. WALTHAM, F.R.C.S. Pp. 557. 1898. London: Smith, Elder and Co.

This volume opens with a sympathetic record of the life of the late James Andrew, M.D., by Dr. Church. Andrew was elected assistant-physician to the hospital in 1864, and for thirty-two years he continued to work as physician to the hospital and a teacher to the medical school. He was better known in his profession than among the public, a fact that carries with it the testimony that he worked for love of his work, and not for the profits of the profession. Among the original articles are many of much interest to medical men, e.g., Dr. Horton Smith writes on the bacteriology of acute broncho-pneumonia; Mr. C. A. Morton on the surgical treatment of increased intra-cranial pressure; Dr. W. E. Lee discusses some points in the Maidstone epidemic, and Mr. T. Forbes, cystic disease of the kidneys and liver. Drs. Lauder Brunton and Tunnicliffe contribute an interesting article on the relative digestibility of white and brown bread, in the course of which many practical observations are made. The following passage may be quoted:—

"The mere chemical composition of any food-stuff is a very poor index of its nutritive value. A stick of charcoal, the atmospheric air, a little water, and some sea salt contain all the elements of a typical diet, and in ample quantity, but the nutritive value of this composition is practically *nil*; hence it is not always a matter of what a food-stuff contains, but how it contains it." The tabulated matter and abbreviated registrar's notes and museum catalogue, which occupy about one-half of the volume, are clear and well arranged.

IL MANUALE DEL FARMACISTA. By P. E. ALESSANDRI. Second edition, revised. Pp. xvi., 731, with 145 tables and 82 illustrations. Price, lire 6.50. Milan: Ulrico Hoepli. 1898.

In the present go-ahead days when new remedies are introduced and pass into oblivion with vertiginous rapidity, the pharmacist frequently finds himself at a loss to know where to search for reliable and accurate and at the same time concise information concerning the little used or new compounds he is called upon to dispense. Our continental brethren seem to be better catered for than us in England in this respect, the Germans have numerous hand books of great utility, the French have the admirable works of Crinon and Bocquillon-Limousin, and the Italians, as we see by the manual before us, are just as well posted and up-to-date as their Teutonic and Gallic neighbours. It would be difficult to produce a book better thought out, better arranged, or more comprehensive than the one in question, the amount of matter compressed into the limits of a handy manual being phenomenal. The first part is devoted to a treatise on general pharmacy, pharmaceutical operations, prescribing and prescription reading, with chapters on density, in which are included some useful tables on saccharine solutions, showing the amount of sugar and water by weight in solutions of different densities. There are also glycerin, acetic acid, hydrochloric, nitric, and sulphuric acid tables of like object, together with freezing mixtures and alcohol tables. Chemical problems are explained and worked out in a special short chapter, and a list of abbreviations used in Italian prescriptions is given, which we would commend to the notice of our readers interested in Italian pharmacy.

The second and third parts of the book are devoted to inorganic and organic chemistry respectively, the chemicals mentioned having their reactions described and the methods of detecting falsifications and impurities minutely explained. The grouping of the organic compounds is noteworthy, all the new remedies being referred to their proper class, such as alcohols, aldehydes, ketones, amines, benzols, amido-phenols, aniline, pyrrhol, etc., derivatives. The chapters on alkaloids and glucosides, together with camphor derivatives and albuminoids, contain much valuable information as regards the tests and composition, as well as uses, of these bodies. The fourth part comprises *materia medica*, both vegetable and animal. Under *elemi* we notice that the one variety described is the Brazilian and not the Manila. The estimation of cinchona bark and ipecacuanha, as well as that of opium, is clearly explained, a volumetric process being advised for cinchonal. The reactions of the alkaloids are all given, with special notes on quinine and the metallic compounds of albumin, casein, and peptone, noted with their characters and doses.

The articles and tables dealing with oils, fixed and volatile, and organic medicines of indefinite composition are worthy of the book, whilst the part treating of galenical pharmacy is full of interesting formulæ and methods. The extracts, fluid and solid, have a chapter to themselves, in which it will be noted that the Italians, like the other continental pharmacists, evidently do not favour what we in England term "green extracts," and also that the author has very strong opinions against the use of concentrations in the extemporaneous preparation of medicated wines or syrups. The formulæ given for eau de melisse, eau de Cologne, and acqua senza pari, as well as for certain elixirs or liqueurs such as "Alchermes liquido," much used in Tuscany, ratafia di caffè, Curaçao, calisaya, Chartreuse and pepsine elixir are worth the notice of those desirous of extending their knowledge of elegant pharmacy. Antiseptics are fully described, Lister's method explained, and the making of gauzes, cottons and wools of various medications elucidated. The remainder of the book consists of formulæ for hypodermic solutions, pills, ointments and powders, and a posological table, and another of poisons and antidotes. It is a book for which there should be a demand in England if it were translated and produced in the same compact form as the Italian, of which the usefulness is much increased by the excellent wood-cuts interspersed in the text.

EXTRACTS FROM CONSULAR REPORTS.

THOSE WHO WISH TO PURCHASE English-made eau de Cologne while in Spain should look well to the label on the bottles, some of which though of foreign manufacture, bear the words "Nom plus perfume Especialnes in Cologne Water, London."

ANOTHER INGENIOUS FRAUD practised in Spain is the imitation of well-known articles of British manufacture. The labels of these goods are printed in such a manner as to lead the confiding public to believe they are purchasing the products of the best known British firms, whose name appears on the label in large capitals. A close inspection, however, reveals the words "better than" printed in small type above the firm's name, while the actual manufacturer's name is so written as to deceive many purchasers.

A NEW EDUCATIONAL INSTITUTION was opened on April 25 at Leipzig, viz., the first Commercial High School ("Handelshochschule") in Germany. According to the report of Mr. Gastrell, Commercial Attaché to Her Majesty's Embassy at Berlin, it is a kind of commercial university or college where higher and finishing studies on commercial subjects may be obtained. This new school is an instance of German foresight in grasping future necessities, and in providing betimes the means of supplying them. Professor Hermann Raydt, for years head of the great Commercial School of Leipzig, is the Director of the institution, the whole educational scheme, which is thoroughly practical, having been thought out and planned by himself, and others having practical experience in such questions. The whole scheme is worked very economically, and at present only costs £400 per annum, the income being raised without help from the Imperial Government of Germany. There are about ninety-five students attending the lectures, which embrace a wide range of subjects, the hours of study being from 7 a.m. to 7 p.m.

THE WINE-PRODUCERS of the province of Lecce (Italy) appear to be using sulphate of copper washes more and more extensively, not merely as a curative, but also as a preventative of peronospora. Consul Cocoto reports that during 1897 the sulphate of copper imports amounted to 781 tons, as against 637 tons in 1896 and 222 tons in 1895, thus demonstrating the increasing popularity of the washes. When they are applied during the earlier stages of the plant's growth, before the leaves and grapes are fully developed, up to the time of the complete ripening of the grape, the quality of the wine is not affected so long as there has been no peronospora of a pronounced type. But if the sulphate of copper washes have been used late, or if peronospora has been treated curatively, then the wine suffers, the result being diminished alcoholic strength and great loss of colour.

THE QUANTITY OF OLIVE OIL exported from Gallipoli during 1897 was 4469 tons, value £148,798, as compared with 3426 tons, value £112,298, in the previous year. There were also exported 2752 tons of olive husks, realising £1651, the quantity sent out in 1896 being 1116 tons, value £513.

THE IMPORT OF SULPHUR to Gallipoli in 1897 amounted to 1400 tons, and was valued at £4089. This quantity was a decrease of 100 tons as compared with the import of 1896, which realised £4380.

THE PRICE OF OLIVE OIL is certain to rise, so at least is the opinion of Vice-Consul the Hon. W. G. Thesiger, who, in reporting on the trade of the port and district of Taranto, states that the olive crops of 1897, though deficient in the yield of the finer oil, gave an excellent oil for burning, such as is greatly in demand in Russia. The prices of oil for 1897, according to the quality, were rather below the average, in consequence of the large supply, foreign competition, and the hope of a still better harvest for 1897-98. This hope has, however, been disappointed by the failure of the last crop, hence the reason for a rise in price. Reports from other districts in Italy and also from Turkey, speak of the complete failure of the 1897 olive crops. Prices on the Syrian coast are reported to have advanced at least 30 per cent.

THE IMPORTS INTO GREAT BRITAIN of chemicals, dyestuffs, and tanning substances during the six months ending June 30, 1898, show a decrease in value of £479,437, the totals being £3,750,226

for the corresponding period in 1897, and £3,270,789 this year. The imports for June alone, however, show an increase in value of £77,881; the 1897 import being £401,507, as compared with £479,388.

CHEMICALS AND CHEMICAL, AND MEDICINAL PREPARATIONS exported from the United Kingdom in the half-year ending June 30, amounted in value to £4,391,846, as against £4,631,705 for the same period of 1897, a decrease of £239,859. On the other hand, the exports for the month of June show an increase of £50,030, the total value for the month being £678,061, in 1898, and £623,031 the previous year.

THE OPIUM EXPORT from the province of Ssü-ch'uan during 1897 is estimated at £1,800,000, and other drugs at £400,000.

OPIUM SMOKING is reported to have originated in Yunnan and Kuei-chow, and from thence the practice spread to the coast provinces. The cultivation of the poppy on an extensive scale is stated to have begun at the end of the reign of K'ien-lung (1796), at which time opium was worth its weight in silver. In the opinion of Consul Bourne there is no doubt that the officials tried at the beginning of the century to stop the cultivation of the poppy, but this must have been a very difficult task, because an export, such as opium, light in weight for its value, is just what these provinces, with their antiquated means of communication, want. Without opium Yunnan and Kuei-chow would have no means of paying for imports.

CHINA COULD SUPPORT TWICE HER PRESENT POPULATION, according to Consul Bourne, and each individual might be twice as well off as he is now without any revolutionary change in the present manner of life; all that is necessary being capital and good government. The commercial future of the Empire, he says, is wonderful to think of, there being every requisite for production on a huge scale, except capital, good leadership, and good administration.

THE VEGETABLE KINGDOM OF CHINA, in Dr. Augustine Henry's opinion, affords a good and quite untrodden field for the development of an export trade. Camphor might be largely extracted from leaves, branches, etc., little or no camphor being now produced in China. A host of plants would supply rubber. Paper materials also abound, together with boxwood, soap trees, vegetable oils and tallows.

ARTIFICIAL MANURES (phosphates) imported into Genoa during 1897 amounted to 15,000 tons. Of these, 4307 tons were supplied by Germany, 2826 tons from Austria, and 7735 tons from America. England and Germany are largely responsible for an increase of nearly 8000 tons of other chemical products.

A VALUABLE DEPOSIT OF CINNABAR has been opened at Black Butte Lane County, Oregon, which report says can be worked very economically at a cost of 10 cents per pound. This, Consul Laidlaw thinks, is probably an underestimate, but the deposits are said to be very large. Cinnabar is also found in many districts of Peru, especially in the department of Huancavetica, where the Santa Barbara Mine was at one time world-famous. In the neighbourhood of this mine many cinnabar-bearing veins are found, and it is asserted that within a radius of thirty miles from the Santa Barbara mine the metal is found in abundance in many localities, although the extraction of cinnabar was given up years ago.

THE VALUE OF ALBUMIN exported from Beirut, quoted in the returns for 1896 as £13,200, Consul-General Drummond-Hay states was erroneous, as it exceeded the value of the whole trade, including Lattakia, the principal port for the production of that article. The trade in albumin is now said to be almost extinct.

THE MOST IMPORTANT COCA-GROWING DISTRICT IN PERU, according to Mr. Alfred St. John, is the province of Otuzco. There are at present 2,700,000 plants in the province, which produce about 4700 quintals, or 213 tons of coca leaves a year. The production, it is believed, might be increased considerably, but it has been checked by the fall in price of this product. The plant is grown at a height varying from 2000 to 5000 feet above the sea, but it thrives best at a height of from 3000 to 4000 feet.

PHARMACY IN AUSTRALASIA.

[From our Melbourne Correspondent.]

ALTHOUGH the General Medical Council omitted to supply the organs of Australasian pharmacy with advance copies of the new Pharmacopœia, we are, thanks to the admirable synopsis and trenchant criticisms published in your pages, generally conversant with its principal points of new departure; and if somewhat disappointed at the limited nature of these from a specially colonial point of view, console ourselves with the reflection that we shall in due course have an addendum "all to ourselves." One alteration, however, has been noted as of special interest to Australians engaged in the culture or distillation of medicinal plants, and that is that the former injunctions that the oils used in medicinal preparations must be distilled, and in some instances that the plants from which prescribed oils are obtained must actually have been grown in Great Britain are no longer insisted on. The attention of the Victorian Secretary of Agriculture has been drawn to the fact that the effect of this is to allow essential oils manufactured from plants grown in the Colonies to enter into the production of medicine in Great Britain, thus opening up a possibly lucrative branch of horticulture for us. With our favourable conditions of soil and climate, the incentive thus afforded will, it is considered, lead to very important results, and Australian supplies of essential oils may in the near future become a leading factor in the English market. In the meantime Victorian pharmacists are anxious to have a definite date gazetted on which the new Pharmacopœia shall come into practical operation, and the Pharmacy Board has been requested to approach the Government on the subject, and suggest that the day to be fixed should be January 1 next.

THE DEATH OF MR. CHAS. AGER ATKIN, on June 6, has removed from amongst us one of the oldest and most respected pharmacists in the colony. Mr. Atkin, who was born at Nottingham and served his apprenticeship with his father, arrived in Victoria in 1853, and a few months afterwards commenced business in the suburb of North Melbourne, then called Hotham, in which he permanently settled down and established an extensive business, identifying himself prominently with the manufacture of quinine wine, his brand of which has for many years past enjoyed a high reputation throughout Australia. Mr. Atkin was one of the founders of the Pharmaceutical Society of Australasia, of which he was at one time Vice-President. We have also to regret the loss, on May 15, of George Foord, F.C.S., who for nearly half a century has held a prominent position in our scientific world. Mr. Foord, who, by the way, received his early education at the Blue Coat School, at one time held an important position in the Royal Mint in this city, from which he retired on a pension. He was a Vice-President of the Royal Society, and an honorary member of the Pharmaceutical Society of Australasia, in which he took a very warm interest.

The widow of Dr. S. I. Williams, the particulars of whose death were given in a previous letter, has instituted proceedings against Mr. James Christopher, chemist, Clifton Hill, to recover £3000 damages, the action being founded on the allegation that Dr. Williams died from the effects of an injection of sulphate of atropine supplied to him by a son of the defendant in mistake for sulphate of morphine. Mr. Christopher, jun., was, it will be remembered, charged with the manslaughter of Dr. Williams, and acquitted. The result of the present proceedings is awaited with considerable interest by the craft.

A very satisfactory test was recently given before the Victorian Chief Inspector of Stock and leading pastoralists of a new patent (Kemp's) sheep-branding liquid, the sole agency and rights of manufacture of which have now been secured by Messrs. Felton, Grimwade, and Co. The merits of this liquid are that while it will brand sheep equally well wet or dry, is unaffected by heat and impervious to rain or moisture, the brand will dissolve and leave no trace behind when the wool is subjected to the ordinary process of scouring at the usual temperature.

THE PHARMACEUTICAL SOCIETY OF NEW SOUTH WALES held a special general meeting on June 8, to consider a proposed amendment of Article 4 in their Articles of Association, dealing with the qualifi-

cation required to render applicants eligible for membership. In introducing the subject, Mr. Cox explained that it had been ruled that the word "qualified" in the Article in question meant "qualified by law," and he believed it was the general desire of members that that interpretation should be amended. He accordingly moved that the Article be amended so as to read:—"Any person who (a) has at any time prior to the 1st day of January, 1898, been a member of the Pharmaceutical Society of New South Wales as then existing, or who (b) has passed an examination recognised by the Council in the subjects of chemistry and pharmacy, and such other allied sciences as the Council shall from time to time decide, may, subject to the following provisions, become a member of the Society." The general feeling on the subject was voiced by Mr. Marshall, who urged that although, looked at from the point of view of the general body of members, the Society might be said to represent an organisation of pharmacists who had come together for the benefit of the trade, the influence of the Society and its position in the estimation of kindred societies throughout the world would be greatly weakened were undesirable persons elected to membership. The motion was duly adopted, and is to be submitted for confirmation to another special meeting on 29th inst.

THE PHARMACY BOARD OF SOUTH AUSTRALIA recently decided to add botany to the list of its subjects of examination, and at the May meeting adopted the following regulation:—"Every candidate must have a theoretical knowledge of the structure of plants, and an intimate acquaintance with the parts of the root, stem, leaf, flower, fruit, and seed; the functions and mode of the arrangement of the different organs of plants; a knowledge of the general principles of classification; and he must be able to distinguish practically between each of the following orders: Compositæ, Cruciferae, Leguminosæ, Rosaceæ, Ranunculaceæ, and Umbelliferae, and refer to their respective orders such specimens as may be shown him."

IN PASSING SENTENCE upon two young men recently convicted of conspiring to defraud the public by selling, as Dr. Williams' Pink Pills, pills which they had themselves put up in boxes imitating the genuine article, the Chief Justice of South Australia commented in very strong terms on the representations as to the efficacy of their pills, made by the Dr. Williams' Company in the pamphlets issued by them, which had come before the Court. The medicine might, he said, be a good or a harmless one, but if the former it was a pity that people carrying on business on such an immense scale should have recourse to such unworthy subterfuges and untruthful statements, which were made merely to impose on the gullibility of mankind.

FROM NEW ZEALAND we learn that the Dunedin chemists are endeavouring to form an association composed of chemists and their assistants, and also those connected with the wholesale drug trade, the objects being the establishment of friendly intercourse between the members and the promotion of the interests of the members generally in matters "educational, political, commercial or otherwise."

MESSRS. SHARLAND & Co., LTD., wholesale druggists, held their annual meeting recently at Auckland, when a very satisfactory report and balance sheet were presented, showing that a previous deficit of £2300 had been cleared off. A call of 7s. 6d. per share had been promptly paid on 43,268 shares, leaving only 74, which had been forfeited by non-payment. The volume of trade for the year showed an increase of 25 per cent., and the prospects of the Company appear to be very encouraging.

I CLIP THE FOLLOWING INTERESTING PARAGRAPH from an Auckland paper:—A stalwart young Maori walked into Mr. Gatenby's chemist's shop at Wanganui recently, and said he wanted to learn the business. The suddenness of the offer almost took the chemist's breath away, but he thought he could cool the ardour of the dusky aspirant when he stated that a premium of £100 was required. The Maori, however, followed up his impertunity by "planking" down the £100, and has since signed an agreement for a three years' apprenticeship. The young man in question is an old Wellington College boy, and he came out with credit in a recent medical preliminary examination.

PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL.

WEDNESDAY, AUGUST 3, 1898.

Present :

MR. WALTER HILLS, PRESIDENT.

MR. G. T. W. NEWSHOLME, VICE-PRESIDENT.

Messrs. Allen, Atkins, Bateson, Bottle, Carteghe, Corder, Cross, Grose, Hampson, Harrison, Johnston, Martindale, Park, Savory, Storrar, Warren, and Young.

The minutes of the previous meeting were read and confirmed.

THE LATE DR. J. E. DE VRIJ.

The PRESIDENT said a Reuter's telegram from the Hague appeared in the *Times* of the previous day announcing the death of Dr. de Vrij. This was the only notice that had reached the Society of his death, but he could not let the occasion pass without referring to Dr. de Vrij. It was not necessary to do so in any detail, because it was only recently that he had had occasion to allude to the great services he had rendered to pharmacology. Dr. de Vrij was the ninth recipient of the Hanbury Medal, which was awarded to him last year. At the opening of the School of Pharmacy last October he (the President) referred in some detail to his work, but he would remind the Council that Dr. de Vrij was born as long ago as 1813, that he was trained and educated as a pharmacist, and that from about 1835 he made the subject of quinine and investigations into cinchona bark his special study. Dr. de Vrij was sent out by the Dutch Government to Java in the year 1857, and did great work there with reference to the introduction of the growth of cinchona in the Dutch East Indies. He would also remind the Council that in 1880 Dr. de Vrij received the distinction of being made a Companion of the Order of the Indian Empire for the work he had done in India in the same direction. Dr. de Vrij had been an honorary member of the Society for over forty years; therefore, he felt that under these circumstances special notice should be taken of the death of this eminent worker in science, and that a special resolution should be passed on that occasion. Dr. de Vrij had been taken away at a ripe old age, but they had hoped from the vigorous letter he sent the Society last year that he would keep his health for several years to come. He was sure the Council would wish to express his grief at the death of Dr. de Vrij, and its sincere sympathy with the family in their bereavement. He would, therefore, propose: "That this Council learns with much regret the death, on July 31, of Dr. de Vrij, one of the most eminent investigators of the cinchona alkaloids, and for over forty years a highly esteemed honorary member of the Society. In recognition of his labours in pharmacology he was awarded the Hanbury Medal in 1897, and he will be long remembered as a co-worker with Daniel Hanbury. The Council tenders its sympathy with the family of Dr. de Vrij." The resolution passed unanimously.

APPLICATIONS FOR MEMBERSHIP, ETC.

The PRESIDENT said the next item on the agenda was one which appeared monthly, viz., Election of Members, Associates, etc., and a certain number of applications had been received, but the present circumstances were exceptional, and it had been thought on the whole that it would be better to defer all elections until new Bye-laws had been duly passed for the purpose of carrying out the provisions of the Pharmacy Acts Amendment Bill, which had now become law. Of course, it was a matter for regret that any delay should take place in perfecting the adherence of any of their friends to the Society, but it had been carefully considered by the General Purposes Committee, and it was felt that the proper course would be to have new Bye-laws properly passed by the Council, confirmed by a special general meeting of members, and approved by the Privy Council before any further elections were made.

REPORT OF THE FINANCE COMMITTEE.

The report of this Committee was read by the Secretary, including the recommendation that sundry accounts be paid.

The PRESIDENT, in moving the adoption of the report and recommendations, said there was nothing to which he need call special attention. The payments were rather heavy, but in the case of salaries they represented two months. He should add that a letter had been received from the Hon. Sec. of the Midland Pharmaceutical Association, enclosing a cheque for £5 as a donation to the

Benevolent Fund, the resolution in favour of which was passed last year, but circumstances had prevented its transmission earlier. This was another pleasing illustration of the interest taken in the Fund.

The resolution was carried unanimously.

DIPLOMAS.

The undermentioned, being duly registered as pharmaceutical chemists, were granted diplomas stamped with the seal of the Society:—

Bennison, Ernest Carr.
Dixon, William.
Ellis, Hugh Edward.
Flemming, Thos. Henry.
Franklin, Arthur Cawte.
Gale, George Thomas.
Garnett, John Benbow.
Hart, Samuel Henry.

Hodgson, John Edward.
Hovenden, Sydney Churcher.
Jones, George Maurice.
Martindale, Win. Harrison.
Merrikin, Sydney Herbert.
Pick, Frank Phillips.
Rhead, Alfred.
Smallwood, Fredk. William.

Teale, John Oliver.

REPORT OF THE BENEVOLENT FUND COMMITTEE.

The report of this Committee stated that only one case had been before the Committee, which was deferred for further information.

The VICE-PRESIDENT moved the adoption of the report, which was at once agreed to.

REPORT OF THE LAW AND PARLIAMENTARY COMMITTEE.

The report of this Committee simply stated that the President had explained the steps he had taken in connection with the Pharmacy Acts Amendment Bill, and that the Committee had approved.

The PRESIDENT, in moving the adoption of the report, said it might be well if he gave a brief account of what had taken place. He would take that opportunity of referring to one of the political matters which had occurred since the Council last met. Although it did not arise out of the resolution then before them he would like to refer to the Poisonous Substances Bill. In accordance with the resolution passed by the Council a month ago he sent out a circular to every registered chemist and druggist throughout the country asking them to do all that was possible to oppose the further progress of the Bill, giving them certain reasons to guide them in taking that opposition. It was hardly necessary for him to say much about the Bill now, because on the very day that their own Pharmacy Acts Amendment Bill went through the Committee of the House of Lords an announcement was made by the leader of the House of Commons that the Poisonous Substances Bill would not be proceeded further with that Session. Mr. Balfour then stated that he found there was a very considerable amount of opposition to this Bill throughout the country, and on that ground, and bearing in mind the state of the session, he did not propose to take steps to make further progress with it. It might well be believed that the opposition which was taken by the Society through the various registered chemists and druggists throughout the country had had a very considerable effect in stopping the further progress of that Bill. Of course, it was quite on the cards that the Government might take up that Bill again, but he believed they had given another evidence that they were a distinct power in the country. He had come to the conclusion during the last few months that the Society had considerable influence throughout the country. The system of local secretaries was such that the Society was in close touch with them throughout the length and breadth of the country, and if they could only show anything like union in any steps they took, the effect of their power was very considerable. With regard to the Pharmacy Acts Amendment Bill, it was very satisfactory to note that it had now gone through Parliament and become a Statute. In view of what occurred in the House of Lords since the last meeting of the Council it was as well that he should refer in a little detail to what had happened. The second reading of the Pharmacy Acts Amendment Bill was taken in the House of Commons on Thursday, July 7. At that time it was proposed that the Committee stage, assuming the Bill passed the second reading, should be taken on July 11, and that the Standing Committee stage on July 12, whilst the third reading was proposed for the 14th. The second reading passed without any comment. The Committee stage on July 11 was also passed without any amendment, and the Bill was duly reported to the House; but on the occasion of the Standing Committee on July 12 certain speeches were made by the Lord Chancellor and Lord Herschell which raised hopes among themselves and their friends

throughout the country, and gave rise to a certain amount of concern in the tents of the limited companies. This took place on the Tuesday, and there was nothing further to report before the *Pharmaceutical Journal* and the trade journals appeared. Consequently, all that was to be known at that time was what had been said very sympathetically by the Lord Chancellor and by Lord Herschell; but on the Friday morning, July 15, the amendment, which they all knew so well now, was put into his hands. Lord Hardwicke, who was in charge of the Bill, and knew that the Society was labouring under certain disadvantages, thought that, having regard to the remarks made by the Lord Chancellor and Lord Herschell, he could do no other than say that he would consider the amendment. It was suggested afterwards that, as it was a very intricate matter, it would be advisable if the Lord Chancellor himself would be good enough to draw up the amendment. This amendment appeared on the Friday after the *Pharmaceutical Journal* of that week had been published. When he saw the amendment he felt at once that it was not, standing by itself, an amendment which would be of any great advantage to the Society, and there was of course a possibility that it might in some way jeopardise the Bill. He had a consultation that afternoon with Mr. Carteighe, who was good enough to see Lord Herschell, and later in the day Mr. Carteighe, the Secretary, and himself had an interview with Lord Hardwicke, when it was pointed out that the amendment, as it stood, was one which could not very well be accepted, as there were several objections to it. The Lord Chancellor himself realised this, and that it would be necessary that other amendments should be added in order to make it really workable. Lord Hardwicke was asked to postpone the third reading from the Monday to the Thursday, in order that they might have an opportunity of further considering the matter. In the meantime he thought it was expedient to call the Watch Committee together, and consult them as to the action to be taken with reference to this amendment. That Committee met on July 19, on the morning of which day he had had an interview with Lord Hardwicke, when he explained to him the objections to the amendment. He was authorised by the Committee to take such steps as he thought fit to secure the passing of the Bill without amendment. On the following day he had another interview with Lord Hardwicke, and put before him the views of the Committee, with which his Lordship agreed, and said he would inform the Lord Chancellor that he could not accept the amendment. It was now matter of history that the Lord Chancellor withdrew the amendment, and he hoped all their friends had read or would read with care the speech which his Lordship made on that occasion. The Watch Committee objected to the amendment on various grounds. In the first place it was opposed to the main principle of the Bill, which from the first had been considered as one simply for the consolidation of the Society, and for regulating its internal arrangements, so that everyone who had a statutory qualification should be eligible for membership, and even for a seat on the Council. That was considered to be both necessary and practicable, and when that was done it was hoped they might afterwards be able to tackle some other subjects which required to be dealt with. This view he had always put forward when discussing the Bill with members of the House of Commons, and always spoke of it as a non-contentious Bill which had practically the unanimous support of those interested, and on that ground it passed through the House of Commons. It was therefore felt that to introduce extraneous matter of an important character at a late stage in the House of Lords was a serious thing, which required considerable thought. It was also felt that the amendment proposed that the legalisation by statute of the position of limited companies, which could not be accepted. It seemed to the Committee that if such an amendment became law, limited liability companies would not only be permitted to practise, but would also have a right to assume the titles of "pharmaceutical chemists" and "chemists and druggists," to which there was the gravest objection. Further, no machinery was provided for ascertaining whether the businesses carried on by such companies were really under the management of duly qualified managers, and therefore further amendments would have been necessary to make such a clause workable. Another objection to the amendment was that it did not apply to Ireland, where the same difficulties existed, some said in greater degree, and at any rate they sympathised with their Irish friends in the matter and hoped that in due course some means might be found of diminishing the evil, if not of removing it altogether. The third reading took place on July 21, and he might again refer to the important speech

made by the Lord Chancellor on that occasion. He felt that this was a matter which did require early consideration, and only yesterday the Lord Chancellor was good enough to accord him an interview, when he had a very pleasant conversation with him. Whilst he did not think it either wise or right to report what took place at a personal interview, he thought he might go so far as to say that Lord Halsbury showed considerable sympathy with many of the views which he had the honour to lay before him; he also pointed out that the subject must be dealt with in a practical and careful way, and he believed they might rely on the help of Lord Halsbury later on if they could suggest anything which appeared to him to be both practical and desirable. At the risk of delaying the Council he should like to add a word or two of appeal to those outside the Society. The door was now opened to all who had the statutory qualification to join the Society and work with it on equal terms for the advancement of its interests and those of pharmacy in general. He would, therefore, earnestly ask those who had hitherto kept aloof to seriously consider their position and make up their minds that in future they would work with the Society. Within the last few days he had received a letter from a gentleman who, while acknowledging the good work which had been done in getting the Bill through, said he should still wait to see what they were going to do. Now he did not want that sort of thing any more. He appealed to such men to come in and help to do something practical to improve their position. He had received a large number of communications from registered persons and local organisations respecting the two Bills which he had referred to, and as he could not personally reply to each correspondent he hoped this public acknowledgment would be accepted. Various suggestions had been made, some of which were valuable, and they would all be duly considered. He felt that the Watch Committee and the Law and Parliamentary Committee had done their duty with reference to this Bill.

Mr. ALLEN seconded the motion.

Mr. HAMPSON expressed his great satisfaction at the position the Society held to-day, inasmuch as outsiders had now the opportunity of becoming insiders, and carrying on the work for the benefit of the Society and of the public. He would also congratulate the President on what he had achieved and on his retaining his health, which a month ago, he feared, would be somewhat impaired by his exertions, which had been very great, and in which he had been very ably seconded by the Secretary. He believed that now their house was in order, as far as the immediate progress of pharmacy was concerned, and it depended on those at present outside whether the Society should be strengthened or remain as it was. He should have scarcely believed it possible for the President to have received such a letter as he had mentioned. Everyone who was qualified was now invited to come within the ranks and help to mould the future of pharmacy, which required a great deal of moulding. He believed the Society had a great future as it had a great past, and that the time would arrive when by statute the whole dispensing of the country would be done by persons entitled to do it. Why should Ireland occupy a better position in this matter than England? They could not rest content until that distinction was removed. With regard to the stores question he thought the Watch Committee and Law and Parliamentary Committee and President had acted quite rightly with regard to the proposed amendment in the House of Lords, because it would have legalised the position. He did not know what the necessary steps might be, but he thought before long it would be necessary to call on every member of the trade to support some kind of measure whereby store practice should be either put on a proper basis or entirely abolished. He could not say at all what would be possible. It was a great misfortune in one sense that the matter could not have been dealt with two years ago before it attained such great dimensions. Perhaps it would have been impossible, but at any rate the past was past, and they would have now to consider what could be done in the future.

Mr. MARTINDALE congratulated the President on his success in carrying this measure through Parliament. He had hoped that the amendment to be proposed in the House of Lords would not have been such a disappointment, but he thought that, as the result of the debate which took place, they had got on to a higher place than they had hitherto occupied, and he hoped that when another opportunity occurred they would be able to follow up the success now attained, and to regulate company business in a way which would protect the interests of the trade as well as of the public. They were in a different position to the medical profession and the dentists, with whom they had been in

communication, having their practice to protect as well as their title; but he hoped that in future both would be secured. He thought the carrying of their own Bill and the rejection of the other showed that they occupied a stronger position than they had done hitherto, and hoped that with the help of the present and past Lords Chancellor they might on a future occasion go to Parliament with good hopes of obtaining a much more secure position than they had hitherto held. Great credit was due to the President for the way in which he had carried the Bill through, he had been unflinching in his attention, and never let slip an opportunity of gaining support, as he could testify, having been on duty with him on many occasions when the Bill was expected to come on. Their thanks were also due to several members of Parliament who had given them great assistance.

Mr. BOTTLE said he had not been one of those who had troubled the President with any letters, but he wished to congratulate him very much upon the success that had attended his work in procuring the passing of the Pharmacy Acts Amendment Bill and defeating the Poisonous Substances Bill. He noticed that in one of the trade journals the President and the Watch Committee were taunted with a betrayal of confidence, but in his opinion if the President had accepted the suggested amendment he would have been guilty of betraying the confidence reposed in him by the Watch Committee. For his part he would deprecate any immature legislation on the matter, as there was a large amount of divers interests to be dealt with and thought out before a Bill of that sort was rushed through. He would conclude by thanking the President and the London members for the great energy and ability they had displayed and the success which had attended their efforts.

Mr. CARTEIGHE also wished to congratulate the President on the fact that he passed one Bill through the present session of Parliament and killed another. These two events would probably never occur again during the official lifetime of a President. He (Mr. Carteighe) could take the position of the old hand, and felt bound to issue a word of caution. They talked of their power, but they must remember they had shown their power that session in killing a Bill by the process of opposition, and the power of passing their own Bill had been shown by the skill, care, and tact with which every serious difficulty which might cause contention in the House of Commons had been surmounted by the President. When they came to the thorny question of companies he would also use one word of caution, and that was that no one had ever given the Council authority to consider for one moment the series of regulations under which company trading should be carried on in pharmacy. No resolution to that effect had ever been passed at that Council table. When he was speaking at various places throughout the country, he pointed out that the first thing a lawyer who wanted to take an opposite view to them would say, would be, "put the companies in the same position as the trustees are under your own Act." It would be remembered that the Lord Chancellor's devil drafted for him what was called the "Widow's clause." Lest the observations of Mr. Martindale should make them feel that they had only to make an active effort in the House of Commons in order to put down company trading, let him remind them that they must be prepared to fight very heavily. The question as to whether they could put down a thing, or whether they could regulate were very different. At present he knew of no public opinion in the pharmaceutical world which had given any indication that regulations or modifications of any sort should at present be dealt with. He did not say that they might not come to that, or that it might not be possible so to draft a clause which would conduce to the safety of the public and remove every objection. Before they attempted to assist the Lord Chancellor or give their sanction to any modification of the pharmacy laws as affecting companies they must remember that no measure of that sort could be carried through the House of Commons unless it had the Government at its back, and that a measure of that sort which might pass the House of Lords need not necessarily pass the House of Commons, so easy was it to oppose. In Ireland they had seen a complete revolution. At one time the Council of the Irish Society thought they would accept some recent modification of the law, but a recent petition presented to the House of Lords by the President of that Society showed that they would not accept any modification whatever; that was to say that they would not accept for a moment the regulation of a department of pharmacy in or on a company's premises. There were many of their friends who thought the same. He had over and over again pointed out

that they had a very large number of people among them who wanted to have the privilege of doing what they liked with their business when they died by means of trusteeship or a qualified manager, but who did not at all like the notion of a company doing the same thing. That had been stated to him when their President, and he had replied that there was nothing before the Council to justify them in acting, nor was there anything which would justify the Council in accepting any amendment of the amendment put down by the Lord Chancellor. It would indeed have been a betrayal to have allowed a complete alteration of the law to be introduced into a Bill which was proclaimed from the presidential chair to be a non-contentious measure.

Mr. ATKINS entirely agreed with the arguments advanced by Mr. Carteighe. He was quite sure that whenever they attempted to deal with the subject of company trading they would have a crusade before them such as they had never attempted before, therefore they required to marshal all their forces. It would have been a betrayal of confidence if the Watch Committee had consented to wreck the Bill, as they would most distinctly have done if they accepted the amendment, and engrafted a contentious matter on their Bill. He wished to say personally how much he felt indebted to the President for having killed one Bill and passed another. It was not a question of good luck; it had been the result of sheer hard work on the part of the President, Mr. Carteighe, and the Secretary, and the result which they that day congratulated the President upon had been arrived at by a minute attention to details.

The PRESIDENT, before putting the resolution, wished to say that he was very much obliged for the kind remarks that had been made with reference to himself and any work that he had done with reference to either of the two Bills under discussion. After all, he took very little credit to himself. He happened to be the figurehead at the particular time when things were ripe for dealing with these two matters, and they came off successfully. The report he had received of their representatives throughout the country had been very gratifying to him, and he had to thank particularly the members of the Council for the unanimous and very kindly support they had given to him. He had also to thank the Law and Parliamentary Committee and the Watch Committee, and he wished particularly to record on that occasion his indebtedness to his friend Mr. Richard Bremridge. He had been unwearied in his efforts during the last three or four months, and he was afraid that his nights' rest had been very much interfered with. Whenever he (the President) felt inclined to flag, if it did not happen to be Mr. Martindale calling him out in the snow, it was his friend the Secretary who said "Don't you think we ought to go to the House to-night?" With reference to Mr. Carteighe's note of warning, for which he thanked him, he did not wish in his remarks to be too triumphant. He did wish to call attention to the fact that they did exercise a very considerable influence throughout the country, but, as he had occasion to say before, that influence and power must only be used when it was parallel with public benefit, otherwise the power would not make itself manifest. He quite agreed that the subject of limited companies practising pharmacy was one that required the very greatest care in dealing with, and he hoped that during the coming winter every one who was interested in the matter would give it the very closest consideration, looking at the matter from every point of view and not from a selfish point of view. Possibly in the next or succeeding session something would be done to effect an improvement of the present condition of affairs. Bearing in mind the great interest that was taken in the matter, he should like to suggest that the Law and Parliamentary Committee might find it expedient next session to consider the formation of a proposal for dealing with limited liability companies. He thought he might take it from the Council that they would like the Law and Parliamentary Committee to be summoned as soon as convenient after the holidays to consider the expediency of drafting a Bill, or at least considering the matter. He would move that the best thanks of this Council be tendered to the Hon. W. F. D. Smith, M.P., Mr. Brookfield, M.P., and the Earl of Hardwicke, for their much appreciated services in connection with passing the Pharmacy Acts Amendment Bill through the Houses of Parliament. Letters of thanks had been sent by himself not only to these three gentlemen, but to other M.P.'s who had been kind enough to render assistance, but he thought that a special vote of the Council was due to the two hon. members and the noble Earl, who had taken charge of the Bill.

The VICE-PRESIDENT, in seconding the resolution, said he

knew what a deal of time Lord Hardwicke and the two members of the House of Commons had given to this matter, and they were also much indebted to many other members. He thought those who had been in communication with M.P.'s in their own districts would do well to write to them expressing their thanks, as had been done in his own town, as this would help to produce a suitable frame of mind on the part of their representatives if they had to appeal to them on any future occasion. With regard to the question of the amendment, he thought it would have been a distinct breach of faith if that amendment had been accepted, because in corresponding with members of Parliament it had always been stated to be a non-contentious Bill, and on the strength of that assurance support had been obtained.

Mr. MARTINDALE said there were two other members of the House of Commons who had rendered great assistance—Mr. Boulnois and Dr. Farquharson—and several members of the House of Lords. He thought they might learn from this Bill that when they brought their united forces to bear on the House of Commons they were not without some power, and that they might expect to get equity from the House of Lords. If companies wished to carry on the business of chemists, which involved a personal qualification, it should be conducted by someone whose identity and qualifications were known.

The resolution was carried unanimously.

LIBRARY, MUSEUM, SCHOOL, AND HOUSE COMMITTEE.

The Librarian presented his report, including the following particulars:—

	Attendance.	Total.	Highest.	Lowest.	Average.
June	Day	464	32	5	18
	Evening	127	11	3	6
Circulation of Books. Total.		Town.	Country.	Carriage paid.	
June	195	104	91	18s. 4d.	

Several donations had been received (*Ph. J.*, July 16, p. 62), and the Committee had directed that the usual letters of thanks be sent to the respective donors.

The Committee recommended that the undermentioned books be purchased for the Library in London:—

- Hewlett's 'Manual of Bacteriology.'
- Lafar's 'Technical Mycology.'

The Curator's report had also been received, and included the following particulars:—

	Attendance.	Total.	Highest.	Lowest.	Average.
June	Day	687	42	18	26
	Evening	54	6	1	2

Several donations had been received (*Ph. J.*, July 16, p. 62), and the Committee directed that the usual letters of thanks be sent to the respective donors.

The Curator had presented a report on the meetings of the Museums Association held at Sheffield in July. The recommendations of the Executive of the North British Branch with regard to local secretaries were again deferred. The communication from the Colonial Office with regard to the examination of medicinal plants from the Windward Islands had been considered, and the Committee recommended that the Colonial Office be advised to apply to the Imperial Institute. The Committee authorised the signing and sealing of the petition put forward by the Decimal Association. Certain repairs were recommended to be carried out during the vacation. A Sub-Committee had prepared a new set of Bye-laws which were considered and accepted subject to final revision by the Solicitor.

At a second meeting on August 2, the Committee considered the application of Mr. Edgar M. Chapman to be appointed Burroughs Scholar for the ensuing session, and recommended his appointment. It also recommended that the applications of Mr. Herbert Payne and Mr. John Evans, Bell Scholars, to be permitted to continue their studies in the Research Laboratory be acceded to. The Draft Bye-laws with verbal alterations were agreed to.

The PRESIDENT, in putting the resolution for the adoption of the report, said all these matters had been dealt with at the meetings of the Library, etc., Committee, and he did not think, unless any member wished any further enlightenment on any special points, that he need detain them that day by referring to any of the details. With regard to the alteration of the Bye-laws, that would come on later for special consideration.

The resolution passed unanimously, and a separate resolution was passed appointing Mr. Edgar M. Chapman Burroughs Scholar for the ensuing session.

THE NEW BYE-LAWS.

Mr. CARTEIGHE handed the President the text of the proposed Bye-laws (see page 137, *et seq.*).

On the motion of the PRESIDENT the proposed Bye-laws were taken as read.

The PRESIDENT, in moving that the proposed Bye-laws be read a first time in accordance with the provisions of the Charter, said he would call attention to one or two points in connection with them. The *raison d'être* of the amendments of the Bye-laws was the fact of the passing of the Pharmacy Acts Amendment Bill. Until they got Bye-laws which would enable them to make use of that Bill they were in an interim condition and could not do their work satisfactorily. The Committee had hoped that these Bye-laws might perhaps have received the approval of the Privy Council before the autumn recess; but owing to certain delays which had taken place in the passage of the Bill through Parliament, the third reading did not come off in the House of Lords till July 21, and the Bill did not become a Statute till the 25th. After that date there would not have been sufficient time to give the necessary notice of a special general meeting of the members to confirm the Bye-laws before the holidays, even if they had been able to arrange the necessary meetings of the Council. Therefore these Bye-laws would not receive the approval of the Privy Council until, possibly, November. It was proposed that there should be another meeting of the Council to read them a second time towards the end of September, and he hoped they would be read a third time on the first Wednesday in October. The alterations include a better definition of terms; a provision for transferring associates in business to the lists of members without special application being made; the abolition of the fee payable on restoration; the disappearance of the grade of "associate"; alterations in the procedure of Council elections; extension of the time within which any person nominated for a seat on the Council could declare his acceptance of the nomination. The restriction on the number of chemists and druggists on the Council had been removed. There was also a suggestion which did not arise out of the passing of the Act, and that was that the appointment of Examiners should in future take place in November instead of December; under the old arrangement the time was too limited before they were called upon to commence their duties.

The VICE-PRESIDENT, in seconding the resolution, hoped that the approval of the Privy Council would be obtained at an early date.

REPORT OF EXAMINATIONS.

July, 1898.

	Candidates.		
	Examined.	Passed.	Failed.
England and Wales:—			
Major	31	16	15
Minor	340	104	236
Scotland:—			
Major	3	1	2
Minor	120	49	71
First Examination	346	163	183

Twenty-five certificates were received in lieu of the Society's examination.

RESIGNATION OF A LOCAL SECRETARY.

The PRESIDENT announced that a letter had been received from Mr. Bolton, their local secretary at Nottingham, resigning his office on the ground of ill-health. Mr. Bolton had done really good work for the Society at Nottingham, and the Council would be particularly sorry at his resignation, and also the cause for the same. With the sanction of the Council he would write to Mr. Bolton thanking him for his past services. Mr. Bolton had been good enough to suggest that Mr. F. Ross Sergeant should be appointed to the office he was vacating, therefore he would propose the election of Mr. F. Ross Sergeant for the remainder of the current year in the place of Mr. Bolton, who was compelled to resign owing to ill-health. Bearing in mind the important matters that would be discussed during the next few months it was well that a centre like Nottingham should not be without a local secretary. Mr. Ross Sergeant was well known at the Council, and they had

every reason to believe that he would make an excellent local secretary.

The resolution passed unanimously.

APPOINTMENTS IN THE SCHOOL.

Mr. C. B. Fry and J. A. Dewhirst were appointed Demonstrators in Chemistry, Mr. C. Horrell Demonstrator in Botany, and Mr. Upsher Smith Demonstrator in Materia Medica and Pharmacy.

THE JACOB BELL AND MANCHESTER SCHOLARSHIPS.

The following reports were presented:—

Jacob Bell Memorial Scholarships.

The Examiners appointed to conduct the examination for the Jacob Bell Scholarships had reported that twenty-five candidates had competed for the Scholarships at the following centres:—

Birmingham	2	Cheltenham	2	Northampton	2
Brighton	1	Glasgow	1	Nottingham	1
Cambridge	1	Liverpool	1	Oxford	1
Canterbury	2	Manchester	1	Southampton	1
Cardiff	2	Newcastle	1	London	6

The envelopes bearing the mottoes of the successful candidates having been opened by the Committee appointed to make the award had been found to contain the following names:—

John Irwin Scott.

Horace Finnemore.

The Committee had awarded the Scholarships to Mr. Scott and Mr. Finnemore, subject to the approval of the Council.

The competitors who adopted the following mottoes had obtained upwards of two-thirds of the maximum number of marks (which is the minimum for the award of a Bell Scholarship). The arrangement is in order of merit:—

- | | |
|-------------------------|-------------------------|
| 3. Orando Laborando. | 7. Spes fortunæ sit. |
| 4. Est juvenis sperare. | 8. Eba. |
| 5. Audax. | 9. Absque labore nihil. |
| 6. One and all. | 10. Zephyrus. |

Manchester Pharmaceutical Association Scholarship.

The Committee reported that two candidates had competed, and that one had reached the standard of marks entitling him to the award of the Scholarship.

The envelope bearing the motto of the successful candidate was opened by the Committee appointed to make the award, and had been found to contain the name of

Arthur William Ryder,

to whom the Scholarship had been awarded, subject to the approval of the Council.

Pereira Medal and Council Prizes.

Professor McLeod, Professor Harvey Gibson, and Mr. E. H. Farr, who had been appointed to conduct this examination, had reported that nine candidates had entered for the competition, and that two had attained the requisite standard of efficiency for the awards. The envelopes bearing the mottoes of the successful competitors having been opened were found to contain the names of Frederick Alfred Upsher Smith, Birmingham; and Pierre Elie Felix Perrédès, Jersey.

The remaining competitors did not reach the standard of efficiency referred to.

The following awards were therefore recommended:—

Pereira Medal (Silver); and Books value £5, presented by the late Thomas Hyde Hills.

Frederick Alfred Upsher Smith.

Pharmaceutical Society's Medal (Silver).

Pierre Elie Felix Perrédès.

The PRESIDENT, in moving the adoption of the reports, said it was very satisfactory. It had been perhaps the keenest competition on record, there being twenty-five candidates, of whom eleven obtained

sufficient marks to qualify them for the prize, viz., 66 per cent. of the maximum number, and six obtained over 75 per cent. He was glad to learn from Mr. Pinches, who conducted the examination in scholastic subjects, that there had been a distinct advance in the last few years in the standard of education of those who competed for these scholarships, and he spoke in the highest terms of the work done by several of the candidates.

The resolution was carried, as was also a further resolution authorising Mr. Ryder to pursue his studies at Owens College, Manchester.

Mr. ALLEN said it was matter for congratulation that there had been such an excellent competition for the Bell Scholarships, and that so many as eleven candidates had obtained a qualifying proportion of marks, but there was one matter in connection with this examination on which he should like to make a suggestion; he had always taken a great interest in this competition, and there was one matter which he had found very embarrassing to candidates. The classical and scholastic portion of the examination was well defined, and they all knew what was expected of them, but the technical portion was simply defined in the Calendar as Elementary Chemistry, Pharmacy and Botany, and though there was a foot-note saying that a scholar was supposed to be commencing his studies, or at least to have made only that progress which might reasonably be expected during apprenticeship, that left the subject matter of the examination very wide. He was not finding fault with the examination papers, which of course were as fair for one candidate as another, but he thought it would be much more satisfactory if there were some better definition of what was meant by elementary chemistry, botany, and pharmacy. Some twenty-three or twenty-four years ago, when he went in for the examination, he felt the difficulty himself, and he had reason to believe that it existed still, the result being that candidates were driven to guide their studies by questions set at former examinations, which was not a satisfactory state of things. If he might venture a suggestion it would be that the elementary knowledge required should be based upon the chemical tests, substances, and processes of the British Pharmacopœia.

Mr. HAMPSON said the suggestion was an important one, and he thought it should be referred to the Committee to consider.

The PRESIDENT and Mr. CARTEIGHE both expressed the view that the matter should be referred to the Library and School Committee, and this was at once agreed to.

A resolution was passed making these awards, and resolutions were also passed thanking the Examiners for their services.

THE DECIMAL ASSOCIATION.

A letter had been received from the Secretary of this Association inviting the Council to be represented on the Committee of the Association. The letter was referred to the Library, Museum, School, and House Committee.

REPORT OF THE GENERAL PURPOSES COMMITTEE.

The Council went into Committee to hear and consider the report of this Committee, which dealt only with legal matters.

On resuming, the report and recommendations were unanimously adopted, and special resolutions were passed authorising the Registrar to take proceedings against the persons named therein.

The PRESIDENT announced that no meeting of the Council would be held in September.

"FIRST" EXAMINATION RESULTS.

A meeting of the Board of Examiners for England and Wales was held on Tuesday, August 2.

The report of the College of Preceptors on the examination held on July 12 was received. 346 candidates had presented themselves for examination, of whom 183 had failed.

The following 163 passed, and the Registrar was authorised to place their names upon the Register of Apprentices and Students:—

Abram, Arthur William; Wawne.	Atkinson, Richard Jowett; Bradford.
Adamson, John; Kinross.	Aves, Owen; Bridlington Quay.
Archer, William Leiper; Govanhill.	Bacon, Joseph William; Consett.
Arnott, Andrew Baxter; Cowdenbeath.	Baker, Albert John Joseph; London.
Arnott, David; Glasgow.	Barbour, Archibald; South Shields.

Barclay, Charles, jun.; Cowdenbeath.
 Barley, Oliver James; Stony Stratford.
 Batley, Joseph Howard; Barnsley.
 Beswick, James Herbert; Blackburn.
 Bickford, Harding; Hampstead.
 Body, Sydney Francis; Plymouth.
 Boyle, James Wood; Forfar.
 Brown, William Alfred D.; Brighton.
 Browne, Lewis Alexander; Uddingston.
 Bruce, George; Thurso.
 Burgess, John H. E.; Newport, I.W.
 Busbridge, Harry L.; Birmingham.
 Butterfield, William; Gt. Driffield.
 Button, Charles; Bodmin.
 Cameron, William R.; Lancaster.
 Cammell, Horace Watson; Hull.
 Chalmers, Robert; Inverness.
 Chard, Ernest Alfred; Bristol.
 Chisholm, John M.; Spennymoor.
 Clancy, Matthew Walter; Sidcup.
 Clark, Ernest Harold; Birmingham.
 Coney, Joyce Muriel; London.
 Cordiner, David G.; South Shields.
 Corlett, Daniel Mybrea; Douglas.
 Cornibeere, Albert Edward; London.
 Cruickshanks, John Bate; Montrose.
 Davies, Alfred Robert; Mold.
 Davies, Edwin Gladstone; Rhyl.
 Davies, Morgan Rhys; Cardiff.
 Deacon, George; Nuneaton.
 Dempster, John; Peebles.
 Donald, Stanley; Banff.
 Douglas, Joseph C.; Cockermonth.
 Downie, James Walker; Glasgow.
 Dryerre, Henry, jun.; Blairgowrie.
 Duggleby, F. C.; Gt. Driffield.
 Duguid, Joseph; Aberdeen.
 Dyer, Frederick Julian; Ramsgate.
 Eastmead, Leonard C. A.; Chatham.
 Edwards, David Miles; St. Dogmells.
 Ellison, Charles Kitchen; Skipton.
 Evans, James; Llandyssul.
 Fail, C. H. B.; Newcastle-on-Tyne.
 Farnworth, Samuel; Bolton.
 Field, William James; Witney.
 Fife, Donald Fullford; Barnstaple.
 Finlayson, Daniel; Glasgow.
 Forbes, John Pringle; Leigh.
 Foster, Francis John; Leeds.
 Francis, Alfred Bernard; Newport.
 Fraser, Alexander; Edinburgh.
 Goodier, Aloysius; Preston.
 Gordon, John Hamilton; Bathgate.
 Gorrie, Peter; Edinburgh.
 Graham, Linley; Kendal.
 Graham, William T.; Birmingham.
 Gregory, Nicholas; Whitehaven.
 Halliday, Robert James; Cupar.
 Hamilton, Frank Tinning; Carlisle.
 Harcus, John Sinclair; Kirkwall.
 Hardie, Charles Fullerton; Aberdeen.
 Hay, Thomas Hamilton; Lockerbie.
 Heely, Frederick W.; Gt. Grimsby.
 Hewson, John; Manningham.
 Hinchco, John Henry; Stoke-on-Trent.
 Hirst, Tom Eastwood; Slaithwaite.
 Hoad, Henry; Lewisham.
 Horner, Arthur Jeff; Bedale.
 Howarth, Sam Crabtree; Norden.
 Hughes, Charles O. E.; Birmingham.
 Hunt, Eric Bernard K.; Wellington.
 Hunter, James Edward; Alnwick.
 Ingrouille, Leonard John; Guernsey.
 James, William; Nottingham.
 Jarvis, William; Wisbech.
 Jones, John Evans; Llanfyrnach.
 Young, Charles Edward; Grantham.

Kemp, William G. F. H.; Gainsborough.
 Kerfoot, Ernest Hodgson; Manchester.
 Latham, David Paterson; Kirkealdy.
 Lewis, Dan; Clynderwen.
 Lewis, Edward Day; London.
 Lloyd, Ernest Frederick; Leicester.
 McArthur, Donald; Glasgow.
 Macgregor, John F. S.; Birmingham.
 Mackenzie, Elizabeth; Birmingham.
 McLeod, William A.; Thornaby-on-Tees.
 McMillan, James G.; Broughty Ferry.
 Madgshon, Flora Curle; Edinburgh.
 Marris, Stanley; Gt. Grimsby.
 Massie, Duncan; Glasgow.
 Mather, John Fleming C. B.; Buckie.
 Matthams, P.; Dunmow.
 Matthews, Joseph; Kelso.
 Maxey, Frank Ream; Wisbech.
 Middlemass, J. S.; Stockton-on-Tees.
 Miller, David; Dundee.
 Miller, Edward; Bloxwich.
 Mitchell, Herbert George; Boscombe.
 Morrison, William Davidson; Keith.
 Munt, Harry William; Scarborough.
 Nicolson, Charles; Glasgow.
 Norkett, Charles F.; Caversham.
 O'Malley, Thomas; Jedburgh.
 Orme, Herbert Gaywood; Brighton.
 Owen, Robert Cecil; Chester.
 Owens, Thomas Owen; Amlwch.
 Paley, Joseph; Pontefract.
 Parker, Benjamin; Mansfield.
 Peake, George Arthur; Birmingham.
 Pearman, Hurry; Blackpool.
 Peden, John; Stranraer.
 Philip, George; Kely.
 Phillips, Evan Albert I.; New Quay.
 Preston, John Priestley; Keighley.
 Purdy, Ernest Gibson; Seacroft.
 Revill, George Edwin; Romford.
 Riley, William Albert; Atherton.
 Roberts, Shergold Lovell; Sherborne.
 Robertson, John Grant; Govan.
 Robertson, Margaret Millar; Alloa.
 Rothwell, William; Bolton.
 Ryder, James Gove; Aberdeen.
 Sanders, Charles; Smethwick.
 Sandwith, Rowland; Bracknell.
 Sant, Harry Thomas; Newport.
 Scollick, Ernest Arthur; Gipsy Hill.
 Scrafton, Ralph; Middlesbrough.
 Shaw, Francis Veale; Leeds.
 Simpson, John W.; Stalybridge.
 Smart, Basil Austin; Cambridge.
 Smith, William; Lugar.
 Spruce, Charles Francis; Birmingham.
 Steel, Darrell; Stratford-on-Avon.
 Stephens, Benjamin Morrell; Paris.
 Storey, Francis Hubert; West Kirby.
 Talbot, John; Halifax.
 Taylor, Emma Bennett; Hungerford.
 Taylor, Walter John; Ruabon.
 Troup, James; Aberdeen.
 Varley, Edwin G.; Weston-super-Mare.
 Walker, James Thomas; Nottingham.
 Walters, Hopkin Thomas; Maesteg.
 Warne, Herbert Llewellyn; Shanklin.
 Warton, Wilfred; Streatham.
 West, Tom Edgar; Keighley.
 Weston, A. J. C.; Walsall.
 White, William; Gainsboro'.
 Whitehouse, Colston Henry; Bristol.
 Williams, Richard Maldwyn; Penrhyn.
 Willoughby, George E.; Carn Brea.
 Wood, George Laban; Uttoxeter.
 Yates, Matthew; South Shields.

The questions set at this examination were published in the *Pharmaceutical Journal* for July 16, p. 62.

The following is a list of the centres at which the examination was held, showing the number of candidates at each centre, and the result:—

	Candidates.				Candidates.		
	Examined.	Passed.	Failed.		Examined.	Passed.	Failed.
Aberdeen	10	7	3	Inverness	2	2	0
Birmingham	24	13	11	Kirkwall	3	2	1
Brighton	2	2	0	Lancaster	4	2	2
Bristol	8	4	4	Leeds	22	10	12
Cambridge	2	1	1	Lincoln	4	3	1
Canterbury	3	1	2	Liverpool	18	6	12
Cardiff	11	1	10	London	37	16	21
Carlisle	7	3	4	Manchester	26	10	16
Carmarthen	9	5	4	Newcastle-on-Tyne	11	7	4
Carnarvon	7	3	4	Northampton	2	1	1
Cheltenham	2	0	2	Nottingham	13	5	8
Darlington	8	5	3	Oxford	3	1	2
Douglas	2	1	1	Penzance	2	1	1
Dundee	9	6	3	Peterborough	2	2	0
Edinburgh	29	13	16	Plymouth	8	3	5
Exeter	6	2	4	Sheffield	3	1	2
Glasgow	20	10	10	Shrewsbury	4	3	1
Guernsey	2	1	1	Southampton	5	2	3
Hull	13	7	6	York	3	1	2

SELECTED FORMULÆ.

PERU COGNAC.

This is a solution of Peru balsam in cognac. It contains 25 grammes of active principle in one litre. Schmey recommends it as suitable for tuberculosis and other tuberculous diseases.—*Pharm. Ztg.*, xlii., 41, after *D. Med. Ztg.*, 1898, 2.

CAMPHORATED TOOTH POWDER.

Camphor, 50 centigrammes; soap, 1 gramme; saccharin, 25 milligrammes; thymol, 5 centigrammes; precipitated chalk, 50 grammes; sassafras oil, 1 or 2 drops.—*Pharm. Zeitch. f. Russl.*, xxxvi., 696, after *Pharm. Era*.

TOBACCO FLAVOURINGS OR ESSENCES.

(1) Fluid extract of valerian, 1 fl. oz.; tincture of tonka bean (1-8), 8 fl. ozs.; alcohol (60 per cent.), to 32 fl. ozs. (2) Valerianic acid, 1 fl. dr.; butyric ether, 10 Mm.; acetic ether, 40 Mm.; alcohol (60 per cent.), 64 fl. ozs. (3) Tincture of valerian, 4 fl. drs.; butyric ether, 4 fl. drs.; tincture of vanilla, 2 fl. drs.; sp. ath. nitr., 1 fl. dr.; alcohol, 5 fl. ozs.; water to make 16 fl. ozs. *Cape Agricult. Journ.*, xi., 522.

KOLA PREPARATIONS.

Kola Tablets.—Dry extract of kola, 50; soluble chocolate, 20; vanillin sugar (1-500), 30 grammes; starch, *q. s.* Make 50 to 100 tablets. *Kola Emulsion*.—Fluid extract of kola, 10; yolk of egg (to emulsify), 20; glucose, 10; syrup, 20; tincture of vanilla, 5; cognac, 35.—*Apoth. Zeit.*, 1897, 404.

CAPTOL HAIR DYE.

Eichhoff recommends the following formula for the exhibition of captol: Captol, 2; chloral hydrate, 2; tartaric acid, 2; castor oil, 1; alcohol, 65 per cent., 200; perfume, *q. s.*—*Apoth. Zeit.*, 1897, 682.

PEPSINE ELIXIR.

Pure pepsin, 8 grammes; distilled water, 50 grammes; extract of coca, 2 grammes; extract of cinchona, 2 grammes; sugar 50 grammes; dry sherry, 100 grammes; hydrochloric acid, 10 drops; dissolve in the cold and filter bright through paper.—*Bol. Farm.*, through *Bullet. Com.*, xxvi., 37.

LEATHER VARNISH.

Caoutchouc, 1; petroleum, 1; carbon bisulphide, 1; shellac, 4; bone black, 2; methylated spirit, 20. Add the caoutchouc to the carbon bisulphide in a well-closed bottle, and set aside for a few days. When softened, add the petroleum and the spirit, then the shellac in fine powder, and heat to 125° C.; when nearly clear add the bone black, shake well and fill into well-corked bottles. This varnish dries quickly and produces a deep black coating which has a certain elasticity.—*Sci. Amer.*, lxxviii., 55.

PARLIAMENTARY NOTES.

THE POLITICAL ARENA is still the scene of active strife, but for chemists and druggists it possesses little interest now that their particular gladiators have retired with the laurels of victory. A feverish desire to get rid of the remaining business and pack up for the vacation characterised last week's work. A Saturday's wrangle over "conscientious objection" in relation to vaccination and a Bank Holiday debate on the superannuation of elementary school teachers were among the "extras" provided at St. Stephen's. In Committee of Supply on the Home Office Vote, Mr. Tennant (Berkshire) revived the question of lead poisoning and phosphorus necrosis, and called the Department hard names for not protecting sufficiently the workers in dangerous trades. He maintained that the use of lead was not essential in the process of glazing, and dramatically emphasised his point by producing for the critical inspection of the House a plate which was innocent of lead, but which shone with a glaze that had earned the approval of experts, and had undergone the severe test of being associated with the baking of seven separate loaves. Mr. Tennant stated that a firm was manufacturing these plates by way of experiment, and the House generally seemed to feel that chemical science was on the eve of settling for ever a problem which has long afflicted the country, and has a very important bearing on the health of a large number of Her Majesty's subjects.

PATENT LAWS AND ANILINE DYES formed a pretext to Mr. Cawley (Prestwich, Lancs.) on Friday last for a little tilt at the Board of Trade. He pointed out that a foreigner who could not get a patent in his own country, say for a dye process, could get one here, though he need not work it here. This had the effect of shutting out English manufacturers who desired to use the process and wished to obtain a licence from the patentee for that purpose. The present law provided that in cases where the patentee refused a licence and refused to work the patent himself, application might be made to the Board of Trade, but as this procedure involved the expenditure of about £1800, it was practically useless. Mr. Ritchie did not deny it, nor did he attempt to defend it. "This is the result of free trade in patents," said the right hon. gentleman. Captain Phillpotts (Torquay) also thought that the patent laws were unsatisfactory and ought to be inquired into, as also did Mr. Bryce (S. Aberdeen), but the representative of the Board of Trade gave them no comfort, and seemed to think that the present law provides remedies for all grievances, and that, if the cure happens to be expensive, it is better than having nothing.

ONE OF THE SCANDALS OF THE SESSION, and, indeed, of the last two sessions, is the supineness of the Lords on the companies question. The Select Committee to which the amending Bill was referred has not been sitting for a long time past, and shows no signs of meeting to even report that it cannot finish its work. In short, the policy of the last three years has been little else than barefaced shirking the question. The recent Hooley revelations may give rise to a good deal of unholy suspicion that Parliament is too much interested in companies to wish to disturb the *statu quo*. Evidence is daily accumulating of the most shocking abuses of the privilege of incorporation, and questions on the subject are continually coming before the House. Only last Tuesday Mr. Field directed attention to the scandals in connection with the promotion of limited companies, and asked the Government to introduce a Companies Act early next session. But what was the result? The Government could not pledge itself for next session, and the departments regulating home affairs and trade had no power to instruct the Public Prosecutor. One is inclined to think that public opinion will force the Government to do something next session, and recent events seem to signify that the time is getting ripe for serious legislation on the subject. The Pharmaceutical Society will no doubt take advantage of these facts, to impress upon the proper authorities that the public are quite as much swindled in having their pharmaceutical needs catered for by an impersonal combination of unqualified individuals as they are in having their expected dividends swallowed up by fraudulent directors or unscrupulous promoters.

PETROLEUM.—Mr. Ure (Linlithgow), who was successful in forcing the 100° flash test on the Petroleum Committee as the dividing line between oil and spirit, followed up his action on Tuesday by introducing a Bill to amend the Petroleum Act, 1879.

IRISH PHARMACISTS AND THE COMPANIES ACTS.

The following letter, with enclosures, has been received by the Editor from the Registrar of the Pharmaceutical Society of Ireland:—

The Pharmaceutical Society of Ireland,
67, Lower Mount Street,
Dublin, July 30, 1898.

Sir,—By direction of the President, I beg to hand you herewith copy of a letter forwarded on the 23rd inst. to the Lord Chancellor; also copy of his Lordship's acknowledgment.

ARTHUR T. FERRALL, Registrar,
Pharmaceutical Society of Ireland.

The Editor, *Pharmaceutical Journal*.

[COPY OF LETTER.]

The Pharmaceutical Society of Ireland,
67, Lower Mount Street,
Dublin, July 23, 1898.

To the Right Hon. The Lord Chancellor,
House of Lords.

My Lord,—I write to voice the astonishment and indignation of the Pharmaceutical Chemists of Ireland at the treatment their Petition to the Parliament of the Country has received.

We have asked for bread and you have tried to put a millstone round our necks. We claim to have the same treatment as the Medical Profession; to be dealt with in the same manner, and in the same clause. We are the necessary auxiliaries of that profession and have qualified for our position by education and examination as required by law.

If a number of persons seek to obtain the legal rights of any other body they have to go through the process of obtaining a Special Act of Parliament for the purpose, and the words "lawful purpose" in the Companies Acts clearly indicate that the purposes for which persons may incorporate themselves at pleasure, without going to Parliament, were such as the individual may do without appealing to Parliament, and which do not over-ride Acts of Parliament.

In Ireland, since 1791, it has been illegal for any person to "keep open shop" for the compounding of medicines, unless such person was registered and legally qualified by education and examination, and in 1875 this Society was incorporated by Special Act of Parliament to over-ride this right of the apothecaries of Ireland.

And we respectfully urge that the Companies Acts give no authority or right to over-ride either the Apothecaries Act or the Pharmacy Act (Ireland), 1875.

I have, etc.,

R. J. DOWNES, President.

[COPY OF REPLY.]

House of Lords, S.W.

July 26, 1898.

Sir,—I am directed by the Lord Chancellor to acknowledge the receipt of your letter of the 23rd instant.

I am, etc.,

KENNETH MUIR MACKENZIE.

The Registrar of the Pharmaceutical
Society of Ireland.

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE PHARMACY ACTS.

PHARMACEUTICAL SOCIETY *v.* AUSTIN.

At the Grimsby County Court on Tuesday, before Judge Shortt, a case of considerable interest to chemists was heard. The Pharmaceutical Society of Great Britain claimed from Mr. J. Austin, 133, Cleethorpe Road, Grimsby, £5, being the penalty to which the defendant was liable under the Pharmacy Act, 1868, for having assumed the title of "chemist," not being a registered person under that Act. Mr. T. R. Grey, barrister (instructed by Messrs. Flux, Thompson, and Flux) represented the Society, whilst Mr. White (Grimsby) appeared on behalf of the defendant.

Evidence was given by Jonathan Mitchinson (Hull), inquiry agent, to the effect that, acting on instructions from the Society, he visited the shop of the defendant, and saw painted on the shop the words "Manufacturing Chemist." He went inside and purchased some neuralgia mixture, which contained chloroform, etc. For the defence it was urged that Austin, who was a herbalist, had decided to commence the business of manufacturing chemicals to sell wholesale, and, in consequence, had had the words "Manufacturing Chemist" painted above the door, and just below the word "Laboratory," together with a hand indicating the place where the chemicals were intended to be manufactured. The title did not mean to imply that the defendant was a chemist.

His Honour held that the defendant was not entitled to use the word "chemist," even in conjunction with the word "manufacturing," and pointed out that the power given to wholesale dealers by Section XVI. of the Pharmacy Act in no way entitled them to use the title chemist, or any other title which might imply that they were registered persons under the Act, and judgment was entered for the plaintiffs, with costs.

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THE COUNCIL MEETING.

LAST Wednesday the winding-up of official work for the session was marked by reference to several unusually important events which have occurred since the previous meeting. After the minutes of the last meeting had been read and confirmed, the PRESIDENT drew attention to a telegraphic report in the *Times* of Tuesday announcing the death of Dr. DE VRIJ, an old honorary member of the Society and the last recipient of the Hanbury Medal in October last. On that occasion the PRESIDENT spoke at length of the work done by Dr. DE VRIJ in connection with the cultivation of cinchona in Java and India, and of his intimate association with the late DANIEL HANBURY in pharmacological research. A resolution expressing sympathy with Dr. DE VRIJ'S family was passed on the motion of the PRESIDENT.

In reference to a number of applications for membership of the Society, the PRESIDENT explained that they must be deferred for the present, and until the new Bye-laws required by the Act of 1898 shall have been passed and approved.

The report of the Finance Committee did not call for any special comment, and as is usual at this period, the larger amount of the payments recommended was a result of their being for two months in place of one. Mention was made of a donation of five pounds to the Benevolent Fund as having been received through the Honorary Secretary of the Midland Pharmaceutical Association and as a pleasing illustration of the interest taken in the Fund.

The report of the Benevolent Fund Committee was unique, inasmuch as it did not recommend a single grant, and there had been only one application to consider.

The report of the Law and Parliamentary Committee simply expressed approval of the steps taken by the PRESIDENT in connection with the Bill which has now become the Pharmacy Act, 1898. In moving its adoption, the PRESIDENT spoke of the action taken in stimulating opposition to the Poisonous Substances Bill, by addressing registered chemists and druggists on the subject and pointing out the lines of procedure to be adopted. The PRESIDENT did not think any further remarks were necessary on that subject, since Mr.

BALFOUR had stated that, in view of the opposition offered, the Bill would not be proceeded with. If the subject should again be taken up, evidence had been given that they were a power, and that the Society has considerable influence. Passing on to what has occurred in the House of Lords, the PRESIDENT said that the action taken in reference to the LORD CHANCELLOR'S proposed amendment was necessary for several reasons, which he stated at length (see p. 127), emphatically reiterating the view expressed in last week's Journal, that the course taken was the only one possible for the Society. Finally the PRESIDENT reminded those unconnected with the Society that all who have the statutory qualification are now able to come in and work on equal terms for the advancement of the common interests of the craft. He appealed to them to assist in doing something practical for the improvement of their position.

Mr. HAMPSON supported the remarks of the PRESIDENT, and congratulated him on the success he had achieved, expressing also a hope that it would meet with such a response from those outside the Society as would permit of energetic action in the future.

Mr. MARTINDALE expressed his opinion that, as the result of what had been said in the House of Lords, a somewhat improved position had been gained and he hoped the advantage would be followed up whenever opportunity arose.

Mr. BOTTLE, in congratulating the PRESIDENT on the passing of the Pharmacy Act and the defeat of the Poisonous Substances Bill, expressed his opinion that if he had accepted the suggested amendment he would have been open to the charge of betraying their confidence that has been unjustly brought against him for the opposite reason. He deprecated any attempt at hasty legislation in regard to a matter involving several interests.

Mr. CARTEIGHE also congratulated the PRESIDENT on the passing of one Bill and the killing of another—events that would probably never again fall to the lot of a President. In reference to what had been said of the power that could be exercised by registered persons, caution was necessary in the exercise of that power, especially in dealing with such a thorny subject as company trading. Lest Mr. MARTINDALE should induce the belief that to put down company trading they have only to make an effort, he would remind them that the effort would involve a very hard fight. In the pharmaceutical world he knew of no public expression of opinion as to the propriety of regulating or controlling company trading. Before attempting to assist the LORD CHANCELLOR in that direction or giving their sanction to such a proceeding, they must also remember that no measure to that end could be carried unless it had the support of the Government. In the present instance it would have been really a betrayal to have allowed a complete alteration of the law to be introduced in a Bill which had been declared from the presidential chair to be a non-contentious domestic measure.

Mr. ATKINS also concurred in these views, believing that whenever the attempt was made to deal with the subject of company trading all their power would be required for the contest.

The PRESIDENT, in putting the motion, thanked the members of the Council for their unanimous and kindly support, also their representatives throughout the country and Mr. RICHARD BREMRIDGE for his efforts during the past six months. As to future proceedings, he thought that it would

be expedient that the Law and Parliamentary Committee should consider the formulation of a proposal for dealing with companies and possibly drafting a Bill with that object.

On the motion of the PRESIDENT, a resolution was passed that the best thanks of the Council be addressed to the HON. W. F. SMITH, Mr. BROOKFIELD, and the EARL OF HARDWICKE, for their services in connection with the passing of the Pharmacy Act, 1898.

The report of the Library Committee dealt with various matters of detail, one of the principal being the new Bye-laws, a draft of which was agreed to. On the recommendation of the Committee, Mr. EDGAR M. CHAPMAN was appointed Burroughs Scholar; Mr. HERBERT PAYNE and Mr. JOHN EVANS were permitted to continue their studies as Bell Scholars in the Research Laboratory.

Mr. CARTEIGHE handed to the PRESIDENT a draft of the proposed new Bye-laws, which were taken as read, and in moving that they be read the PRESIDENT called attention to the several points on which they differ from the old Bye-laws.

The PRESIDENT announced that he had received from Mr. BOLTON, of Nottingham, a resignation [of his office as Local Secretary, and expressed his regret that ill-health was the cause of his discontinuing the good work he has done at Nottingham. In accordance with Mr. BOLTON's suggestion, Mr. F. R. SERGEANT was appointed Local Secretary.

In connection with the Society's School, Mr. C. B. FRY was appointed Demonstrator in Chemistry, Mr. C. HORRELL Demonstrator in Botany, and Mr. UPSHER SMITH Demonstrator in Materia Medica and Pharmacy.

On the recommendation of the Committee, Mr. JOHN IRWIN SCOTT, of Bootle, and Mr. HORACE FINNEMORE, of Seaford, Staffs, were elected Bell Scholars; Mr. ARTHUR W. M. RYDER, of Elworth, was awarded the Manchester Scholarship and permission was given him to pursue his studies at Owens College, Manchester. The competition for these scholarships was unusually keen, and the general results exceedingly satisfactory.

Mr. ALLEN drew attention to the need for some better definition of what is meant by elementary chemistry, botany, and pharmacy in connection with the competition for the Bell Scholarships. He had reason to believe that candidates experienced some difficulty in this respect, for though it is stated that they are supposed to be commencing their studies, or at least to have made only such progress as may reasonably be expected during apprenticeship, that statement left the matter so indefinite that candidates have recourse to questions set at former examinations as a guide to their studies. He therefore suggested that the elementary knowledge required should be based upon the chemical tests, substances, and processes of the British Pharmacopœia. Recognising the importance of the matter, the Council referred it to the Library Committee for consideration.

On the recommendation of Professors HARVEY GIBSON and McLEOD and Mr. FARR, the Pereira Medal was awarded to Mr. FRED A. UPSHER SMITH and the Silver Medal to Mr. P. E. F. PERREDES.

On the reading of the report of the General Purposes Committee, special resolutions were passed authorising the Registrar to take proceedings against various persons for infringement of the Pharmacy Acts, and the Council adjourned until October next.

A FERTILE SOURCE OF ERRORS.

IN referring to the 'Farmacopea Venezolana' last week, it was stated that, whilst denominations of metric weights and measures are used exclusively in the body of the work, the approximate equivalents of certain English weights and measures are given in the preface, apparently with the idea that those equivalents may prove useful if at any time Venezuelan pharmacists should require to dispense English prescriptions. But, as will be seen, some confusion is manifested with regard to the two older systems of weights used by English pharmacists, and a considerable degree of laxity is also permitted in connection with the suggested equivalents. The pound (*libra*), for example, is said to correspond to 16 ounces, and its equivalent is given as 460.0 Gm., or in round numbers (*en número redondo*) 500.0 Gm., whilst the ounce (*onza*) is said to correspond to 8 drachms, and its equivalent given as 28.80 Gm., or in round numbers 30.0 Gm. Similarly, the drachm (*dracma*), containing 3 scruples, is to be regarded at will as equivalent to 3.60 Gm., or 4.0 Gm., whilst the scruple (*escrúpulo*) of 20 grains may be represented by either 1.20 Gm. or 1.0 Gm. The grain (*grano*) is considered equivalent to 50 Mgm. The fluid measures, of which metric equivalents are given, correspond more closely to those in use here. Thus, it is stated that the gallon (*galón*) may be regarded as equivalent to 4548 C.c. or 4.5 Lit.; the pint (*pinta*) to 578 C.c. or 500 Gm.; the fluid ounce (*onza fluida*) to 29 C.c. or 30 Gm.; the fluid drachm (*dracma fluida*) to 3.5 C.c. or 4 Gm.; and the minim (*mínima*) or drop (*gota*) to 0.06 C.c. or 5 Cgm.

Apart from the confusion manifested between avoirdupois and apothecaries' weights, the free and easy manner in which the metric equivalents of English weights is given is remarkable. It would seem that a difference of 40 Gm. on the pound or of 2.2 Gm. on the ounce is regarded in Venezuela as of little consequence, to say nothing of the fact that the equivalents of the pound and ounce, as stated in round numbers, do not agree between themselves. The explanation of the matter is, of course, apparent, the idea prevailing in fixing the equivalents having been to give the nearest convenient weights in whole numbers. And this is where the weak point of the conversion system reveals itself, for exact equivalents are rarely in round numbers, and for all practical purposes it is usually assumed that the nearest whole number will suffice. But in Venezuela the tendency appears to be somewhat excessive in that direction, and quite unnecessarily so, for sets of weights, either English or metric, are not so expensive that those of both denominations should not be found in every pharmacy where they are likely to be required. The moral to be derived by English pharmacists from the facts stated above seems to be that they should lose no time in purchasing properly authenticated sets of metric weights and measures, which should be used whenever metric quantities of medicinal substances are ordered in prescriptions or asked for by customers. The fact that errors may easily occur in converting quantities has not been dwelt upon, but it is well known that there is no more fertile source of errors, and as the cause can be removed by the expenditure of a comparatively insignificant sum, there is no valid reason why that cause should be allowed to remain. In everything connected with the dispensing of medicines exactness should be sought after, not approximations, and the only safe rule in weighing and measuring is to use weights and measures of the system indicated.

ANNOTATIONS.

THE CONFERENCE AT BELFAST will have adjourned before another issue of the Journal is in the hands of our readers, and judging from the information in hand, a highly successful meeting will have been recorded. Though the reception and conversazione will not be held until Tuesday evening, next week, instead of Monday as usual, it may be anticipated that the greater proportion of those who propose to take part in the proceedings will have assembled in Belfast by Monday night. Mr. J. C. Nightingale, the Assistant-Secretary of the B.P.C., asks us to announce that a meeting of the Executive Committee will be held at the Grand Central Hotel, Belfast, at 9 p.m. How the time will be spent by the non-official members of the Conference during that meeting and subsequently must be left to the imagination, but presumably it will not be devoted to discussing the new Pharmacopœia or any other strictly pharmaceutical topic. And in any case, a time of quiet contemplation will not come amiss after crossing the ocean, and prior to official welcomes and listening to the presidential address. We understand it is practically decided to devote half a day, during the session of Conference, to a general discussion of the new B.P. That will account for at least a third of the papers to be read, so it may not be so great a puzzle, after all, to find time to read and discuss the numerous papers promised.

THE PHARMACOPŒIA DISCUSSION at the Conference promises to be of especial interest, and it is greatly to be hoped that the Editor of the Pharmacopœia may be able to be present, so as to sum up the discussion. The papers on Pharmacopœia topics approach the main subject from every side, and if, as would be desirable, the discussion takes place on the opening day of the meeting, it ought to prove far and away the most important item in the Conference programme. If for no other reason, the Pharmacopœia papers should be read and discussed on Tuesday because everyone will then be fresh to the work and in the best possible condition for taking part in the proceedings. In addition to that, the earlier the discussion comes on the fuller will be the reports that can be published next week, and consequently the wider the publicity that will be gained. It should be remembered that the full report of the Conference proceedings in next week's Journal will be in the hands of every registered chemist in Great Britain and most of those in Ireland by the end of the week. Such an opportunity has never before presented itself in connection with the annual gathering of the members of the British Pharmaceutical Conference, and it would be a pity if full advantage were not taken of the opportunity. Since, therefore, the new Pharmacopœia is more prominent in the minds of pharmacists than any other technical matter at present, the discussion on it should be as full as possible and as fully reported as press exigences will permit.

THAT SIXTY REGISTERED CHEMISTS should be so lost to all sense of self-respect as to cover companies carrying on the business of a chemist and druggist is greatly to be regretted, yet such is claimed to be the case, in a scandalous circular issued by a company whose ravages are only too severely felt by chemists in the southern counties. The irregular practice of pharmacy rendered possible by registered persons, in the capacity of assistants or managers, covering companies carrying on the business of a chemist and druggist, is the inverse counterpart of the covering of unqualified assistants in medical practice, which has been declared to constitute "infamous conduct," and from that point of view is worthy of the attention of all pharmacists who are desirous of maintaining

the value of their qualification. Those who assist the company referred to, whether there be sixty of them or less, ought to consider seriously what a future they are helping to prepare for themselves. Presumably they do not intend to act as servants of the company for an indefinite period, yet when, if ever, they commence business as chemists and druggists on their own account they will find that they have helped to forge shackles which will impede their progress enormously. Not only that, but so long as they continue to serve the company they are morally responsible for the vile slanders cast upon the rest of the craft in their district by the company whose circular, mentioned above, is as full of misrepresentations as any document could be. Surely the moral sense must be sadly lacking in the case of registered chemists who can stoop to serve such masters!

GRANDMOTHERLY LEGISLATION in the old country is known to be as nothing compared with that prevailing in some of the American States, but it is difficult to conceive of such an absurdity as legislating about the shape of feeding bottles for infants. According to the *Pharmaceutical Era*, however, "the long-necked nursing-bottle question" has stirred up a lot of trouble in Buffalo, where a number of the most prominent druggists have been arrested and charged with selling the objectionable bottle with long rubber tube in direct violation of an ordinance by the Board of Health. One druggist was found guilty and fined, the Court holding that the ordinance was presumptively reasonable, as the bottles in question are detrimental and injurious to public health. The other defendants, backed by the local pharmaceutical association, intend to carry their cases to a higher Court. And now, says the *Era*, "there is a hot time in the old town." The druggists say they are being persecuted, the health officer says the druggists did not sin ignorantly, having been fully informed of the nature of the ordinance, and the physicians are upholding him in the matter. It is allowed that Buffalo's chief health officer, by his methods of sanitation, disinfection, and looking after the public health generally, has secured for that city a record which is the envy of the health boards of other cities. He is described as a fighter who, when he sets out to remedy an evil, usually effects his purpose. It appears that in the present instance no one denies that feeding bottles with long rubber tubes are dangerous, but some think that the health officer has been a little too arbitrary in his action. However, he has the law on his side, and that, observes the *Era*, is a powerful weapon.

THE SCHOOL OF PHARMACY SYLLABUS for the session 1898-99 is now ready, and copies can be obtained by application to the Secretary of the Pharmaceutical Society, 17, Bloomsbury Square, W.C. It gives full particulars of the courses of lectures, laboratory courses, fees, scholarships, etc., and should be consulted by every pharmaceutical student who proposes to attend a college course prior to presenting himself for examination.

DR. J. E. DE VRIJ, C.I.E., whose death is announced as having occurred on July 31, at the Hague, was the latest recipient of the Hanbury Medal. He began life as a pharmacist and was more or less associated with pharmacy throughout his long life, but he gained distinction as an investigator in connection with the chemistry and natural history of drugs, more especially cinchona, or as the *Times* puts it, somewhat strangely, "the pharmaceutical properties of quinine" (*vide P. J.*, lix., 30). The Hanbury Medal was awarded to Dr. De Vrij in July of last year, and presented at the inaugural meeting in October last, when the worthy recipient was unfortunately unable to be present. He died after a very short illness at the advanced age of 85 years.

SECONDARY EDUCATION may possibly receive the attention it deserves in the next session of Parliament, the Duke of Devonshire having formally directed the attention of the House of Lords to the subject on Monday by introducing two Bills relating thereto. He pointed out that the Department of Science and Art is now maintaining central organising authorities at a cost of about £26,000 a year, and also distributing the public grant of £276,000, divided amongst local institutions, some of which profess to give the highest scientific and artistic teaching. Parliament is also responsible for other amounts, and altogether there is a sum of not less than a million expended on certain branches of secondary education in various schools and institutions. In addition, there is a large number of private schools all over the country which would probably be quite willing, in return for some public recognition, to come into a general scheme of education, and the Lord President of the Council is of opinion that, by supporting such agencies from public funds, the direct administration of them might and should be brought under the consideration of Parliament, through a Minister who shall be understood to be responsible for the direction given to secondary as well as elementary education.

THE MINISTER OF EDUCATION will preside over a Board of Education, on the model of the Board of Trade, the Local Government Board, and the Board of Agriculture, the present Education Department and Department of Science and Art being brought together and placed under the control of one permanent secretary. If the Minister of Education should be in the House of Lords, the President of the Council will be President of the new Board, and he will be represented by the Vice-President in the House of Commons. If, on the other hand, the Minister of Education should be in the House of Commons, he will have the office of President of the Board of Education, and there will be no Vice-President, the new department being represented in the House of Lords by some other arrangement. The present Education Department is to be entirely reorganised, as well as the Department of Science and Art, but the details of the reorganisation remain as yet to be worked out by the departments concerned. It is thought that the proposed changes will tend to economy, no less than to increased efficiency, and the new departure should be cordially welcomed by all friends of systematic advanced education. Experiments in this direction, on a larger or smaller scale, have been carried on all over the country at a great cost to the public for some years past, but if both successes and failures prove useful in facilitating the evolution of a perfect scheme of general education the expense will have been wisely incurred.

THE FLORA OF TROPICAL AFRICA, which is being issued by the scientific authorities of the Royal Gardens at Kew, is progressing, volume 4 being in an advanced state of preparation, though very little of it appears yet to be in type. Two other volumes, Nos. 7 and 5, are being printed first, the third and last part of volume 7 being nearly ready. There have been certain difficulties as to the printing of volume 5, but the publishers have now declared themselves ready to proceed with it.

DR. MORRIS, Assistant Director at Kew, is to be Director of a special public department to be established, in connection with the West Indies, for the purpose of dealing with all questions of economic plants and botanic stations in all the islands. He possesses special qualifications for the post, since he has special acquaintance with the West Indies, in addition to the scientific and other knowledge required. As was stated by Sir Edward Grey in the House of Commons on Tuesday last, he will bring to

the discharge of his duties a knowledge of tropical produce and the possibilities and conditions of the cultivation of that produce such as cannot be surpassed by anyone. He will also bring to the administration of the new department the greatest ability, energy, enterprise, and devotion to work, and his labours as head of the department should prove of the highest value to the West Indian Islands.

THE NEW CANADIAN TARIFF is exceptionally favourable to the products of all other British territories, allowing as it does a reduction of one-fourth from the general tariff rates of duty. The preferential tariff applies to all articles except wines, malt liquors, spirits, spirituous liquors, liquid medicines and articles containing alcohol, tobacco, cigars and cigarettes, imported into Canada from the United Kingdom, Bermuda, the British West Indies, British Guiana, British India, Ceylon, New South Wales, and the Straits Settlements. The tariff may also be extended by Order in Council to any other British colony or possession, if the local Customs tariff is, on the whole, as favourable to Canada as the British preferential tariff of Canada is to such colony or possession.

MR. J. A. R. NEWLANDS, to whom, equally with Mendeléeff credit is due for the discovery of the "periodic law" in chemistry, died at Clapton on Friday, July 29, aged 60 years. He was about only a few weeks ago, and his death will be greatly regretted by a large circle of friends and acquaintances. Mr. Newlands was privately educated by his father, a Presbyterian minister, though claimed as a City of London School boy. His work on the periodic law was but tardily recognised in this country and, in fact, practically ignored until Mendeléeff had given the subject prominence.

SIR FREDERICK ABEL offers to those who desire to inform themselves correctly regarding the important matter examined into by the Petroleum Committee, the excellent advice that they should not be guided by *ex parte* statements, but should examine for themselves. But the task is somewhat difficult, for unfortunately the truth about petroleum and the flash point of lamp oil lies at the bottom of a very deep well; it has been sounded by Sir Frederick and by Dr. Atfield, but without either having brought to light the real reason for adopting the 73 degree standard. However, the adoption of a higher flash point is now so probable that there is practically no need for raking up ancient history that few are acquainted with.

THE NATURAL HISTORY MUSEUM at South Kensington is to be in charge of Professor E. Ray Lankester, F.R.S., Linacre Professor of Human and Comparative Anatomy of the University of Oxford, who has been appointed Director in the room of Sir William Fowler, who retires at the end of September next. Professor Ray Lankester holds the degrees of M.A., LL.D., F.R.S., and is a Fellow of Merton College and Hon. Fellow of Exeter College, Oxford. He was Professor of Zoology and Comparative Anatomy at University College, London, from 1874 to 1890, became Regius Professor of Natural History, Edinburgh, in 1882, Royal Medallist of the Royal Society in 1885, and Vice-President of the Royal Society in 1896. He founded the Marine Biological Association (Plymouth Laboratory), of which he subsequently became President, in 1884. He is a corresponding member of the Imperial Academy of Sciences, St. Petersburg, a foreign member of the Royal Bohemian Society of Sciences, and has edited the *Quarterly Journal of Microscopical Science* for many years, besides publishing numerous works on zoological science.

BYE-LAWS OF THE PHARMACEUTICAL SOCIETY.

For the convenience of readers the existing bye-laws of the Pharmaceutical Society and the proposed bye-laws are here presented side by side for comparison.

Present Bye-Laws.

PRELIMINARY.

In the following Bye-laws words importing the singular number shall include the plural number, words importing the plural number shall include the singular number, and words importing the masculine shall include the feminine, unless there be something either in the subject or context repugnant to such construction. By the expression, "the Charter," shall be meant and intended the Royal Charter of Incorporation of the Society. By the expression, "the Statute, 1852," shall be meant and intended the Statute, 15 and 16 Vict., cap. 56, intituled "An Act for regulating the qualifications of Pharmaceutical Chemists;" and by the expression "the Act, 1868," shall be meant and intended the Statute, 31 and 32 Vict., cap. 121, intituled "An Act to regulate the Sale of Poisons, and alter and amend the Pharmacy Act, 1852." All the Bye-laws heretofore passed are hereby repealed.

SECTION I.

QUALIFICATIONS, ELECTIONS, AND SUBSCRIPTIONS.

1. Persons who have become Members and Associates pursuant to the Charter, the Statute, 1852, or the Act, 1868, may continue to be such Members, or Associates accordingly. Persons who have become Apprentices or Students, pursuant to the Charter and the Statute, 1852, may be registered as Students, and all the said Members, Associates, or Students, shall respectively so continue, subject to the Bye-laws in force for the time being.

2. Persons qualified to be elected Members, Associates, or Students of the Society, shall at a meeting of the Council be proposed and seconded by Members of the Council. The qualification of the proposed Member, Associate, or Student, shall be stated in a written resolution, which, when proposed and seconded, shall be submitted to the Council, and when passed, shall confer the right of becoming a Member, Associate, or Student.

3. Persons registered as Pharmaceutical Chemists under Section 10 of the Statute, 1852, and desirous of becoming Members of the Society, shall make application to the Council in that behalf.

4. Persons who, at the time of the passing of the Act, 1868, were or had been in business on their own account as Chemists and Druggists, who have been registered as Chemists and Druggists, and are desirous of becoming Members of the Society, in exercise of the privileges conferred by Sections 18 and 19 of the Act, 1868, shall make application to the Council in that behalf.

5. No persons other than those who have previously been registered as Pharmaceutical Chemists, or those who, at the time of the passing of the Act, 1868, were or had been in business on their own account as Chemists and Druggists, and have previously been registered as Chemists and Druggists, shall be elected Members, unless as Honorary Members or as Corresponding Members.

6. Persons registered as Chemists and Druggists, by reason of having obtained certificates of qualification from either of the Boards of Examiners, and desirous of becoming Associates of the Society, under Section 20 of the Act, 1868, shall make application to the Council in that behalf, and no other person shall be elected an Associate.

7. Persons registered as Apprentices or Students under Section 10 of the Statute, 1852, shall be eligible for admission as Students

Proposed Bye-Laws.

PRELIMINARY.

All the Bye-laws heretofore passed are hereby repealed, and the following shall be the Bye-laws of the Society.

In the following Bye-laws:—

Words importing the singular number shall include the plural number, words importing the plural number shall include the singular number, and words importing the masculine shall include the feminine, unless there be something in the subject or context repugnant to such construction.

"The Society" shall mean and intend the Pharmaceutical Society of Great Britain.

"The Charter" shall mean and intend the Royal Charter of Incorporation of the Society.

"The Statute, 1852," shall mean and intend the Statute 15 and 16 Vict., cap. 56, intituled "An Act for regulating the qualifications of pharmaceutical chemists."

"The Act, 1868," shall mean and intend the Statute 31 and 32 Vict., cap. 121, intituled "An Act to regulate the sale of poisons and alter and amend the Pharmacy Act, 1852."

"The Council" shall mean and intend the Council of the Society.

"The Secretary" shall mean and intend the Secretary of the Society, and

"The Registrar" shall mean and intend the Registrar appointed under the provisions of the Statute 15 and 16 Victoria, cap. 56, and of the Statute 31 and 32 Victoria, cap. 121.

SECTION I.

QUALIFICATIONS, ELECTIONS, AND SUBSCRIPTIONS.

1. Persons who have become Members may continue to be such Members. Persons who have become Students shall become and be registered as Student-Associates, and all the said Members and Student-Associates shall be subject to the Bye-laws of the Society in force for the time being.

2. Every person who on the 25th day of July, 1898, was an "Associate in Business" may be elected by the Council a Member of the Society without special application in that behalf, and such persons shall be exempt from further contribution to the Society in respect of the year 1898, and save as appears hereby persons qualified to be elected Members, or Student-Associates, shall, at a meeting of the Council be proposed and seconded by Members of the Council. The qualification of each proposed Member or Student-Associate shall be stated in a resolution, which, when proposed and seconded, shall be submitted to the Council, and when passed, shall confer the right of becoming a Member or Student-Associate.

3. Persons registered as Pharmaceutical Chemists or as Chemists and Druggists, and desirous of becoming Members, shall make application to the Council in that behalf, and no persons other than Pharmaceutical Chemists or Chemists and Druggists shall be elected Members, unless as Honorary Members or as Corresponding Members.

To be repealed.

Incorporated in Clause 3.

To be repealed.

4. Persons registered as "Apprentices or Students" shall be eligible for election as Student-Associates, and, if desirous of being

Present Bye-Laws.

of the Society, and, if desirous of being admitted accordingly, shall make application to the Council in that behalf.

8. All persons on election as Members, Associates, or Students, shall sign a written declaration, stating their full names and addresses, and their willingness to comply with the regulations of the Society.

9. All Subscriptions for the current year shall become due upon election, and all annual subscriptions shall become due on the first day of January in every year; and if any Member, Associate, or Student shall not have paid his annual subscription before the first day of May in any year, his name shall be omitted from the Register of Members, Associates, and Students of the Society, certified by the Council at the Annual Meeting. It shall be competent to the Council to restore any person whose name has been so removed to his former status in the Society on payment of his subscription for the then current year, and a sum to be determined by the Council, and being not less than one shilling nor exceeding one guinea, as for and in commutation of his arrears of subscription.

10. All persons who have become Life Members of the Society pursuant to Bye-laws which have heretofore from time to time been in force, shall be exempt from further contributions to the funds of the Society.

11. All Members of the Society, except Life Members, Honorary Members and Corresponding Members, shall pay an annual subscription of one guinea.

12. All Members of the Society, and all persons qualified for election as Members of the Society, shall have the option of becoming Life Members exempt from further contribution on payment of a life composition of ten guineas.

13. All Associates and Students, other than Associates who are in business on their own account, shall pay an annual subscription of half a guinea.

14. All the Associates who, under Section 20 of the Act, 1868, are entitled to continue, and are desirous of continuing as such Associates, being in business on their own account, shall give notice to the Secretary in that behalf, and shall, in accordance with the same section, contribute to the funds of the Society the same subscriptions, whether annual, life, or otherwise, as Members, and in default thereof shall cease to be Associates.

SECTION II.

HONORARY AND CORRESPONDING MEMBERS.

1. The Council shall at their discretion elect as Honorary Members, or as Corresponding Members of the Society, such scientific men as have distinguished themselves in any of the branches of knowledge embraced in the educational objects of the Society.

2. The Council shall from time to time determine the number of persons to be Honorary Members, and the number of persons to be Corresponding Members. There shall be books kept by the Secretary, in which Members of the Council shall enter the names of persons whom they may consider eligible for election as Honorary Members or as Corresponding Members, and at the meeting of the Council in April of every year names shall be selected from the books so kept, not exceeding in number the vacancies in the lists of Honorary Members or of Corresponding Members respectively, and the names of the persons so selected shall be exhibited in the Library, until the meeting of the Council in the ensuing month, when the Council shall proceed to the election.

SECTION III.

COMMON SEAL.

1. The Common Seal of the Pharmaceutical Society of Great Britain shall consist of the armorial bearings, crest, and motto, registered in her Majesty's College of Arms.

2. The said seal shall be deposited at the House of the Society, in a box having a lock and two keys, one of which shall be in the custody of the President, and the other in that of the Vice-President.

3. The Common Seal may be set or affixed to any deed, instrument, or writing, in pursuance of an order or minute of the Council entered in their minute book, and in the presence of the President, or Vice-President, or two Members of the Council, and not otherwise.

SECTION IV.

BYE-LAWS AND REGULATIONS.

The making, altering, or abrogating of any Bye-law or any Regulation, to be prescribed by the Society, in accordance with any statute, shall be in the following manner:—

Proposed Bye-Laws.

elected accordingly, shall make application to the Council in that behalf.

5. All persons on election as Members, or Student-Associates, shall leave with the Registrar a signed declaration, stating their full names and addresses, and their willingness to comply with the regulations of the Society.

6. All Subscriptions for the current year shall become due upon election; and all annual subscriptions shall become due on the first day of January in every year; and if any person shall not have paid his annual subscription before the first day of May in any year, his name shall be omitted from the Register of Members or of Student-Associates. It shall be competent to the Council to restore any person whose name has been so omitted to his former status in the Society on payment of his subscription for the then current year.

7. All persons who have become Life Members or Life Associates pursuant to Bye-laws which have heretofore from time to time been in force, shall be exempt from further contributions.

8. All Members, except Life Members, Honorary Members, and Corresponding Members, shall pay an annual subscription of one guinea.

9. All Members, and all persons qualified for election as Members shall have the option of becoming Life Members exempt from further contribution on payment of a life composition of ten guineas.

10. All Student-Associates shall pay an annual subscription of half a guinea.

To be repealed.

SECTION II.

HONORARY AND CORRESPONDING MEMBERS.

1. The Council shall at its discretion elect as Honorary Members, or as Corresponding Members such scientific men as have distinguished themselves in any of the branches of knowledge embraced in the educational objects of the Society.

2. The Council shall from time to time determine the number of persons to be Honorary Members, and the number of persons to be Corresponding Members. There shall be books kept by the Secretary, in which Members of the Council shall enter the names of persons whom they may consider eligible for election as Honorary Members or as Corresponding Members, and at the meeting of the Council in April of every year names may be selected from the books so kept, not exceeding in number the vacancies in the lists of Honorary Members or of Corresponding Members respectively, and the names of the persons so selected shall be exhibited in the Library, until the meeting of the Council in the ensuing month, when the Council shall proceed to the election.

SECTION III.

COMMON SEAL.

1. The Common Seal of the Society shall consist of the armorial bearings, crest, and motto, registered in her Majesty's College of Arms.

2. No alteration.

3. No alteration.

SECTION IV.

BYE-LAWS AND REGULATIONS.

The making, altering, or abrogating of any Bye-law or any Regulation, to be prescribed by the Society, in accordance with any statute, shall be in the following manner:—

Present Bye-Laws.

1. A written formula for any proposed Bye-law or Regulation, or for altering or abrogating any Bye-law or Regulation, being delivered by a Member of the Council to the Chairman, shall thereupon be read, and if seconded and approved, shall be referred to two subsequent ordinary or special Meetings of the Council for confirmation, and then to a special General Meeting of the Members of the Society, and afterwards to the Privy Council, according to the provisions of the Pharmacy Act, 1852, and the Pharmacy Act, 1868.

2. A copy of the Bye-laws shall be given to every Member, Associate, and Student of the Society on his election, and shall at any time be delivered to any Member, Associate, or Student of the Society, on his applying for the same and paying one shilling.

SECTION V.

ELECTION OF COUNCIL AND AUDITORS.

1. Two-thirds of the Members of Council shall go out of office in every year according to the provisions of the Charter: seven of them shall consist of those Members who remained in the Council after the lot was taken in the last preceding year, or their successors; the other seven shall be taken by lot from the remaining fourteen Members.

2. The retiring Members of the Council shall be ascertained and determined at the monthly meeting held in February of every year, and their names shall be published on or before the 10th day of March in every year.

3. Any person qualified to vote desirous of nominating any Member for election as a Member of the Council or as an Auditor, shall on or before the 24th day of March in every year give notice in writing to the Secretary of the Society, with the name and address of the nominee, and if for the Council disclosing whether such nominee be or not a Pharmaceutical Chemist. The Secretary shall on or before the 26th day of March then instant address and send by post to each nominee a notice of his having been so nominated, and inquiring whether he will accept office if elected, and in default of a written reply from such nominee being received on or before the 31st day of March then instant, declaring his readiness to accept office if elected, such nominee shall not be deemed eligible or willing to be elected.

4. The Council shall at their monthly meeting, held in April of every year, prepare a list of all persons nominated for election and eligible and willing to be elected Members of the Council and Auditors for the ensuing year, and disclosing the qualifications of nominees for the Council; and in default of the nomination of a sufficient number of persons eligible and willing to accept office, the Council shall nominate as many as may be required to form a complete list of eligible and willing persons to fill all the vacancies in the Council, and a complete list of five Auditors. No nominations shall be received or made after the 24th day of March, except such as may be made by the Council, in the manner and under the circumstances aforesaid, at the monthly meeting in April.

5. The Secretary shall send by post to every person qualified to vote, not less than ten days prior to the meeting at which members of the Council and Auditors, or either of them, are to be elected, a Voting Paper for such elections. The names and residences of the Members eligible and willing for election, and whether they are or not on the Register of Pharmaceutical Chemists, shall appear in such Voting Papers, and in all Voting Papers for the election of Members of the Council, the names of the Members who remain in office, and whether they are or not on the Register of Pharmaceutical Chemists shall also appear.

6. At all elections of Members of the Council and Auditors, votes may be given by ballot, either by personal delivery of the said Voting Papers at the time of election, or by the said Voting Papers being transmitted under cover to the Secretary, so that the same shall be received by him not less than one clear day prior to the day on which the election is to take place, and the Voting Papers shall be in the following form:—

Voting Paper to be delivered personally on the day of election, May 18, or transmitted under cover to the Secretary, so that it shall be received by him not less than one clear day prior to the day on which the election is to take place. An envelope duly addressed accompanies this.

Proposed Bye-Laws.

1. A form for any proposed Bye-law or Regulation, or for altering, or abrogating any Bye-law or Regulation, being delivered at a Council meeting by a Member of the Council to the Chairman, shall thereupon be read, and if seconded and approved, shall be referred to two subsequent ordinary or special Meetings of the Council for confirmation, and then to a special General Meeting of the Members of the Society, and afterwards to the Privy Council, according to the provisions of the Statute, 1852, and the Act, 1868.

2. A copy of the Bye-laws shall be given free to every Member and Student-Associate on his election, and shall at any time afterwards be delivered to any Member or Student-Associate on his applying for the same and paying one shilling.

SECTION V.

ELECTION OF COUNCIL AND AUDITORS.

1. Seven Members of the Council shall go out of office in every year, and the vacancies shall be filled by election, the retiring Members not being ineligible for re-election if duly nominated for that purpose. The seven Members who so go out shall be the Members of the Council who have been longest in office without re-election, and if and whenever the number of the Members of the Council who have been longest in office without re-election shall exceed seven, the Members of the Council to retire shall be determined from these by lot.

2. The retiring Members of the Council shall be ascertained and determined at the monthly meeting held in February of every year.

3. Any Member qualified to vote desirous of nominating any other Member for election as a Member of the Council or as an Auditor, shall on or before the 18th day of March in every year, give a notice signed by him to the Secretary, with the name and address of the nominee. The Secretary shall on or before the 20th day of March then instant address and send by post to each nominee a notice of his having been nominated, and inquiring whether he will accept office if elected, and in default of a written reply from such nominee being received on or before the 31st day of March then instant, declaring his readiness to accept office if elected, such nominee shall not be deemed eligible or willing to be elected.

4. The Council shall at its monthly meeting, held in April of every year, prepare a list of all Members nominated for election and willing to be elected Members of the Council and Auditors for the ensuing year; and in default of the nomination of a sufficient number of Members willing to accept office, the Council shall nominate as many as may be required to form a complete list of Members willing to fill all the vacancies in the Council, and a complete list of five Auditors. No nominations shall be received or made after the 18th day of March, except such as may be made by the Council, in the manner and under the circumstances aforesaid, at the monthly meeting in April.

5. The Secretary shall send by post to every Member qualified to vote, not less than ten days prior to the meeting at which Members of the Council and Auditors are to be elected, a Voting Paper for such elections. The names and addresses of the Members willing to serve if elected shall appear in such Voting Papers.

6. At all elections of Members of the Council and Auditors, votes shall be given by ballot, either by personal delivery of the said Voting Papers at the time of election, or by the said Voting Papers being transmitted, under cover, by the Member, to the Secretary, so that the same shall be received by him not later than twelve o'clock noon on the day on which the election is to take place, and the Voting Papers shall be as near as conveniently may be in the following form:—

Present Bye-Laws.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

17, BLOOMSBURY SQUARE, W.C.

For the Election of Fourteen Members of the Council.

NAMES OF MEMBERS ELIGIBLE AND WILLING FOR ELECTION.

1*	.....	11	.....
2	P.C.	12	.....
3	.....	13	.....
4*	P.C.	14	.....
5	.....	15	.....
6	.....	16	.....
7	.....	17	.....
8	.....	18	.....
9	.....	19	.....
10	.....	20	.....

The names to which Stars are prefixed are those of Members of the present Council who are eligible for re-election.

The names to which the letters P.C. are prefixed are those of Pharmaceutical Chemists.

The names to which the letters P.C. are not prefixed are those of persons who are not on the Register of Pharmaceutical Chemists.

INSTRUCTIONS FOR VOTING.

Every person voting must erase the names of all the Candidates for whom he does not intend to vote. If more than fourteen names be left, the Voting Paper will be rejected. Section 19 of the Act, 1868, is printed below.

The Voting Paper, after the erasure of names, should be folded up, and must be transmitted under cover to the Secretary, so that the same shall be received by him not less than one clear day prior to the day on which the election is to take place, or delivered by the voter personally at the time of election.

To prevent imposition, the person voting must sign his name and address on the line on the outside of the cover.

The following are the members who remain on the Council :—

- P.C.
-
- P.C.
- P.C.
-
- P.C.

The names to which the letters P.C. are prefixed are those who are Pharmaceutical Chemists.

Section 19 of the Act, 1868, is as follows :—

Every person who is or has been in business on his own account as a Chemist and Druggist, as aforesaid, at the time of the passing of this Act, and who shall become a Member of the Pharmaceutical Society, shall be eligible for election to the Council of the Pharmaceutical Society, but the said Council shall not at any time contain more than seven Members who are not on the Register of Pharmaceutical Chemists.

— is the utmost number of Members not Pharmaceutical Chemists who can be elected on the Council on the present occasion.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

17, BLOOMSBURY SQUARE.

Voting Paper, May 18, , for the Election of Five Auditors.

CANDIDATES.

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....
- 6.....
- 7.....

INSTRUCTIONS FOR VOTING.

Every person voting must erase the names of all the Candidates for whom he does not intend to vote. If more than five names be left, the Voting Paper will be rejected.

The Voting Paper, after the erasure of names, should be folded up, and must be transmitted to the Secretary, so that the same shall be received by him not less than one clear day prior to the day on which the election is to take place, or delivered by the voter personally at the time of election.

Proposed Bye-Laws.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN,

BLOOMSBURY SQUARE, LONDON.

VOTING PAPER

For the election of Seven Members of the Council.

1*	.....	6	.....
2	.....	7	.....
3	.....	8	.....
4*	.....	9	.....
5	.....	10	.....

* The names to which Stars are prefixed are those of retiring Members of the present Council.

INSTRUCTIONS FOR VOTING.

Every Member voting must erase the names of all the Members for whom he does not intend to vote. If more than seven names be left, the Voting Paper will be void.

The Voting Paper must be transmitted, under cover, by the Member, to the Secretary, so that the same shall be received by him not later than twelve o'clock noon on the day on which the election is to take place, or delivered by the Member personally at the time of election.

The Member voting under cover must write his name and address on the outside of the cover, or the Voting Paper will be void.

The following are the members who remain on the Council :—

-
-
-
-
-
-

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN,

BLOOMSBURY SQUARE, LONDON.

VOTING PAPER.

For the election of Five Auditors.

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....
- 6.....
- 7.....

INSTRUCTIONS FOR VOTING.

Every Member voting must erase the names of all the Members for whom he does not intend to vote. If more than five names be left, the Voting Paper will be void.

The Voting Paper must be transmitted, under cover, by the Member, to the Secretary, so that the same shall be received by him not later than twelve o'clock noon on the day on which the election is to take place, or delivered by the Member personally at the time of election.

Present Bye-Laws.

To prevent imposition, the voter must sign his name and address on the outside of the cover.

Form of Address, etc., on Envelope.

VOTING PAPER.

Voter's Signature.....
 Voter's Address.....

To the Secretary of the Pharmaceutical Society, 17, Bloomsbury Square, London, W.C.

The Voting Paper must be returned to the Secretary, so that the same may be received by him on or before the day of May, 18 , or be delivered personally at the time of election.

7. Before the votes are taken, the persons constituting the meeting shall appoint from amongst themselves four or more Scrutineers, of whom four shall form a quorum.

8. The Voting Papers to be delivered personally shall be received at the General Meeting, and the Voting Papers duly transmitted under cover to the Secretary shall be opened by or in the presence of the Scrutineers.

9. The Scrutineers shall ascertain the number of votes given for each Member nominated for election.

10. It being provided by Section 19 of the Act, 1868, that the Council shall not at any time contain more than seven Members who are not on the Register of Pharmaceutical Chemists, the Scrutineers shall, after the voting on any election of Members of the Council, certify to the Chairman of the Meeting whether or not the number of Members not on the Register of Pharmaceutical Chemists nominated for election is more than seven, or more than may with any like Members remaining on the Council make up the number of seven ; and if they shall certify that the number of Members not on the Register of Pharmaceutical Chemists nominated for election is more than seven, or more than may as aforesaid make up the number of seven, then they shall further likewise certify the number of votes given in favour of each of such Members so nominated, and which of such Members so nominated, to the number of seven or the lesser number, sufficient to make up as aforesaid the number of seven, have a majority of votes over the remainder of such Members, and that such of the said Members, as have not the said majority are in a minority of their class.

11. The Scrutineers shall make to the Chairman a return, signed by them, of the names of the Members nominated for election, but in the case of an election of Members of the Council, such return shall be exclusive of the names of such, if any, Members not being Pharmaceutical Chemists as may be certified to be in a minority of their class, and the said return shall disclose the number of votes given for each Member named therein.

12. The Chairman of the Meeting shall declare the result of every election ; and, in cases where there shall have been a poll, shall declare the election to have fallen on the Members who, according to the return of the Scrutineers contemplated by the last-preceding Bye-law, shall appear to have a majority, and in the case of an equality of votes, the Chairman of the Meeting shall have a second or casting vote.

13. The Chairman, at any Meeting for the election of Members of the Council or Auditors, shall have the power of adjourning such Meeting from time to time, with a view to the reception of the Report of the Scrutineers, but no such adjournment shall extend beyond a period of four days.

SECTION VI.
COUNCIL.

1. The Council shall meet at the Society's house on or about the first Wednesday in every month at eleven o'clock in the forenoon, or at such other hour as may from time to time be decided by the Council. Seven Members shall constitute a quorum, and without that number being present no business shall be transacted.

Before other business is entered on, the minutes of the preceding monthly and of any subsequent meetings or meetings shall be read.

2. All motions or proposals shall be written, together with the names of the mover and seconder, and upon being put shall be decided by a show of hands, except in cases of a ballot, which

Proposed Bye-Laws.

The Member voting under cover must write his name and address on the outside of the cover or the voting paper will be void.

Form of Address, etc., on Cover.

VOTING PAPER.

Member's Signature.....
 Member's Address

To the Secretary of the Pharmaceutical Society, Bloomsbury Square, London, W.C.

The Voting Paper must be returned to the Secretary, so that the same may be received by him not later than twelve o'clock noon on the day of May, 18 , or be delivered by the Member personally at the time of election.

7. Before the votes are examined, the Members constituting the meeting shall appoint from amongst themselves four or more Scrutineers, of whom four shall form a quorum.

8. No alteration.

9. The Scrutineers shall ascertain the number of votes given for each Member nominated for election, and shall make to the Chairman a return, signed by them, or four of them, of the names of the Members nominated for election, and the said return shall disclose the number of votes given for each Member named therein.

To be repealed.

Incorporated with Clause 9.

10. No alteration.

11 No. alteration.

SECTION VI.
COUNCIL.

1. The Council shall meet at the Society's house on or about the first Wednesday in every month at eleven o'clock in the forenoon, or at such other day or hour as may from time to time be decided by the Council. Seven Members shall constitute a quorum, and without that number being present no business shall be transacted. Before other business is entered on, the minutes of the preceding monthly and of any subsequent meeting shall be read.

2. All motions or proposals shall be signed by the mover and the seconder, and upon being put shall be decided by a show of hands, except in cases of a ballot, which may be demanded by any Member.

Present Bye-Laws.

may be demanded by any Member. Should the numbers be equal, the Chairman shall have a second or casting vote. It shall be lawful for the Chairman to postpone or adjourn to the next meeting any motion whereof notice in writing has not been given to the Secretary at least six clear days before the meeting.

3. All resolutions carried at the Meetings of the Council, except such as relate to the Bye-laws, shall be acted upon without confirmation.

4. The Council may from time to time in their discretion appoint such Committees as shall appear to them expedient, and shall elect from among themselves a Committee of General Purposes, a Committee of Finance, and a Committee for the Library, Museum, School and House, and may from time to time modify or dissolve any Committee. The President and Vice-President shall be *ex officio* Members of all Committees, and the President shall preside at all Meetings of the Council and of Committees, or in his absence the Vice-President. If the President and Vice-President are both absent, a Chairman shall be chosen by the Members present.

SECTION VII.

COMMITTEE FOR GENERAL PURPOSES.

1. This Committee shall consist of not less than twelve Members, four of whom shall constitute a quorum. The Committee shall meet as often as may be required, and its proceedings shall be reported to the Council.

SECTION VIII.

COMMITTEE OF FINANCE.

1. This Committee shall consist of not less than four Members, two of whom shall constitute a quorum. The Committee shall meet as often as may be required.

2. It shall be the duty of this Committee to regulate and examine the accounts, to check the receipt of all moneys, to examine all bills, and to present at the monthly meetings of the Council such as shall have been approved for payment, with the signature of a quorum attached. This Committee shall also prepare a Financial Statement for the Auditors previous to the annual meeting.

SECTION IX.

THE COMMITTEE FOR THE LIBRARY, MUSEUM, SCHOOL AND HOUSE.

1. This Committee shall consist of not less than five Members, three of whom shall constitute a quorum. The Committee shall meet as often as may be required, and report from time to time to the Council.

2. It shall be the duty of this Committee to superintend the School and the House, the arrangement and preservation of the books, specimens, and apparatus, to inspect the Laboratory, and to make regulations for the admission of visitors and students to the Library and Museum.

SECTION X.

EXAMINERS—EXAMINATIONS—FEES.

1. The Council shall, at their meeting, in December, in every year, appoint such competent persons as they shall think fit, to be Examiners for the year to commence on the then following first day of January, to conduct all such examinations as are provided for or contemplated by the Charter, or by the Statute, 1852, or by the Act, 1868, and the persons so appointed shall, for the time being, constitute and be called the Board of Examiners for England and Wales.

2. The Council shall, at their meeting, in December, in every year, appoint such competent persons in Scotland as they shall think fit to be Examiners for the year to commence on the then following first day of January, to conduct all such examinations as are provided for or contemplated by the Charter, or by the Statute, 1852, or by the Act, 1868, and the persons so appointed shall, for the time being, constitute and be called the Board of Examiners for Scotland.

3. The President and Vice-President of the Society shall, *ex officio*, be members of the Boards of Examiners, and either of them present at any meeting of either such Boards shall preside thereat.

4. The Council shall not appoint any person who has attained the age of sixty-five years at the time of the appointment to be an Examiner.

Proposed Bye-Laws.

Should the numbers be equal, the Chairman shall have a second or casting vote. It shall be lawful for the Chairman to postpone or adjourn to the next ordinary meeting of the Council any motion whereof notice signed as aforesaid has not been given to the Secretary at least six clear days before the meeting.

3. All resolutions carried at the Meetings of the Council, except such as relate to the making, altering, or abrogating of Bye-laws, shall be acted upon without confirmation.

4. No alteration.

SECTION VII.

COMMITTEE FOR GENERAL PURPOSES.

No alteration.

SECTION VIII.

COMMITTEE FOR FINANCE.

No alteration.

SECTION IX.

THE COMMITTEE FOR THE LIBRARY, MUSEUM, SCHOOL AND HOUSE.

1. This Committee shall consist of not less than five Members, three of whom shall constitute a quorum. The Committee shall meet as often as may be required, and its proceedings shall be reported to the Council.

2. It shall be the duty of this Committee to superintend the School and the House, the arrangement and preservation of the books, specimens and apparatus, to inspect the Laboratory, and to make regulations for admission to the Library and Museum.

SECTION X.

EXAMINERS—EXAMINATIONS—FEES.

1. The Council shall, at its meeting, in November, in every year, appoint such competent persons as it shall think fit, to be Examiners for the year to commence on the then following first day of January, to conduct all such examinations as are provided for or contemplated by the Charter, or by the Statute, 1852, or by the Act, 1868, and the persons so appointed shall, for the time being, constitute and be called the Board of Examiners for England and Wales.

2. The Council shall, at its meeting, in November, in every year, appoint such competent persons in Scotland as it shall think fit to be Examiners for the year to commence on the then following first day of January, to conduct all such examinations as are provided for or contemplated by the Charter, or by the Statute, 1852, or by the Act, 1868, and the persons so appointed shall, for the time being, constitute and be called the Board of Examiners for Scotland.

3. The President and Vice-President shall, *ex officio*, be members of the Boards of Examiners, and either of them present at any meeting of either of such Boards shall preside thereat.

4. No alteration.

Present Bye-Laws.

5. No person shall be appointed an Examiner who at the time of appointment is, or who during one year prior to the time of appointment has been, a Member of the Council; and the election of any Examiner to be a Member of the Council shall vacate his appointment as an Examiner.

6. The Board of Examiners for England and Wales shall consist of not more than fourteen nor less than eight persons, exclusive of the President and Vice-President of the Society; eight to constitute a quorum. The Board of Examiners for Scotland shall consist of not more than eight nor less than four persons, exclusive of the President and Vice-President of the Society; four to constitute a quorum.

7. The Council shall from time to time supply any vacancy in the office of Examiner, and may remove any member of the Boards of Examiners, and substitute another person in his place, and may also from time to time appoint a Special Examiner or Special Examiners, to conduct any examination or part of an examination, or to assist the Boards of Examiners.

8. The Secretary shall from time to time submit to the Privy Council for approval, in accordance with the Pharmacy Act, 1868, all appointments of Examiners made by the Council, and shall also give notice to the officer appointed by the Privy Council of all examinations to be held for the purposes of the Act, 1868, stating the times and places at which such examinations will be held, at least three days *prior* to the holding of the same.

9. The Board of Examiners for England and Wales and the Board of Examiners for Scotland shall meet as often as may be required for the purpose of conducting examinations at such times as the Council from time to time shall direct; and shall report the result of every examination to the Council at the monthly meeting immediately following the same.

10. The Boards of Examiners shall conduct all examinations according to the Bye-laws in force in that behalf, and according to such regulations as shall be made or adopted by them from time to time, and as shall have been approved by the Council. Such regulations shall from time to time be inserted in the published Report of the Transactions of the Society.

11. Prior to September, 1900, persons desiring certificates of competent skill and qualification to be registered as Chemists and Druggists under the Act, 1868, shall be examined in their knowledge of the Latin language, in English Grammar and Composition, and Arithmetic, which Examination shall be called the First Examination. Persons intending to present themselves for this Examination shall give to the Registrar notice in that behalf and pay to him a fee of Two Guineas not less than 14 days prior to the day which has been appointed for the holding of the said Examination. All persons who pass the said Examination shall be registered as "Apprentices or Students."

After August, 1900, persons desiring certificates of competent skill and qualification to be registered as Chemists and Druggists under the Act, 1868, shall deliver to the Registrar on behalf of the Board of Examiners a certificate of having passed an Examination in English Grammar and Composition, in the Latin language, and in one Modern Foreign language, and also in Algebra, Arithmetic, and Euclid, conducted by any or either of the examining bodies which shall have been previously approved for the purpose by such regulations as are specified by the last preceding Bye-law, and shall pay to him a fee of Two Guineas, whereupon, if the Board of Examiners shall so see fit, they shall be registered as "Apprentices or Students."

12. Persons intending to present themselves to the Examiners for examination in accordance with the Charter and Statute, 1852, or the Act, 1868, and having been registered as "Apprentices or Students," shall be examined in the translation and dispensing of Prescriptions, in Botany, in *Materia Medica*, in Pharmaceutical and General Chemistry, Physics, and Posology, and in their knowledge of the Law relating to the Sale of Poisons, which Examination shall be called the Minor Examination.

13. Persons desiring certificates of competent skill and qualification to exercise the business, or calling, of Pharmaceutical Chemists shall produce to the Registrar evidence of having been previously registered as Chemists and Druggists, and shall be examined in more extended knowledge of Botany, *Materia Medica*, Chemistry, and Physics, or any two of them, which examination shall be called the Major Examination.

Proposed Bye-Laws.

5. No alteration.

6. The Board of Examiners for England and Wales shall consist of not more than fourteen nor less than eight persons, exclusive of the President and Vice-President; six to constitute a quorum. The Board of Examiners for Scotland shall consist of not more than eight nor less than four persons, exclusive of the President and Vice-President; four to constitute a quorum.

7. No alteration.

8. The Secretary shall from time to time submit to the Privy Council for approval, in accordance with the Act, 1868, all appointments of Examiners made by the Council, and shall also give notice to the officer appointed by the Privy Council of all examinations to be held for the purposes of the Act, 1868, stating the times and places at which such examinations will be held, at least three days *prior* to the holding of the same.

9. No alteration.

10. The Boards of Examiners shall conduct all examinations according to the Bye-laws in force in that behalf, and according to such regulations as shall be made or adopted by them from time to time, and as shall have been approved by the Council. Such regulations shall from time to time be inserted in the *Pharmaceutical Journal*.

11. No alteration.

12. Persons presenting themselves to the Examiners for examination in accordance with the Charter and Statute, 1852, or the Act, 1868, and having been registered as "Apprentices or Students," shall be examined in the translation and dispensing of Prescriptions, in Botany, in *Materia Medica*, in Pharmaceutical and General Chemistry, Physics, and Posology, and in their knowledge of the Law relating to the Sale of Poisons, which Examination shall be called the Minor Examination.

13. No alteration.

Present Bye-Laws.

14. Persons who shall tender themselves to the Examiners for Examination under the provisions of the Act, 1868, excepting only those specified in the next following Bye-law, shall be examined in the Minor Examination.

15. Persons entitled to be registered as Chemists and Druggists on passing a modified Examination, who shall tender themselves to the Examiners for Examination under the provisions of the Act, 1868, shall be required to pass the Modified Examination, which the Council of the Pharmaceutical Society, with the consent of the Privy Council, have declared to be in their case sufficient evidence of skill and competency to conduct the business of a Chemist and Druggist, as the same is set out in the Schedule hereto, or such other modified Examination as may in like manner be declared such sufficient evidence.

16. The Examiners may grant or refuse to such persons as have tendered themselves for the Minor Examination and the Major Examination respectively, Certificates of Competent skill and knowledge and qualification; and lists of such persons shall be delivered by the Examiners to the Registrar.

17. All persons desiring registration as Chemists and Druggists shall in respect of an examination, to take place prior to September, 1900, pay a fee of Five Guineas, and shall in respect of an examination, to take place after August, 1900, pay a fee of Ten Guineas, and shall in either case pass the Minor Examination or the Modified Examination, whereupon they shall be registered accordingly.

18. Persons desiring registration as Pharmaceutical Chemists under the Statute, 1852, shall pay a fee of Three Guineas and pass the Major Examination, whereupon they shall be registered accordingly.

19. Persons intending to present themselves for examination in the Major, the Minor, or the Modified Examination shall give to the Registrar notice in writing of their intention in that behalf on or before the fifteenth day of the month immediately preceding that in which the Examination is to take place.

20. All notices of intention to attend for examination shall be to attend on the next occasion of the Examination being held, and all fees in respect of examination and registration shall be payable on the giving of notice of intention to attend for examination, and in no case shall any fee paid in accordance with the Bye-laws be remitted or returned.

21. All persons shall, at the time of giving notice of intention to present themselves for the Minor Examination, satisfy the Registrar that they have attained the full age of twenty-one years, and have been registered as "Apprentices or Students," and that they have for three years been practically engaged in the translation and dispensing of prescriptions.

22. Persons who have attended and failed to pass an examination shall not be entitled to attend on any future occasion unless and until they shall have given renewed notice of intention to attend an examination, and shall have paid fees as follows:—

(a) *In respect of a Major Examination, Two Guineas.*

(b) *In respect of a Minor Examination, or a Modified Examination, Three Guineas.*

(c) *In respect of a First Examination, One Guinea.*

23. Persons who have given notice of intention to attend an examination and have failed duly to attend at the time appointed for the same, shall not be entitled to attend on a future occasion unless and until they have given renewed notice of intention to attend an examination, and shall in each case have paid a fee of One Guinea,—or if the persons shall have proved to the satisfaction of the Council or the Board of Examiners (by production of medical certificates or otherwise) that the said failure was occasioned by unavoidable and proper causes,—One Shilling.

SECTION XI.

REGISTRAR AND REGISTRATIONS.

1. The Registrar shall receive and, for at least five years, preserve the lists issued by the Examiners, signifying that examinations, or parts of examinations, have been passed.

2. The Registrar shall from time to time make out and maintain a Register of all persons being respectively Members, Associates, and Apprentices or Students of the Society, also a Register of all persons entitled to be registered under the Statute, 1852, and also a Register in accordance with the provisions of the Act, 1868, of all persons who shall be entitled to be registered under that Act, with proper indices of such Registers respectively.

Proposed Bye-Laws.

14. No alteration.

15. Persons entitled to be registered as Chemists and Druggists on passing a modified Examination, who shall tender themselves to the Examiners for Examination under the provisions of the Act, 1868, shall be required to pass the Modified Examination, which the Council, with the consent of the Privy Council, have declared to be in their case sufficient evidence of skill and competency to conduct the business of a Chemist and Druggist, as the same is set out in the Schedule hereto, or such other modified Examination as may in like manner be declared such sufficient evidence.

16. No alteration

17. No alteration.

18. No alteration.

19. No alteration.

20. No alteration.

21. No alteration.

22. No alteration.

23. No alteration.

SECTION XI.

REGISTRAR AND REGISTRATIONS.

1. No alteration.

2. The Registrar shall from time to time make out and maintain Registers of all persons being respectively Members or Student-Associates of the Society, also a Register of all persons entitled to be registered under the Statute, 1852, and also a Register in accordance with the provisions of the Act, 1868, of all persons who shall be entitled to be registered under that Act, with proper indices of such Registers respectively.

Present Bye-Laws

3. The names of persons registered as Students of the Society, shall, upon their Registration as Pharmaceutical Chemists, Associates, or Chemists and Druggists, be removed from the Register of Students of the Society.

4. The names of persons registered as Associates shall upon their registration as Pharmaceutical Chemists, be removed from the Register of Associates.

5. Persons who have not been examined under the said Statute, 1852, who have been registered as Pharmaceutical Chemists by reason of their election as Members of the Society, and who have not paid life subscriptions, shall pay the annual subscription required from Members; and the names of all such Members as last mentioned who fail to pay their annual subscription before the first day of May in any year shall be omitted from the Register of Pharmaceutical Chemists.

6. The Registrar shall comply with such Orders or Regulations for regulating the Register to be kept under the Act, 1868, as may from time to time be made by the Council.

7. All the said Registers shall be revised annually and laid before the Annual General Meeting of the Society.

8. The Registrar shall, in the month of January in every year, at the expense and for the profit (if any) of the Society, cause to be printed and published, and sold, a correct Register, as required by the Act, 1868, and in so doing shall comply with such rules and regulations as may from time to time be in that behalf made by the Council.

SECTION XII.

TREASURER.

1. It shall be the duty of the Treasurer to take charge of all moneys, to pay such accounts as the Council may order by the signature of six Members of the Council in Council assembled, and to render his account at each monthly meeting.

SECTION XIII.

SECRETARY.

1. The Secretary shall have authority over the clerks and servants of the establishment, whose wages he shall pay. He shall be in attendance at his office during the hours to be from time to time specified by the Council, and be present at meetings of the Council and Committees, General and Special Meetings, and also at the Evening Meetings. It shall be his duty to superintend the affairs of the Society under the direction of the Council and Committees. He shall keep the books of the Society in a neat and orderly manner, shall conduct the correspondence, and issue all summonses, take the minutes of all Meetings for business, and read them, and make a report of all matters that come under his cognisance for the information of the Council and Committees. He shall consult and act on the instructions of the President or Vice-President on any business requiring attention, between the various meetings, and be responsible for the safe custody of all the documents and property belonging to the Society which shall be under his control. He shall find security in the sum of £500, and shall receive all subscriptions, fees and donations, and give a printed receipt for the same, and no other, checking each receipt. He shall promptly pay to the account of the Treasurer at the Society's bankers the amount of moneys so received by him. He shall receive such a sum in advance for current expenses as the Council may order, and account for the same to the Committee for Finance. He shall also superintend the transmission of the Journal and Transactions.

SECTION XIV.

AUDITORS.

1. The Auditors shall meet at least one month previous to the Annual Meeting. It shall be their duty to inspect the Accounts of the Society, and the Financial Statement prepared for them by the Committee for Finance, which must be certified and signed by the Auditors present at the Audit, and presented to the Council not later than at their ordinary meeting in May.

SECTION XV.

SUMMONSES.

FOR ALL MEETINGS OF THE COUNCIL, EXAMINERS, COMMITTEES, OR AUDITORS.

1. Printed summonses shall be issued by the Secretary, with his name attached, and if left at the place of business, or transmitted

Proposed Bye-Laws.

3. The names of persons registered as Student-Associates shall, upon their Registration as Chemists and Druggists, be removed from the Register of Student-Associates.

To be repealed.

4. No alteration.

5. No alteration.

6. No alteration.

7. No alteration.

SECTION XII.

TREASURER.

No alteration.

SECTION XIII.

SECRETARY.

1. The Secretary shall have authority over the clerks and servants of the establishment, whose wages he shall pay. He shall be in attendance at his office during the hours to be from time to time specified by the Council, and be present at meetings of the Council and Committees, General and Special Meetings, and also at the Evening Meetings. It shall be his duty to superintend the affairs of the Society under the direction of the Council and Committees. He shall keep the books of the Society in a neat and orderly manner, shall conduct the correspondence, and issue all summonses, notices and advertisements, take the minutes of all Meetings for business, and read them, and make a report of all matters that come under his cognisance for the information of the Council and Committees. He shall consult and act on the instructions of the President or Vice-President on any business requiring attention, between the various meetings, and be responsible for the safe custody of all the documents and property belonging to the Society which shall be under his control. He shall find security in the sum of £500, and shall receive all subscriptions, fees and donations, and give a printed receipt for the same, and no other, checking each receipt. He shall promptly pay to the account of the Treasurer at the Society's bankers the amount of moneys so received by him. He shall receive such a sum in advance for current expenses as the Council may order, and account for the same to the Committee for Finance. He shall also superintend the transmission of the *Pharmaceutical Journal*.

SECTION XIV.

AUDITORS.

1. The Auditors shall meet at least one month previous to the Annual General Meeting. It shall be their duty to inspect the Accounts of the Society, and the Financial Statement prepared for them by the Committee for Finance, which must be certified and signed by the Auditors present at the Audit, and presented to the Council not later than at its ordinary meeting in May.

SECTION XV.

SUMMONSES FOR MEETINGS.

1. All Summonses, Notices, or Advertisements shall be issued by the Secretary, and Summonses if left at the place of business, or residence, or transmitted by post, addressed to the place of

Present Bye-Laws.

Proposed Bye-Laws.

by post, addressed to the place of business or residence of the person summoned, shall be considered as received.

2. All summonses shall be issued at least three clear days previous to the Meetings, inclusive of the day of issuing the same, except in the case of Special Meetings; and all notices of motion shall be inserted therein, and also notice of such matters as require particular consideration.

3. The Secretary shall issue summonses, notices, or advertisements convening all Special Council or General Meetings. If for the latter, not less than ten clear days' previous notice shall be given; and such summonses, notices, or advertisements shall contain full notice of the business to be discussed at the Special Meeting.

SECTION XVI.

FILLING UP VACANCIES BY DEATH, RESIGNATION OR REMOVAL.

1. In the event of any vacancy occurring in the office of President, Vice-President, or Treasurer, the Secretary shall report the same, and the cause thereof, in the summons for the next meeting of the Council, who shall thereupon find and declare such vacancy, and immediately proceed to elect from their remaining number a proper person to fill such vacant office.

2. In the event of any vacancy occurring in the Council or Auditors, or in the several Committees, during the current year, the Secretary shall report such vacancy and the cause thereof, in the summons for the next meeting of the Council, at which some Member of the Council, or of the Society, as the case may require, shall be appointed to fill up such vacancy.

3. In the event of a vacancy occurring in the office of Registrar or Secretary, the President or Vice-President shall appoint some person, *pro tempore*, to fulfil the duty of the office, and in the summons for the next meeting of the Council the vacancy shall be declared; and some person or persons being proposed and seconded at such meeting the election shall take place, but shall not be final, unless confirmed at the next meeting of the Council.

SECTION XVII.

REMOVAL OF OFFICERS AND MEMBERS.

1. Every Member of Council who shall commit any act or acts which appear to the Council derogatory to the honour of his office, shall give an explanation of the same to the Council, on being required to do so; and in default thereof, or if such explanation be unsatisfactory to the Members present, he shall be liable to the censure of the Council; or if it be deemed expedient, a notice may be given by any Member of the Council for a motion of removal from the Society of the Member so offending, which notice shall be inserted in the summons for the ensuing meetings of the Council until disposed of, and shall be taken into consideration at the first ensuing meeting of the Council at which not less than twelve Members thereof shall be present.

2. If any report be made to the Council by a Member of the Society in writing, with his name attached, that another Member or any Associate has been guilty of any act or conduct which is contrary to, or subversive of, the interests of the Society, or a violation of its laws and regulations, and if the Council be of opinion that the alleged act or conduct is of such character, the Secretary shall write to the Member or Associate so accused for an explanation, and in default of explanation, or if the same be unsatisfactory, two Members of the Council shall be deputed to communicate, personally or by letter, with such Member or Associate, and shall report the result to the Council, when any Member of the Council shall, if he think it expedient, give notice of a motion for the removal of such Member or Associate from the Society. This notice must be inserted in the summons for the ensuing meetings of the Council until disposed of: and be taken into consideration at the first meeting thereof at which twelve members are present.

3. Any Member or Associate, Apprentice or Student, desiring to retire from the Society, shall send notice thereof to the Secretary in writing, together with the certificate or diploma of membership, if any, held by him. No Member or Associate shall be released from his obligation to pay his annual subscription until such time as the certificate or diploma of membership, if any, shall have been returned.

business or residence of the person summoned, shall be considered as received.

2. Summonses, Notices, or Advertisements convening Special General Meetings shall be given not less than ten clear days before the day thereby appointed for the Meeting. All other Summonses, Notices, or Advertisements shall be given not less than three clear days before the day thereby appointed for the Meeting, and in all the said cases there shall appear notice of the general nature of the business to be discussed at the Meeting.

3. Incorporated in Clause 2.

SECTION XVI.

FILLING UP VACANCIES BY DEATH, RESIGNATION OR REMOVAL.

1. In the event of any vacancy occurring in the office of President, Vice-President, or Treasurer, the Secretary shall report the same, and the cause thereof, in the summons for the next meeting of the Council, which meeting shall thereupon find and declare such vacancy, and immediately proceed to elect one of its number to fill such vacant office.

2. In the event of any casual vacancy occurring in the Council or in the Auditors, or in the several Committees, the Secretary shall report the vacancy in the summons for the next meeting of the Council, and at such meeting some member of the Council, or of the Society, as the case may require, shall be appointed to fill the vacancy, but any person so appointed shall retain his office so long only as the member causing the vacancy would have held the same if the vacancy had not occurred.

3. No alteration.

SECTION XVII.

REMOVAL OF OFFICERS AND MEMBERS.

1. No alteration.

2. If any report be made to the Council by a Member of the Society in writing, with his name attached, that another Member or a Student-Associate has been guilty of any act or conduct which is contrary to, or subversive of, the interests of the Society, or a violation of its laws and regulations, and if the Council be of opinion that the alleged act or conduct is of such character, the Secretary shall write to the Member or Student-Associate so accused for an explanation, and in default of explanation, or if the same be unsatisfactory, two Members of the Council shall be deputed to communicate, personally or by letter, with such Member or Student-Associate, and shall report the result to the Council, when any Member of the Council shall, if he think it expedient, give notice of a motion for the removal of such Member or Student-Associate from the Society. This notice must be inserted in the summons for the ensuing meetings of the Council until disposed of: and be taken into consideration at the first meeting thereof at which twelve Members are present.

3. Any Member or Student-Associate desiring to retire from the Society shall send notice thereof to the Secretary in writing, together with the Certificate of Membership, if any, held by him. No member shall be released from his obligation to pay his annual subscription until such time as the Certificate of Membership, if any, shall have been returned.

Present Bye-Laws.

SECTION XVIII.

FUNDS AND PROPERTY.

1. The Council of the Society shall from time to time cause such parts of the funds in the hands of the Treasurer as may not, in their judgment, be required for carrying on the business of the Society, to be invested in Government or real securities in the corporate name of the Society.

2. The property and funds of the Society, other than moneys from time to time in the hands of the Treasurer or Secretary, shall not be disposed of, or otherwise dealt with, except in pursuance of an order of the Council of the Society, signed by six members, at the least, in Council assembled.

SECTION XIX.

BENEVOLENT FUND.

1. The Benevolent Fund shall consist of donations and subscriptions, and such grants as may from time to time be made by the Council from the General Fund towards the particular objects of such Fund, in addition to the sum already invested in respect of the same Fund.

2. Donations* in aid of the Benevolent Fund shall be invested in Government or real securities; and no part of the invested capital of such Fund shall be distributed among the recipients of relief.

3. The interest accruing from the invested portion of the Benevolent Fund, together with annual subscriptions and grants made from the General Fund in aid thereof, shall be applicable, in the discretion of the Council, towards the relief of persons eligible to receive the same according to the provisions of the Act, 1868, and any unapplied portion of the same in any year may be invested and thenceforward form part of the invested Fund.

SECTION XX.

ANNUAL AND SPECIAL GENERAL MEETINGS.

1. The Council shall prepare a Report of their proceedings during the past year, which, together with the Report of the Auditors, shall be read at the Annual General Meeting, and inserted in the published report of the Transactions of the Society.

2. The Council shall meet previous to the General Meeting, and arrange the business to be transacted thereat; and the proceedings of the General Meeting shall be considered perfect in themselves without the necessity of reading or confirming the minutes of the preceding Annual Meeting.

3. No business shall be brought forward at any Special General Meeting but that for which it is convened, and of which due notice has been given to the Members of the Society, pursuant to the preceding Bye-law, No. 3, under Sec. 15.

SECTION XXI.

DIPLOMA AND CERTIFICATES.

1. Every Member of the Society shall be entitled to possess and use a Certificate of Membership.

2. Persons registered as Pharmaceutical Chemists under Section 10 of the Statute, 1852, shall be entitled to possess and use a Diploma stamped with the seal of the Society.

3. All persons examined in the Minor or in the Major Examination pursuant to the Bye-laws may, after having passed their examination and been registered, receive appropriate Certificates.

4. All plates used from time to time for printing the several forms of Diploma and Certificate shall be deposited at the house of the Society, in a box having a lock and two keys, one of which shall be in custody of the President and the other in that of the Vice-President.

5. No print shall be taken from the said plates, or any or either of them, without an express order of the Council. All prints taken shall be in the custody of the Secretary.

* FORM OF BEQUEST.

TO THE BENEVOLENT FUND.

"I give and bequeath the sum of _____ unto the PHARMACEUTICAL SOCIETY OF GREAT BRITAIN, the same to be paid out of my pure personal estate, and to be applied for the purposes of the BENEVOLENT FUND of the said Society.

N.B.—Devises of land and bequests of money savouring of realty, or in other words connected in any way with land, will be void

Proposed Bye-Laws.

SECTION XVIII.

FUNDS AND PROPERTY.

1. The whole property of or under the control of the Society shall be subject to the management, direction, and control of the Council, and may, under the direction of the Council, be invested in or upon mortgage of property or Securities for the time being, from time to time recognised by lawful authority as proper for investment by Trustees.

2. The property and funds of the Society, other than moneys from time to time in the hands of the Treasurer or Secretary, shall not be disposed of, or otherwise dealt with, except in pursuance of an order of the Council, signed by six members, at the least, in Council assembled.

SECTION XIX.

BENEVOLENT FUND.

1. No alteration.

2. Donations* in aid of the Benevolent Fund shall be invested; and no part of the invested capital of such Fund shall be distributed among the recipients of relief.

3. No alteration.

SECTION XX.

ANNUAL AND SPECIAL GENERAL MEETINGS.

1. The Council shall prepare a Report of its proceedings during the past year, which, together with the Report of the Auditors, shall be read at the Annual General Meeting, and inserted in the *Pharmaceutical Journal*.

2. The Council shall meet previous to the Annual General Meeting, and arrange the business to be transacted thereat; and the proceedings of the Annual General Meeting shall be considered perfect in themselves without the necessity of reading or confirming the minutes of the preceding Annual General Meeting.

3. No business shall be brought forward at any Special General Meeting but that for which it is convened, and of which due notice has been given to the Members, pursuant to the preceding Bye-law, No. 3, under Sec. 15.

SECTION XXI.

DIPLOMA AND CERTIFICATES.

1. Every Member shall, whilst a Member, be entitled to possess and use a Certificate of Membership.

2. Persons registered as Pharmaceutical Chemists under Section 10 of the Statute, 1852, shall whilst so registered be entitled to possess and use a Diploma stamped with the seal of the Society.

3. Persons examined in the Minor or in the Major Examination pursuant to the Bye-laws may, after having passed their examination and been registered, receive appropriate Certificates.

To be repealed.

To be repealed.

* No alteration.

Present Bye-Laws.

Proposed Bye-Laws.

6. Every Diploma and every Certificate of Membership shall be signed by the President and Vice-President, and countersigned by the Secretary or Registrar. Every Certificate of Examination shall be signed by the Board of Examiners, or at least four members thereof.

7. Diplomas and Certificates shall be in such form as shall from time to time be determined upon by the Council.

8. Every person ceasing to be a Member of the Society shall forthwith deliver up to such person as the Council shall order the Certificate of Membership furnished to him, pursuant to the preceding Bye-laws.

9. All persons pirating or imitating or improperly using, or inciting any person to pirate, imitate or improperly use, any Diploma, or any or either of the Certificates, or the Common Seal of the Society, or falsely holding themselves forth to the public by means of advertisement, handbills, labels, circulars, or otherwise, as Members or Associates of the Society, or registered under the Statute, 1852, or Act, 1868, will be subject to legal proceedings, and the Council shall from time to time order the same in their discretion.

SECTION XXII.

JOURNAL AND TRANSACTIONS.

1. The *Pharmaceutical Journal* shall be edited, printed, and published in such manner as the Council shall from time to time direct.

2. The Transactions of the Society required by the preceding Bye-laws to be published, shall be inserted in the said Journal, and all notices or advertisements shall be considered duly made or given if inserted therein.

SECTION XXIII.

MEETINGS FOR THE READING OF PAPERS.

1. Meetings of the Society may be held for the reading of papers and discussion of subjects relating to the scientific objects of the Society.

2. Notice of such Meetings shall be given in the *Pharmaceutical Journal* next preceding.

3. All communications intended to be made at such Meetings shall be submitted to the President, or, in his absence, to the Vice-President, or to the Chairman of the Meeting, for his sanction, and without such sanction no subject shall be introduced.

SCHEDULE.

THE MODIFIED EXAMINATION FOR ASSISTANTS UNDER THE PHARMACY ACT, 1868.

Candidates will be examined in the following subjects.

PRESCRIPTIONS.

Candidates will be required to read Autograph Prescriptions, translate them into English, render a correct Translation of the Directions for Use, and detect Unusual Doses.

PRACTICAL DISPENSING.

To weigh, measure, and compound Medicines, write the Directions in suitable language, finish and properly direct each Package.

MATERIA MEDICA AND QUALITY OF SPECIMENS.

To recognise the Pharmacopœia Chemicals in frequent demand, and specimens of Roots, Barks, Leaves, Fruits, Resins, and Gums in ordinary use; the following Plants, either in a fresh or dried state, or from plates:—Belladonna, Stramonium, Hyoscyamus, Conium, Aconitum, Digitalis, and Sabina; also to estimate the quality of each specimen submitted, and its freedom from adulteration.

PHARMACY.

To recognise the Preparations of the Pharmacopœia which are not of a definite Chemical Nature, such as Extracts, Tinctures, and Powders, and give the proportions of the more active ingredients.

Candidates will also be examined in their knowledge of the law relating to the sale of Poisons.

To be repealed.

4. Diplomas and Certificates of Membership and Certificates of Examination shall be in such form as shall from time to time be determined upon by the Council.

5. Every person ceasing to be a Pharmaceutical Chemist or a Member, and every person required so to do by Resolution of the Council, shall forthwith deliver up to the Society the Certificate of Membership furnished to him, pursuant to the Bye-laws.

6. All persons pirating or imitating or improperly using, or inciting any person to pirate, imitate or improperly use, any Diploma, or any or either of the Certificates, or the Common Seal of the Society, or falsely holding themselves forth to the public by means of advertisement, handbills, labels, circulars, or otherwise, as Members, or registered under the Statute, 1852, or Act, 1868, or as Student-Associates will be subject to legal proceedings, and the Council may from time to time order the same in its discretion.

SECTION XXII.

JOURNAL AND TRANSACTIONS.

1. No alteration.

2. The Transactions of the Society required to be published, shall be inserted in the said Journal, and all notices or advertisements shall be considered duly made or given if inserted therein.

SECTION XXIII.

MEETINGS FOR THE READING OF PAPERS.

1. No alteration.

2. Notice of such Meetings shall be given in the *Pharmaceutical Journal*.

3. No alteration.

SCHEDULE.

THE MODIFIED EXAMINATION FOR ASSISTANTS UNDER THE PHARMACY ACT, 1868.

No alteration.

British Pharmaceutical Conference

Presidential Address by Charles Symes, Ph.D. F.L.S.*

A SECOND time in our history has the "Sister Isle" invited the British Pharmaceutical Conference to hold its annual meeting of members on Irish soil, and a second time has it given us the greatest possible pleasure to accept the invitation. Those of us who attended the Dublin meeting just twenty years ago, under the Presidency of the late lamented George Frederick Schacht, will remember the enthusiastic reception accorded to us by our Irish friends on that occasion; the warm and deep interest shown in our proceedings, the large heartedness and fellowship which marked the period of our visit, and the lasting friendships which were formed. To-day this great and beautiful city of Belfast offers us equally friendly greetings and thus assures us of its loyalty to the cause we seek to promote.

Pharmacy and its Advancement.

The science of Pharmacy knows nothing of political differences or diplomatic relations. It simply recognises in the broadest manner the brotherhood of pharmacists, the consolidation of thought, the consensus of opinion of those who practise it, the promotion of whatever conduces to the elevation and advancement of our calling. A more complete knowledge of the materials and the achievement of greater perfection in the appliances with which we have to deal; greater ability to fill our legitimate position as joint labourers with the sanitarians in the prevention of disease, and with the Medical Profession in the noble work of alleviating human suffering and in the healing art. In short, whatever pertains to the real good and the general advancement of the craft. This general advancement is attempted and we believe is, to a considerable extent, accomplished by means which may be divided under several distinct heads, but all bearing close relationship to each other. First and foremost amongst these stands education. Up to the dates of the passing of the Pharmacy Acts every man was a law to himself as to how much knowledge he cared to possess for the conduct of his business, but I am not one of those who believe that in the earlier days a relatively greater proportion of ignorance prevailed in pharmacy than during the early days of other professions. In fact, a little reflection will bring to mind the names of "pharmaceutical giants" who existed before the Pharmacy Act found a place in the Statute books, and whose work will always be recognised as the foundation on which our craft has been built. What, however, has happened is that all who practise our craft must now possess knowledge up to a certain standard, and that standard, determined by the Councils of the Pharmaceutical Societies of Great Britain and Ireland respectively, is applied by the various boards of examiners.

The Influence of Examinations.

Examinations are undoubtedly a stimulus to study and, being conducted largely by men who understand the requirements of the examinees, they are extremely useful, and in great measure accomplish the object contemplated; but the thoroughness with which the knowledge is acquired to pass them, and the way in which that knowledge is afterwards applied, afford the true measure of

their usefulness both to ourselves and to the public. The chief danger of our present system is that men will be content with the minimum of knowledge necessary to pass the qualifying examination, and will then believe that they have done all that is requisite in the way of study to fill the position in life which they have chosen; whereas, in my experience, which now extends over a number of years, the majority of men, when just fresh from their examinations, are then only in a position to learn how to expand, apply, and increase their knowledge for the efficient performance of their duties. This does not apply to pharmacy alone; indeed, so much did it apply to the medical student that, some few years ago, the curriculum was extended to include one year of practical application of the knowledge possessed before registration, by the Medical Council.

The Conference as an Educating Body.

Now, at this point the value of a body like the British Pharmaceutical Conference becomes evident. It at once points out to the so-called qualified man that there is no finality to his knowledge, that he has merely entered by the legitimate portal the field of applied science, investigation, and research; it offers him encouragement to devote himself more closely to the higher branches of his calling, and thus not only to give deeper interest to it, but to sweeten the labour and drudgery attendant on the more commonplace matters which go to make up the daily round of duty. Experts in chemistry, physics, botany, materia medica and other branches of science are busily engaged unfolding the mysteries of Nature, and it is an essential part of the pharmacist's duty to keep himself posted in the advances which are made or he will soon drift behind the times and lose the position which he holds in public opinion. In addition to the foregoing an acquaintance with technical matters is essential. As British subjects we are all amenable to the Imperial laws, but there are some of those which have a special bearing on our calling, and define our relations to the State, to the public, and to ourselves. A knowledge of these is most essential to us, and yet, until recently, no steps were taken either to teach the essential points contained therein or to ascertain if the man who desired a certificate of qualification possessed a reasonable amount of knowledge concerning them. It is gratifying to note that in Great Britain (and I trust the same applies to Ireland), candidates for examination are now required to show that they possess a practical knowledge of the one special Act which regulates their calling. Not only the Pharmacy Acts, but the Statutes relating to the Sale of Food and Drugs, Weights and Measures, Poisoned Grain, Arsenic, Petroleum, and Proprietary Medicines, as well as various Excise Regulations, all have points of special interest for us; indeed, I question whether there is any other calling on which so many Acts of Parliament have such a special bearing.

Pharmacists and the Pharmacy Acts.

Many persons look on the Pharmacy Acts as measures whereby we have voluntarily imposed unnecessary burdens on ourselves. But without going into very ancient dates in the history of pharmacy it may be pointed out that those measures were in the first instance obtained as a means of protection, and of complying with the requirements of public opinion. The Medical Profession

* Delivered at Belfast, August 9, 1898.

on the one hand, and the Government on the other, had from time to time endeavoured to obtain legislation which would materially, and it was feared prejudicially, affect the pharmacist's interests, and he had stood firmly and successfully on the defensive. The time arrived, however, when it was felt that some kind of organisation and legislation was absolutely necessary, and it was thought that it would be better to make an effort to accomplish this for ourselves rather than to leave it to others who could not fully appreciate the requirements and position of our craft. If, therefore, we are at times disposed to complain that the Pharmacy Act is not what we could wish it to be and is defective in some important points, we must bear in mind that it was the result of a compromise, and that had it been left entirely to those outside our calling it would doubtless have been more imperfect than it now is, and we should have been burdened with some oppressive measures from which we are now free. The recently obtained Amendment Act making membership available to all who pass the qualifying examination and giving them a vote in the election of the governing body is calculated to consolidate the Society, and hence is a step in the direction of consolidating the craft.

The Sale of Poisons.

The recent attempt of the Privy Council to pass a "Poisonous Substances" Bill points to the desirability of consolidation for the purpose of opposing such unsatisfactory measures when from time to time the occasion arises. The Privy Council has persistently refused to place carbolic acid, one of those deadly poisons whereby so many lives have been lost, on the Poison Schedule of the British Pharmacy Act, although this has been done in Ireland, and notwithstanding the pressure brought to bear on that body by the Pharmaceutical Society, by coroners, juries, and municipalities. I believe this is due to a great extent to misrepresentations being made as to the restriction of trade and injurious results from monopoly if this were done. As a sort of compromise this Bill was introduced, and without discussion passed the House of Lords, although a crude, imperfect, and erroneous measure. It met with such determined opposition on all hands before its first reading in the Commons that it has been abandoned. This Bill bears in itself the strongest evidence of the impracticability of a Government department attempting to legislate for matters which really belong to pharmacy.

The Desirability of Reciprocity.

The Irish Pharmacy Act, which is of more recent date than that of Great Britain, has most of its clauses based on those of the latter, but so modified as to meet the existing condition of pharmacy in Ireland at the time of its passing. It, too, is the result of a compromise, and leaves something to be desired on the part of our Irish friends. The united action of the two societies, if unable to bring about all the good desired, may do much in that direction. I look forward with hope and confidence to the time when there will be increased unity amongst all English-speaking pharmacists and pharmaceutical societies, and when there will be sufficient uniformity in the various qualifications to enable reciprocity to exist amongst them all. In some of the Colonies it is admitted that something has to be done before this can be accomplished, but it is clearly our duty to do what we can to forward any movement which is calculated to bring about so desirable a consummation.

The Purity of Medicines.

For several years efforts have been made to pass an amended Food and Drugs Act, and it is very generally acknowledged that the present Act requires some amendment. So congested, however, has parliamentary business been that still another session has nearly closed without a prospect of the proposed new measure

becoming law. It is one of the objects of the Conference "to maintain uncompromisingly the principle of purity in medicines." We, therefore, hail with satisfaction anything which contributes to this object, and when we consider how small has been the number of proven cases of deliberate and fraudulent adulteration in recent years under the existing Act, I think the Conference may be congratulated on its good and useful work in investigating and exposing circumstances of this kind during the many years of its existence.

Metric Weights and Measures.

During the past twelve months, the use of the metric system of weights and measures has been legalised for commercial purposes in Great Britain and Ireland. This must be regarded as a step in the right direction, for it previously seemed absurd that a business house could not use actual weights and measures in executing an export order for so many grammes, litres, etc., of an article without committing an illegal act; but so it was. Now, this permissive stage will familiarise the public, slowly, with this system, which is more scientific and, when well known, is more simple than our own. But I have some sympathy with those who would not hastily have its general use made compulsory, as it will take a long time before the public mind is brought to think of quantities in metric terms instead of as now, thinking in our own system, and then converting it into metric equivalents when necessary. If an apple is cut into two equal portions, and again each is equally divided, it seems much more easy to think of one of these as a quarter than as 0.25 of the whole, or, if the division is carried one stage further, an eighth is more easily realised than 0.125. The way in which a number will become fixed in the mind and influence thought is illustrated by the fact that although the decimal system has been used in France (where it originated) for so many years, one still sees in Paris some goods offered in the shops by the "dozen." Some thirty-eight years ago I remember Professor Redwood endeavoured to impress his students with the desirability of thinking in metric quantities, and suggested that those who were familiar with the size of the small dice would be assisted in realising the quantity of a cubic centimetre by regarding them as about equivalent values. Considerable alteration in our coinage will also be required before the decimal system can be rendered general in this country. As pharmacists it is our duty to familiarise ourselves with its use, and thus be prepared to forward a movement which will no doubt sooner or later obtain throughout the country, and is at present used almost invariably for scientific purposes.

Calcium Carbide and Methylated Spirit.

Most of us are not affected sufficiently by the Petroleum Act to call for much comment thereon, but the regulations concerning the storage and sale of benzine have a decided bearing on our calling and calcium carbide, now largely used for the production of acetylene gas for illuminating purposes, has recently been brought under its provisions. The sale of the carbide is a legitimate part of a pharmacist's business, and it is satisfactory that an exemption has been made whereby it may be kept and sold without a licence, so long as it is stored in 1 lb. hermetically sealed canisters and not more than 5 lbs. be kept in stock at any one time. The Inland Revenue regulations affecting us remain the same as they have been for several years past, and we have still to regret that the abuse by a small section of the public of the methylated spirit privilege should have resulted in altered methods of methylating, which inconveniences a much larger section and modifies materially the advantages which we derive from its sale and use. The present kind, methylated with mineral naphtha, becomes turbid on mixing with water and is unsuitable for many purposes for which the old kind containing wood naphtha could be

used. It is true that the old kind can still be obtained under certain conditions for manufacturing purposes, but those pharmacists who formerly supplied pathologists and institutions with it can no longer do so; thus their business suffers without, so far as I can ascertain, any equivalent advantage to any one, I think some strong representation should be made to the Inland Revenue authorities with a view to getting this alteration repealed.

Synthetic Compounds in Medicine.

Turning now to the necessity for keeping up our knowledge of modern chemistry, we have evidence of this from the ever-growing list of physiologically active synthetic organic compounds. Many of these, which have been built up on theoretical considerations, have become valuable medicinal remedies. The fancy names given to them, however, rarely afford any definite idea of their composition, and without this we handle them in a very mechanical way, and lose much of interest that would otherwise attend the dealing with them. The pharmacist knows the nature and qualities, the habitat, process of production, and manufacture of the ordinary drugs and chemicals which he uses, and it is this knowledge, together with care and experience in handling them, which in the eye of the law constitutes qualification for the practice of his profession. It seems only reasonable, therefore, that he should familiarise himself as far as possible with the numerous class of substances which I have mentioned, for although they are of a complex nature, they are capable of much simplification by a consideration of the theoretical constitutions ascribed to them. It will be remembered that Mr. Hodgkin read a very excellent paper on this subject at a meeting of the Conference, held at Leeds in 1890. More recently Dr. Kohn, in an address delivered at a meeting of the Liverpool section of the Society of Chemical Industry, dealt with the relation which exists between the physiological action and the chemical structure of these bodies. I have said that these remedies have been built up, and the term is an appropriate one, as it conveys to one's mind what actually happens. The scientific chemist is now the architect and builder, using certain atoms and molecules to build up chemical structures to meet the wants of the medical profession in the treatment of disease.

Made in Germany.

In Germany, where there are fewer restrictions on experimenting with animals than in this country, the chemist and physiologist work together, the one altering the molecules and molecular arrangement in the chemical, and the other testing, and noting most carefully the effects obtained thereby; hence most of these remedies are produced in that country, and this manufacture has become an extensive chemical industry. I would not be understood to object to the use of fancy names instead of descriptive ones for these synthetic substances, as obviously the use of the latter would in many cases be impracticable. For example, it is much more convenient to speak of or write antipyrin than phenyl-dimethylpyrazolon, and of eucaïne rather than benzoylmethyl-tetramethyl- γ -oxypiperidine-carbonic-methylester. Just as it is more convenient to speak of a cottage, villa, or mansion rather than to use a name which would describe the materials of which either is built and its dimensions. What I hold is that each package or wrapper in which these substances are enclosed should bear a clear and concise description, the formula, and; where practicable, tests should be named whereby it could be identified.

Some New Synthetic Remedies.

Since the publication of Mr. Hodgkin's paper, many new synthetic remedies have been introduced, and it may be convenient here to enumerate some of them, together with their formulæ:—

Agathin— $C_6H_4 \cdot OH \cdot CH \cdot NH \cdot CH_3 \cdot C_6H_5$ —Salicyl-methyl-phenyl-hydrazone. Antirheumatic.

Airol— $C_6H_2(OH)_4CO_2BiI$ —Bismuthoxy-iodo-gallate. Antiseptic.
 Argonin. Silver caseinate. Antiseptic.
 Aristol— $C_{20}H_{14}O_2I_2$ —Di-thymol-iodide. Antiseptic.
 Analgen— $C_9H_5(OC_2H_5)NH(CO \cdot C_6H_5)Na$ —Ortho-ethoxy-ana-mono-benzoyl-amido-chinolin. Antipyretic. Analgesic.
 Antiseptol Cinchonine iodosulphate. Antiseptic.
 Asaprol— $CaC_2H_{14}S_2O_8 + 3H_2O$ —Calcium-beta-naphthol-sulphate. Antirheumatic. Antituberculous.
 Aseptol— $C_6H_4(OH)SO_3H$ —Phenol-sulphonic acid.
 Alumol. Aluminium naphtho-sulphate. Astringent. Antiseptic.
 Benzosol— $C_6H_4(OCH_3)OC_6H_5CO$ —Benzoyl-guaiacol. Antituberculous. Antiseptic.
 Bismal— $4C_{13}H_{12}O_{10}3Bi(OH)_3$ —Bismuth methylene-digallate. Astringent.
 Bromol— $C_6H_2 \cdot Br_3 \cdot O \cdot H$ —Tri-bromo-phenol. Antiseptic and disinfectant.
 Chloralamid— $C_3H_4O_2Cl_3N$ —Chloral formamide. Hypnotic and analgesic.
 Creosol— $C_8H_8CH_3(OCH_3)OH$ —Homo-pyro-catechin-mono-methyl-ether. Antiseptic.
 Diuretin— $C_7H_7N_4O_2 \cdot Na + C_6H_4(OH)CO_2N$ —Theobromine-sodium-salicylate. Diuretic.
 Durol— $C_6H_2CH_3CH_3CH_3CH_3$ —Tetra-methyl-benzol.
 Dermatol— $Bi(OH)_2C_7H_5O_5$ —Bismuth subgallate. Astringent. Antiseptic.
 Eucaine Hydrochloride— $C_{19}H_{27}NO_4 \cdot HCl + H_2O$ —Benzoyl-methyl-tetra-methyl- γ -oxy-tetra-piperidin-carbonic-methyl-ester hydrochloride. Local anæsthetic.
 Europhen— $C_4H_9(CO_3)(O)C_6H_3C_6H_2 \cdot OI \cdot CH_3C_4H_9$ —Iso-butyl ortho-cresol-iodide. Antiseptic. Antisyphilitic.
 Guaiacol Synthetic— $C_6H_4(COH)COH_3$ —Pyro-catechin-methyl-ether. Antituberculous antiseptic.
 Guaiacol Carbonate— $C_6H_4(OCH_3)2CO_3$ —Guaiacol-ester Carbonate. Antituberculous antiseptic.
 Heliotropin. Piperonal. Proto-catechu-aldehyde-ethyl-ester. Antiseptic. Antipyretic. Used in perfumery.
 Hypnal— $CCl_3CH(OH_2)C_{11}H_{12} \cdot N_2O$ —Chloral-hydrate-antipyrin. Analgesic. Antipyretic.
 Hypnone— $C_6H_5CO \cdot CH_3$ —Phenyl-methyl-ketone-aceto-phenone. Hypnotic.
 Iodol— C_4I_4NH —Tetra-iodo-pyrrol. Antiseptic.
 Itrol— $Ag_3C_3H_5O_7$ —Silver citrate. Antiseptic in treatment of wounds.
 Lactophenine— $C_6H_4(OC_2H_5)NH \cdot CO \cdot CH(OH) \cdot CH_3$ —Lactyl-amido-phenol-ethyl-ether.
 Loretin— $C_9H_4NI \cdot OH \cdot SO_3H$ —Ortho-oxychinolin-m-iodo-ana-sulphonate. Antiseptic.
 Lycetol. Dimethyl-piperazin-tartrate. Analgesic. Diuretic.
 Losophan— $C_6HI_3 \cdot OH \cdot CH_3$ —Tri-iodo-meta-cresol. Astringent. Antiseptic.
 Lysidine— $(C \cdot H_2)_2NH \cdot N \cdot C \cdot CH_3$ —Methyl-dihydro-glyoxaline Uric Acid Solvent.
 Malakin— $C_{15}H_{15}O_2N$ —Salicyl-amido-phenol-ethyl ether. Antiseptic. Analgesic.
 Microcidin. Sodium beta-naphtholate. Used in Antiseptic Surgery.
 Nosophen— $(C_6H_2I_2OH)_2 \cdot C \cdot C_6H_4CO \cdot O$ —Iodophen. Tetra-iodo-phenol-phthalein. Antiseptic. Disinfectant.
 Orthoform. Para-amido-m-oxybenzoic-methyl-ester. Local Anæsthetic.
 Phenocoll Hydrochloride— $C_6H_4(OC_2H_5)(NHCOCH_2NH_2)HCl$ —Amido-acet-phenetidid-hydrochloride. Analgesic. Antirheumatic.
 Piperazin— $C_2H_4(NH_2)C_2H_4$ —Diethylene-diamine. Antirheumatic.
 Piperonal. Heliotropine. See above.
 Resorcinol. Iodoform and resorcin. Antiseptic dressing.
 Salophen— $C_6H_4OH \cdot COO \cdot C_6H_4N \cdot H \cdot COCH_3$ —Acetyl-para-amido-salol. Antiseptic. Antipyretic.
 Salipyrin— $C_{11}H_{12}N_2OC_7H_6O_3$ —Antipyrin salicylate. Antipyretic. Analgesic.

Salacetol — $C_6H_4(OH) \cdot COO \cdot CH_2CO \cdot CH_3$ — Acetol-salicylic-ester. Antiseptic. Antirheumatic.

Symphorol N. — $C_8H_9N_4O_2 \cdot SO_3Na$ — Caffeine sodium sulphate. Diuretic. There are also lithium and strontium salts.

Tannalbin. Tannin albuminate. Astringent.

Terpinol — $(C_{10}H_{16})_2H_2O$ — Terpin hydrate derivative. Used in bronchial affections and in perfumery.

Tetronal — $(C_2H_5)_2C(C_2H_5SO_2)_2$ — Di-ethyl-sulphon-diethyl-methane. Hypnotic and sedative.

Thalline Sulphate — $(C_{10}H_{13}NO)_2H_2SO_4$ — Tetra-hydro-para-chinanisol sulphate. Hæmostatic and antiseptic.

Triphenine — $C_6H_4OC_2H_5NHC_2H_5CO$ — Proprionyl-phenetidine. Analgesic. Antipyretic.

Thermidine — $C_6H_4(C_2H_5O)NCO_2C_2H_5COCH_3$ — Acetyl-*p*-ethoxy-phenyl-urethane. Antipyretic. Antiseptic.

Peronine — $C_{17}H_{18}NO_2 \cdot O \cdot C_6H_5 \cdot CH_2 \cdot HCl$ — Benzyl-morphin-hydrochloride. Narcotic.

Creolin, Lysol, Solveol, and Solutol are more or less impure cresol mixtures obtained from coal tar.

Of the fifty substances enumerated, it will be noted that a large percentage possess antiseptic, antipyretic, and analgesic properties; so that their rapid growth would seem to be due more to commercial enterprise than to meeting a real want in medical practice.

Synthetic Odorous Substances.

Another chemical industry, which has considerable interest for the pharmacist, is the production of synthetic esters and odorous substances closely related to the odours of flowers, plants, and animal substances. With artificial musk and vanillin we have been long familiar, as also with the amyl, butyl, and ethyl compounds resembling fruit flavours, but of more recent date we have heliotropine (heliotrope), ionone and iraldine (violet), cumarine (new-mown hay), terpineol (lilac), bergamiol or linaloyl acetate (bergamotte), nerolin (neroly), jasmin oil, anisic aldehyde (hawthorn), geranol (rose geranium), carvol (caraway oil), safrol (oil of sassafras), etc., etc. So much has this industry grown that not only are these products used for toilet soaps, but enter largely into the composition of the essences named after the flowers. They are more persistent than the natural odours, and I am told that the very popular essence of "Parma Violets" is, as a rule, quite innocent of the flowers, and is prepared from ionone mellowed down with small quantities of other extracts, and this the public really prefer. To those, however, who are accustomed to handle delicate perfumes there is not so much difficulty in distinguishing between the artificial and the real, and it still taxes the skill of the chemist and the art of the perfumer to obtain that subtle delicacy of fragrance manufactured and elaborated in Nature's own laboratory.

Paraffins as Medicinal Bases.

Although paraffins, hard and soft, have been much used as applications to the skin, it has generally been recognised that they are not readily absorbed by it, and their use as a vehicle for various medicaments has been objected to on that ground; the addition of lard or wool-fat being considered necessary to obtain the desired result. The great advantage which the paraffins possess of not becoming oxidised by exposure to the air, hence of not becoming rancid, has acquired for them considerable popularity and an extensive use. Of comparatively recent date there has been introduced from Germany a class of liquids which are said to be oxidised paraffin oils, medicated in various ways, and known as valsols. The oxidation is said to bring them into a condition in which they are readily absorbed by the skin, and are therefore valuable vehicles for the medicaments they carry. This statement as to oxidation seems so contrary to our previous notions concerning the paraffins that an investigation into the subject would be of considerable interest, and would form matter for a paper at a future meeting of this Conference. In the meantime I would not wish to question the value of these bodies,

but, so far as I can judge, it is not the pure paraffin which becomes oxidised, but rather the various substances usually found accompanying it in the commercial article.

The British Pharmacopœia, 1898.

In the world of pharmacy, the event of the year has been the publication of the new British Pharmacopœia. The fact that it offers a few alternative formulæ in certain preparations which may be made in or for India and the Colonies cannot be regarded as rendering it Imperial or Colonial, but the appendix which, it is understood, is to be published in about eighteen months or two years, will doubtless render the work complete in this respect. The new Pharmacopœia has already received some adverse criticism from Mr. Howard, Mr. Warrington, Mr. Fletcher, Mr. Umney, Mr. Corder, Mr. Parry, Mr. Bryant and others, and the points raised are well worth consideration, but probably when we become accustomed to the altered formulæ, etc., there will be reason to believe that the work largely represents the advances which have been made in pharmacy since 1885; at least it should do, seeing that it has taken about four and a half years to produce. To judge fairly of the work, it appears to me, we ought to know what was in the mind of the Medical Council when, in December, 1893, it was decided that a new edition of the Pharmacopœia was required. This we are to some extent able to do by reference to an article by Professor Leech in the *Medical Chronicle* of April last, where he writes as follows:—"The propriety of rendering it (the Pharmacopœia) more useful to the colonies and dependencies than it had hitherto been was generally acknowledged, but on other points very diverse views existed. Some, notably Sir Richard Quain, considered but little further change was needed than to add some of the approved new remedies and excise a few of those which had become less used. But the letters and articles which appeared in the medical papers as soon as it became known that a new Pharmacopœia was contemplated, showed that there was a widespread feeling that something more was required. Those who were compelled to make the Pharmacopœia the basis for their teaching, the lecturers on materia medica at the various schools were among the most adverse critics of the Pharmacopœia, pointing out its shortcomings and many errors, while chemists, botanists, and pharmacists, were no less insistent in calling for a thorough revision of all parts of the work. Eventually arrangements were made for such revision."

Pharmacists and the Pharmacopœia.

Here, then, we have the text for what has been attempted, and to the extent to which the work falls short of the object aimed at it is open to fair criticism. I will not enlarge on my oft-repeated objection to the constitution of the Pharmacopœia Committee; it is well known, and I trust in time it will be removed. I am quite aware that the Act of Parliament makes the Medical Council responsible for the publication of the work, but I have yet to learn that the Committee appointed by that body may not consist partly of pharmacists. Without being tedious, let me give you an example of where, I think, the experience of practical pharmacists would have and may come in. Professor Leech tells us in the article quoted that the reason why saffron was retained in decoction of aloes although omitted from tinct. rhei. co., pil. aloes et myrrhæ, and pulv. cretæ aromat., was on the ground that it improves its taste, and that a decoction prepared without it was not so pleasant as that prepared with saffron. But it does not appear to have been taken into account that extract of Barbados aloes, which is more bitter and less aromatic, has been substituted for that of Socotrine, that by keeping for some time, decoction of aloes loses much of its nauseous taste and mellows so as to become almost unobjectionable. It could only be on the

homœopathic principle *similia similibus curantur* that saffron could cure the nauseous taste of anything.

Of Pharmacopœia Publication.

It is not my intention to deal with the criticisms which have been made, as doubtless you are all familiar with them, but I may point out a method of procedure with reference to the publication of the work which would have rendered most of them unnecessary, would have saved much inconvenience and uncertainty, and would probably have secured for it more complete observance than now exists. We are told that the proof was ready in February, and that no material alteration has since been made. Such being the case, why should there have been so much mystery about the publication? Would it not have been better that proof copies should have been sent to the various medical and pharmaceutical journals under certain restrictions, perhaps, but with a view to publicly calling attention to the proposed alterations for the purpose of inviting criticism? Reasonable objections could then have been considered by the Committee. The work could have been issued at the end of May and gazetted, (which legally constitutes publication) at the end of June. I am aware that the able Editor of the *Pharmacopœia* kept a record of the various suggestions for improved processes, etc., which appear from time to time in the various journals, or were made at this Conference, and there is evidence that the 'Year-Books of Pharmacy' and the 'Unofficial Formulæ' have been useful books for reference during the compilation of the official work. There are, however, those engaged in pharmacy who do not publish the many small matters which they observe and think about, but whose opinions on matters of detail would be valuable, and would be ensured by dealing with the work in the manner which I have suggested. Perhaps those in authority would consider that such a procedure would detract from the importance of the work, but Acts of Parliament are not framed and passed in secret, and are not made law before their provisions are known. I do not hold that in Germany they do everything better than we do in this country, but they are certainly in advance of us in their methods of producing a pharmacopœia. In addition to having a properly constituted pharmacopœia committee, they publish from time to time (in fact are now publishing in the *Archiv der Pharmacie*) the suggestions which have been made and the alterations which are contemplated for a future edition of the work, long before it is taken in hand for publication. In this way every detail is considered by all who are concerned and are to be affected by its contents, so that when the work assumes the position of legal authority all are fully prepared to obey its dictates, and it has the endorsement of the entire medical and pharmaceutical professions. We shall all, I think, approve of the more general introduction of the metric system into the work, and there are many other alterations which must commend themselves to us, but I will not anticipate the papers which are to be read at this meeting by entering into details, which will no doubt be ably dealt with by the gentlemen who have them in hand.

In Praise of Ireland.

In view of these interesting papers I am anxious not to weary you with a long address, but I cannot close without referring to the fact that to-day we are the guests of a warm-hearted and generous people, who, like ourselves, are British, and whose interests are closely interwoven with—in short, are identical with, our own. That we are in a country at once beautiful and possessed of great natural resources, capable of much development. The lakes, glens, rocks, rivers, the wild romantic scenery, are all too well known to require comment; but the mineral wealth of Ireland is greater than most people suppose it to be. The coal-

fields of Leinster, Munster, Connaught, and Tyrone; the immense stores of red hæmatite, bog iron ore, and pyrites; the copper mines of Wicklow, Waterford, and Cork. Lead, rich in silver, native silver, arsenic, antimony, baryta, magnesia, etc. To these may be added the gold found in Limerick and Tipperary which, if energetically sought, may prove a veritable Klondike nearer home. The fruitful soil, the climate rendered uniform and less severe than that of England or Scotland by the salutary influence of the Gulf Stream, tend to render the country one which will well repay the expenditure of capital in judicious enterprise. It seems probable that *Eucalyptus globulus* could be cultivated with advantage in the central plains of the island, and that its culture would improve the condition of the soil where excessive moisture exists. In suitable soil it is probable that the climate would be adapted to the cultivation of some herbaceous medicinal plants, such as peppermint, spearmint, etc. Some of the medicinal plants which are grown in North America could doubtless be cultivated with profit in the "Emerald Isle" if a proper selection were made, and their habitat were duly studied. In Belfast we are in a veritable hive of commercial industry, and I know of no legitimate reason why large commercial centres of a similar character should not exist in other parts of this country of so much promise, so well situated and accessible to all parts of the world.

The Late Michael Conroy.

It was my hope that I should have been able to conclude without having to record the death of any member of the Conference during the past year, but such is not my good fortune. Michael Conroy, a former Vice-President, an active member of the Conference, and an Irishman withal, has gone to his rest. He was only fifty-four years of age when he passed away, and we could have hoped to have had his active co-operation, his genial presence, and a continuation of his useful work for some years to come. He possessed a large amount of good reliable information on matters connected with our craft, and took an active part in the discussions at our meetings. He will be remembered by many here as Chairman of the smoking concerts held as part of the social programme at our gatherings for many years, in which his cheerful inspiring cordiality was always exhibited. The Executive Committee have already expressed, through the Honorary Secretaries, their deep sympathy with his widow and family in their bereavement. Personally, I feel his loss to be that of a much-esteemed friend with whom I could always discuss matters relating to chemistry and pharmacy with pleasure and profit.

The Late Dr. de Vrij.

Since this address was written another eminent man has passed away; I refer to Dr. de Vrij, of the Hague. Just fifty-two years ago Dr. de Vrij first visited England as the representative of the "Batavian Society of Experimental Philosophy" at a meeting of the British Association at Oxford, so that in those days he had attained to an eminent scientific position. During his long life his published works and papers and communications numbered over 200, on various scientific subjects. He was the son of a pharmacist, and during the early part of his life he devoted himself to that profession. His chief work which directly affected us was the investigation of the cinchona alkaloids and in connection with cinchona cultivation in Java and India. His work was officially recognised by honours from the Dutch and French Governments and by our Queen, who conferred on him the Order of Companion of the Indian Empire. Last year as your President I had the honour of joining with the President of the Pharmaceutical Society, Mr. Carteighe, and the Presidents of the Linnean and Chemical Societies in awarding to Dr. de Vrij the "Canbury Gold Medal,"

a distinction which he well merited. He was unable to receive it in person, but he wrote a letter expressing his appreciation of the honour, and stating that, although eighty-four years of age, all his senses and his intellectual faculties remained unimpaired. In 1871 he was selected an honorary member of Conference, so that he had been associated with us for twenty-seven years. He was an example of a man of high intellectual ability, devoting his powers to the purpose of serving his day and generation; passing away at a ripe age honoured and esteemed. Last evening your Executive passed a resolution of condolence with his family, which I am sure you will to-day endorse.

THE BASICITY OF QUININE.*

BY DAVID HOWARD AND D. LLOYD HOWARD.

The question suggested for consideration by the Conference as to the basicity of quinine is somewhat difficult to answer, as theoretical consideration would lead to a different conclusion from that indicated by the use of indicators in volumetric testing.

Everything points to the conclusion that the alkaloid is a "diammonia," to use an expressive, if somewhat antiquated nomenclature, that each of the nitrogen atoms of the molecule represents a basic nucleus, one of which is much more powerful than the other.

This is shown by the action of ethyl or methyl iodide or bromide, which very readily give a monethyl or monomethyl base, and with more difficulty a diethyl or dimethyl base.

The formation of quinine salts points to the same conclusion. Sulphuric acid will form three definite crystalline salts; one molecule combining with two molecules of quinine to form the ordinary sulphate of quinine of commerce, with one molecule to form the "soluble sulphate" of commerce; or two molecules of acid will combine with one molecule of quinine to form the little known "tetrasulphate." Similarly the monobasic acids, hydrochloric, hydrobromic, and hydriodic form definite crystalline salts with both one and with two molecules of acid to one of the alkaloid.

Whether the "soluble sulphate" should be regarded as forming a hydric sulphate of the stronger basic nucleus or a neutral sulphate of the "diammonium" must be a matter of opinion; but the tetrasulphate and the acid halogen salts can hardly be regarded otherwise than as the hydric sulphate or the haloid salt of the fully saturated base.

The French chemists have always consistently regarded the "soluble sulphate" as the "neutral sulphate" and the sulphate of commerce as the "disulphate," and similarly they speak of the soluble hydrochlorate as the "neutral" salt and the ordinary hydrochlorate as "basic."

This nomenclature frequently leads to confusion, especially to those who do not recognise the old rule of nomenclature now rarely observed, that gives opposite meanings to the Latin and Greek prefixes. We are careful enough to remember that a kilogramme is one thousand grammes, and that a mille-gramme is one thousandth of a gramme, but we continually find that a disulphate is supposed to be identical with a bisulphate instead of being a basic sulphate, and the exact opposite of a bisulphate. No doubt the risk of this mistake has led to the disuse of the old name "trinitrate of bismuth" for the ordinary subnitrate of the metal.

If, however, we study the salts of quinine by means of the ordinary tests for acidity, we shall arrive at a very different conclusion. Of course, colour indications only show the balance of affinity for an acid or an alkali, as the case may be, of the coloured body. The change from blue to red with litmus only shows that a

free acid has turned the red acid out of its combination with an alkali, and the uncertainty of the change with weak acids is evidence of so slight a preponderance of strength that it required a marked excess to break up the blue salt. This balance of acid strength may be very much affected by temperature and dilution. In a weak and cold solution boric acid has no acid reaction, and borax has been recommended as a means of standardising solutions of test acid. If, however, the borax solution be hot and strong, the boric acid shows a very distinct though indeterminate acid reaction. A colour reaction, therefore, can only show the relative strength of the affinities of the reagents in determining the reaction which causes a change of colour.

As is shown in the paper referred to on the question, in the 'Year-Book of Pharmacy,' 1894, folio 344, this power of the vegetable alkaloids to bring about a colour reaction varies very greatly.

Phenolphthalein gives no indication of the presence of quinine; the acid in a salt may be titrated as if no alkaloid were present. With litmus as an indicator the point of the formation of the older official salts is very well defined, the reaction is almost as well marked as in the case of the formation of the neutral salt of an alkali, and thus as far as indicators go the sulphate of quinine of the British, American, German, and most other Pharmacopœias is undoubtedly a neutral salt. No indicator appears to show the formation of the soluble salt with any degree of certainty. Litmus gives no indication at all, not even the indefinite change to purple caused by the formation of a bicarbonate, and thus the expression "neutral" salt in the French sense expresses a theoretic expression of its composition and not the result of any colorimetric testing, and it is certainly very desirable to avoid an expression which very often proves very misleading.

With methyl-orange the indications are very indefinite; the neutral point is approximately the soluble sulphate. Messrs. Farr and Wright, in their paper on the titration of alkaloids, speak of the end reaction in an alcoholic solution as almost unobservable, but state that in several instances the results obtained by titration were exactly twice as great as those obtained by weighing.

The curious effect of sulphuric acid in increasing the specific rotation of polarised light by solutions of quinine also point to a marked difference in constitution in the different sulphates. Dr. Hesse ('Year-Book of Pharmacy,' page 144, 1874) gives the rotation of quinine $a_j = -166^\circ$, of sulphate of quinine in alcohol as $a_j = -191.5^\circ$, of the quinine in solution as $a_j = -220.4^\circ$. Of soluble sulphate he found the rotation for the contained quinine $a_j = -264.3^\circ$, with $7\frac{1}{2}$ equivalents acid $a_j = -264.7^\circ$, but with still greater excess the rotation of the dissolved quinine may reach $a_j = -287.6^\circ$. It is curious to note that the maximum rotation is not reached immediately on the addition of the excess of acid, but only after the lapse of some time pointing to a slow formation of the tetra-sulphate in the comparatively dilute solutions used.

These results point to the existence in solution of the three crystalline salts, but it would seem that owing to some measure of dissociation in the solutions an excess of acid must be present to keep the tetra-sulphate in solution.

Whatever theoretic conclusions we may form as to the composition of the salts of quinine, there is no doubt of the convenience of the nomenclature adopted by the British, German, American, Dutch, and most other Pharmacopœias, which regards the familiar sulphate as neutral and the soluble sulphate as a bisulphate, but in foreign commerce we must always be on our guard against confusion arising from the French nomenclature, to guard against which the Italian Pharmacopœia gives us the following remarkable trio of synonyms: Bisolfato de chinino = solfato acido de chinino = solphato neutro de chinino.

* Read at the British Pharmaceutical Conference, held at Belfast, August, 1898.

MATERIA MEDICA ANIMALIS.*

BY J. C. MC WALTER, L.R.C.S.I., L.A.H.D., M.P.S.

As official recognition has at length been given to the use of animal substances in medicine by the inclusion of certain preparations of the thyroid gland in our new Pharmacopœia; it may be useful to make a short review of some of the principal remedies of animal origin which have recently been tried for the relief of disease.

At the last meeting of the British Pharmaceutical Conference, it was insisted that glycerin was the most suitable solvent for many of these extracts, and that sterilisation was a most important factor in the production of a satisfactory solution. It is pleasant to find that both of these points have received attention in the directions for preparing the liquor thyroidei of the new B.P.

Nothing within the domain of pharmacology is so difficult as to investigate the therapeutic properties of animal extracts, and in none of the sciences ancillary to medicine has so much ludicrous empiricism been displayed as in the efforts to elucidate these properties.

The difficulty lies, of course, largely in the fact that the problem is largely a biological rather than a chemical one. Dealing with vegetable materia medica, we can generally approximate the active principles, and frequently crystallise them in alkaloids. Any competent pharmacist would confidently offer to exhibit, in the form of extract, tincture, decoction, or elixir, the active principle of any plant submitted to him, but few chemists would claim to be able to bottle in a palatable form the active principles of a calf's brain or a sheep's spleen. We know such organs to have a very complex chemical constitution, and may presume them to be of much therapeutic value in disease of the corresponding organs in the human subject, but what the active principle is, how to discover, extract, and preserve it, constitutes a problem for the scientific pharmacist which should be the more interesting as it is the more difficult, and which has a certain fascination from the fact the solution of it lies on the borderland between the life and death of animal tissues. Continental chemists, who take their duties very seriously, have advocated the establishment of a laboratory where animal extracts and serums could be examined and reported upon, as both physicians and pharmacists are bewildered by the multiplicity of these substances, and confused by the want of any proper standards or tests. The question of the therapy of animal extracts is, indeed, a very proper one for international investigation, but meanwhile something might be done if this Conference were to collect, combine, amplify, and animate the reports of the various scientific bodies throughout the world which are investigating the question. Much of this class of work has already been done in our 'Year-Book of Pharmacy.' But I submit that it would still be desirable if we had some work which would present in a concise and succinct form the present state of our knowledge on any of these animal extracts.

SUCCUS TESTIBUS PARATUS.—Brown-Sequard sterilised extract must be mentioned in any account of organo-therapy. Animated by a belief in its efficacy he tried it in insanity, carcinoma, chorea, cholera, tuberculosis, senile debility, and in various diseases where stimulation of the nervous system is indicated, and in many cases with apparent success.

SPERMINUM.—Spermine is a chemical ferment secreted by most glands, and present in the blood in the normal condition. Professor Poehl discovered that it possesses the curious property of preventing the accumulation in the tissues of certain decomposition products, such as leucomaines and creatine compounds, which cause

auto-intoxication and predispose to infectious diseases. Cases in which the spermine normally present is absent or deficient are relieved by the injection of soluble spermine, prepared in a sterilised solution from fresh animal glands.

CEREBRUM EXSICCATUM PULV.—The modern isopathic movement, which was started by the remarkable cures effected by the thyroid substance, seemed to hold out great hopes of success in the treatment of neurasthenic conditions and mental diseases by preparations from the healthy brains of animals. A dried preparation from the fresh brains of calves was employed for mental troubles, and a subcutaneous injection, liquor cerebri sterilisatus, for neurasthenia. In the latter disease considerable benefit seemed to follow the use of the injection, but for mental diseases the results have been on the whole disappointing. The failures I am inclined to attribute to the methods of preparation. The benefit of cerebral preparations will probably be found to be due to some highly organised and unstable phosphorus compound, which is possibly destroyed in the process of desiccation. The most scientific method, I submit, is to administer the organ in a condition as like the living state as possible. As the brain contains over 70 per cent. of water, drying obviously entails too great a change in its molecular constitution. As we are ignorant of what proportions of its active elements are soluble in glycerin, alcohol, oil, or water, solutions or extracts are out of the question. The only available form seems to be an emulsion, something like Mr. Martindale's pancreatic emulsion. The following will, I think, be found practicable:—Fresh lard, melted, 15 ozs.; distilled water, 15 ozs.; grey substance of brain of recently-killed calf or sheep, 15 ozs.; powdered gum tragacanth, 300 grains; oil of bitter almonds, 15 minims. The brain, freed from membrane and white substance, and hot from the animal, should be dropped into the melted lard, and the mixture strained through a coarse horse-hair sieve. The tragacanth should next be added and the water added *secundem artem* to the mixture in a sterilised mortar. The oil of almonds is to be added last, and the emulsion dispensed in wide-necked bottles. Independent of any specific effect which the brain substance may have in cases of cerebral mischief in the human subject, the emulsion must obviously be of use in checking the excessive waste of tissue which so often accompanies it.

CEREBRUM SICCATUM.—A preparation of the dried grey matter of calf's brains, from which the fat has been removed, has been tried in cases of melancholia and chronic mania. Dr. Robertson has recorded improvement in cases which were treated with daily doses of $\frac{1}{2}$ to 1 drachm.

GLANDULÆ SUPRARENALÆ SICCATÆ PULV.—There is a little gland, shaped like a cocked hat, and perched on the tops of the kidneys of most animals. Its function has long been a puzzle to physiologists. It had been noted, however, that in the curious affection characterised by bronzing of the skin, and known as Addison's disease, that these glands were usually atrophied. Naturally, the fresh and healthy glands from animals have been tried in this affection, and with wonderful results. Drs. Oliver, Sansom, and Jones describe a change in the discoloration of the skin, a rapid increase in weight, and an extraordinary improvement in general health as having followed their use. The internal administration seems to cause great constriction of the arteries, with consequent increase of the blood pressure and stimulation of the heart's action. Hence they seem likely to influence favourably all those diseases which depend on loss of the vasomotor tonus, as neurasthenia and several cardiac affections, some forms of albuminuria, diabetic and Grave's disease. Merck (whose notes I have freely availed of) asserts that the active principle is not destroyed by the gastric juice, and hence they may be given by

* Read at the British Pharmaceutical Conference, held at Belfast, August, 1898

the stomach. He advocates the use of a powder prepared from the fresh capsule of which one part is equal to five in the recent state. This is administered in doses of from three to five grains, after meals, two or three times a day. Other investigators claim that glycerin is a satisfactory solvent and recommend a glycerin extract for internal use. This should be made, of course, from the fresh gland.

Altogether the suprarenal capsule seems one of the most promising and interesting resources of organotherapy.

HYPOPHYSIS CEREBRI SICCAT. PULV.—That portion of the brain which rests on the bony structure known as the "sella turcica," and which is called the pituitary body, has been found to be affected in the disease known as acromegaly, in which the extremities are enormously increased in size, and headache with neuralgic pains are distressing symptoms. Dr. Marinesco administered the pituitary body taken from the skull of an ox in three pronounced cases of this disease. The most pronounced effect was a considerable increase in the diuresis, but the neuralgic pains and headache were considerably lessened. It has also been tried in some twenty cases of epilepsy, but so far from relieving, decidedly aggravated the condition. In some cases a new state of exaltation was produced, which presented features entirely different from those which had been observed before.

Iodine has been discovered in the pituitary body, and this fact has lent strength to the belief that it acts vicariously with the thyroid gland. Schiff's investigations have shown that, under certain conditions, the process of elaboration of tissue in the human economy may be influenced by the introduction of preparations of the pituitary body. In healthy young persons no effect is produced, but in an elderly man and a patient suffering from acromegaly the use of this substance produced an intense increase of the total secretion of phosphoric acid, which was not due to the increased metabolism of albumin, as clearly demonstrated by the excretion of nitrogen. Hence the use of the hypophysis cerebri obviously leads to the decomposition of tissue rich in phosphorus but poor in nitrogen, as bone tissue. The causal connection, then, between acromegaly and the pituitary body seems to be demonstrated, and any failure which has attended its use in cases of this disease is probably due to an insufficient acquaintance with the pharmacy of the pituitary substance. It has generally been administered in tablets containing about 2 grains of the dried substance, which is equivalent to about six times as much of the fresh organ, but sufficient care does not seem to have been taken to ensure that the pituitary body was removed sufficiently soon after the death of the animal, or to observe such aseptic precautions as would preserve its active principle from post-mortem changes. Merck favours a preparation which he calls opophypophysinum, and which is made by treating the substance with a saline solution.

MEDULLA OSSIIUM RUBRA.—Modern physiological investigation has shown that the red marrow of the bones is the birthplace of red blood cells. The use of this substance then seems most rational in anæmic conditions. Several British practitioners have examined the properties of bone marrow, and their experiments met with positive success. Dr. Barrs even treated successfully a case of pernicious anæmia which had been made worse by treatment with arsenic; chlorosis and rachitis have also been much improved under its use. On the other side, Dr. Hunt reports in the *Lancet* that he found the preparation perfectly indifferent in three cases of pernicious anæmia in which it had been specially ordered. Most of these reports had been made on a dry preparation of bone marrow, but that obtained by macerating the fresh bones in glycerin gives a far more active solution, which is undoubtedly of

great therapeutic power. Merck points out that it is absurd to use the organs as such, as they are merely vehicles for their useful secretions, much in the same way as nature's metabolism is influenced, not by the tissues, but by their diffusible products. To administer liver for liver complaints, calf's brain for diseases of the brain, etc., is an attempt to enforce the axiom of Hahnemann, *similia similibus curantur*. Modern investigation has shown that the animal tissues, like many microorganisms, may optionally exist under aerobic and anaerobic conditions, and that the anaerobic existence of the tissues has, after the death of the animal, considerable influence in the chemical nature of the tissue fluid. Poehl has proved that by the evaporation, even *in vacuo*, of the glandular extracts, a series of therapeutically important substances vanish, which he ascribes to the anaerobic activity of the glands, since during slow drying processes he found it impossible to avoid this post-mortem function of the glandular cell tissue. Modern medicine requires that only the isolated active components of the organs should be used in practice. Our knowledge of these is very defective; but an element called "spermine" seems common to all organs which are employed for therapeutic purposes, and seems to give them their general tonic effect. Other substances are also present possessing specific therapeutic properties, and these are asserted to be leucomaines—that is, the basic bodies regularly and continuously formed by the physiological processes going on during the decomposition of the protein substances. Since the precipitable albuminoids do not participate in the healing process, their diminution is desirable; moreover, their elimination implies that of a whole group of toxic proteids. Now many of the leucomaines form with chloride or sodium double salts, which are freely soluble in water and highly diffusible. Hence Merck and Poehl have devised a plan whereby the active principle of the fresh gland is represented by a substance prepared with salt, whereof one part is equivalent to ten parts of the fresh gland. Considered from the purely pharmaceutical aspect, the process is an intensely interesting one, while it is claimed that in the short period which has elapsed since their introduction a whole series of successful applications have been recorded.

OVARIA SICCAT.—Without doubt the ovarics, like other glands of the human organism, contain certain internal secretive products which occupy important relations to the entire system. Further, it has long been observed that the cessation of menstruation, either naturally or in consequence of ovariectomy, is followed by a series of disorders which manifest themselves principally in the shape of nervous troubles. The clinical experiences of a number of physicians go to show that the brilliant results which have followed the use of thyroid preparations in cohexia strumipriva, may be rivalled by the success of ovarian medication in climacteric troubles. By the administration of dried ovarian substance, or of an ovarian extract, it has been found possible to repress, for a shorter or longer period, or, in some cases, even permanently, all the symptoms of sympathetic neurosis, such as palpitation of the heart, failure of memory, nightmare, insomnia, ordox fugax, etc. In many of the cases experimented on, other therapeutic measures had already been tried with little effect, hence the beneficial results of the ovarian gland are the more remarkable.

The dried ovarian substance, prepared by removing the fat as far as possible from the entire ovary of the cow, and drying the substance under antiseptic precautions at a temperature not exceeding 40° C., is the preparation introduced by Merck, which has principally been used. A glycerin extract, made by macerating the warm gland in sterilised glycerin, ought to be a far more

active and elegant form for administration. The ovaries vary very much in size, but average about 3 drachms each, but when dried five ovaries weigh about 2 drachms, and of this a daily dose of from 8 to 16 grains suffices, either in tabular or pilular form.

Denaeyer makes a preparation of the ovarian tissue which he terms an albumose. This is made by macerating 20 parts of the fresh tissue in a mixture of 30 parts of water with 3 of active pepsin and 9 part of hydrochloric acid for six hours at a temperature of 40° C. The solution is afterwards brought to the boiling point and neutralised with sodic carbonate, filtered while still warm through a soft filter, which will absorb the fat and the fluid.

RENES SICCATA.—Cases of kidney disease are amongst the most intractable in medical practice, and when we find that one observer noted an improvement in thirty-five nephritic patients, to whom he administered the fresh kidney, or an extract prepared from it, the remedy seems of much value. In these cases the flow of urine was increased, whilst the proportion of albumin diminished or disappeared. In patients suffering from cirrhosis of the kidney with polyuria, the flow was lessened and the general health improved. Uremic symptoms also disappeared under its use. Dr. Donovan reports similar success in a case of nephritis with general dropsy.

According to Brown-Sequard, the origin of trouble in kidney disease is not that substances remain in the blood which ought to be removed, but rather that an internal secretion, which the kidney normally yields to the blood, is absent in these cases. With this view a glycerin extract of kidneys has been subcutaneously injected in chronic and acute inflammations of the kidneys, and generally with a gradual decrease of albumin in the urine and an increase of the diuresis and improvement of the patient's condition. The dry preparation, of which one part is equal to six of the fresh kidney of the pig or sheep, does not seem to be so active as the fresh gland or the glycerin extract. That preparation, procured by peptic digestion and termed an albumose, is a thick, heavy compact powder, unlike the majority of such preparations, which are light and spongy.

Like most other drugs, the renal extract has been essayed in epilepsy. The results were far from gratifying, as the fits became even more frequent, though this was probably due to the cessation of the ordinary bromide treatment. Promising a therapeutic agent as kidney extract seems to be, and large as is the field for its activity, but few reports have appeared in it of late. This is probably due to an attempt to force the use of dried preparations which seem to be of little value.

THYMUS SICCATUS.—This is a peculiar gland situate in the neck of infants, which seems to exercise considerable influence on the development of the body during fetal life and the first years of infancy. As the child grows it gradually becomes functionless and atrophies. This thymus gland is assumed to secrete a fluid which modifies the composition of the blood to a marked extent and which is to some extent antagonistic in its effects to the secretion of the thyroid gland evaporated to dryness in a porcelain vessel.

It is claimed that this method is applicable to any organ, and that the resulting powder represents the active principle in a form which keeps indefinitely if preserved in a sterilised flask. Moreover, it is soluble in glycerin or water, making a solution of a very agreeable flavour, and it can readily be made into pills, tablets, or powders. The strength can be so adjusted that 1 part of the albumose shall be equivalent to 10 parts of fresh tissue. When dissolved in glycerin, and repeatedly filtered, the solution gives no trace of insoluble albuminoids, and will keep indefinitely in a sterilised and sealed flask

Although it is now generally concluded that the therapeutic properties of the thymus gland are opposed to those of the thyroid, it was at first tried as a substitute for the latter in diseases of that gland affecting the human organism. It was found, naturally, to succeed in cases where the thyroid had failed, and to be followed by an increase in the formation and excretion of uric acid. Unlike the thyroid, there were no such secondary effects as decrease of weight, disturbance of the heart's action, etc. The proper use of the thymus gland is in cases where the thyroid is in a state of abnormal activity, as in Grave's disease; whilst the thyroid treatment is obviously proper in cases where there is atrophy and deficient secretion of the gland, as in myxœdema and cretinoid conditions.

The raw gland, fresh from calves or sheep, has been prescribed for defective nutrition in children, and in some cases with marked success. In chlorosis it has also proved beneficial, and is not followed by the feverish symptoms which often accompany the use of the ovarian extract. It has also been tried in anæmia, leucocythæmia, and paralysis infantum.

Many therapeutists attribute the effects of the thyroid extract to the iodine which it is found to contain, Baumann has traced the presence of iodine in the thymus gland, where it probably exists in a state of combination, like that of iodo-thyrin. Abelous and Billard have shown that the important part which the thymus gland plays in the alimentation of the organism depends upon its property of producing, like the thyroid gland and suprarenal capsule, substances which neutralise and destroy the poisons formed in the body by the natural process of metabolism.

The fresh gland itself is probably the most effective form in which to exhibit it, as it does not seem to be followed by any injurious after-effects. A powder, prepared by dessication from the gland freed from fat under aseptic conditions, is prepared by Merck and others, one part of this preparation equals six parts of the fresh gland, and it may be given in doses of 12 to 15 grains in the day.

PROSTATA SICCATA PULVIS.—The prostate gland is situated at the neck of the bladder, and, being peculiarly liable to become hypertrophied in old people, is a fruitful source of trouble by causing strangury, ischuria, etc. The condition was ordinarily supposed to be but little amenable to medical treatment, and the surgical methods employed are always risky and not invariably successful. At the International Congress of Medicine, held at Munich, Dr. Reinert reported that he had tried the effect of the chopped prostate gland of a bull on a patient suffering from hypertrophy of that organ. He administered a quarter of a gland, finely chopped in bread and butter, two or three times a week. After a few weeks the organ had grown considerably smaller, the patient improved in general health, the difficulty of micturition was lessened, there was an absence of sugar and albumin. Failing fresh prostates an extract should be made by macerating the still warm organ from the animal in a saline glycerin solution, according to the formula published by the "Archives of Physiology," that is to say:—

Fresh Gland	2 parts
Sterilised Glycerin	2 "
Saline Solution (50 per cent.)	1 part.

Macerate for forty-eight hours, and filter frequently until clear.

Tablets are also made containing 2 grains of dried prostatic substance. These are taken in doses of five daily. It does not seem to be the best form for administration, as much of the tissue of the gland is of an interstitial character, and probably inert, whilst the parenchymatous tissue, which is probably the active part, must be more or less changed in the drying process. The disrepute into which this remedy seems to have fallen is probably due to the bad pharmacy displayed in the preparations offered in commerce.

THYROIDINUM SICCATUM.—As this preparation is the best known of the animal remedies, and has received the imprimatur of the Pharmacopœia, it is unnecessary to refer further to it. As a result of Hotkin's studies the normal thyroid gland is found to contain two physiologically active bodies: thyroprotein, a metabolic product, which is an active poison, and thyroidin, a specific product of the thyroid cells, which acts as a ferment.

HEPAR.—If the liver be removed from an animal, death quickly follows. A partial ablation of the gland may, however, be effected without an immediately fatal result, but if the quantity removed be considerable, the animal dies in from eight to twelve hours. When an extract prepared with glycerin from the fresh liver tissue is injected into an animal it survives for several days.

This fact proves that the liver secretes a substance which, when introduced into the veins, neutralises the toxic effects of the bile present in the blood, and prevents the formation of toxic albumins. It also shows that the necessary substance can be procured from liver tissue by a simple pharmaceutical process. It becomes at once obviously important to supply, in presence of the morbid conditions of the liver existing with jaundice, the secretion which is absent or insufficient by the injections of a hepatic liquid which will contain the necessary elements of such secretion.

This hepatic juice appears useful in all cases of intoxication by the bile salts or by the colouring matter of the bile. It should also be of extreme value in cases of microbial and alkaloidal intoxication. Thus, Kotlior has demonstrated that when fresh hepatic juice is mixed with hyoscyamine, the latter loses its property of dilation of the pupil. This phenomenon does not take place if we use, instead of the fresh juice, the cooked liver. The hepatic juice has also the property of destroying those ptomaines which are the products of putrefaction, and which give rise to enteric disease if not neutralised by the hepatic secretions.

Some French investigators have attempted to isolate the active principles of the liver, and have extracted from it several albuminoids having a coagulating action on the blood. They have also demonstrated the presence of soluble toxins belonging to the group of soluble ferments. Mairet and Vires have arrived at the conclusion that the introduction of an extract of liver into a healthy person causes the temperature to fall, whilst it increases the amount of urine passed. The secretion of urea and the total excretion of phosphoric acid are also increased, whilst the evacuations are rendered more copious and fluid.

Considering the important function which the liver plays in the formation of sugar, the hepatic extract has naturally been tried in cases of diabetes. It succeeded when used hypodermically in materially decreasing the quantity of sugar, although no change had been made in the diet. In cirrhosis of the liver it has been used with marked benefit, and in this disease the hypodermic injection, and the administration *per os* were attended with the like results, particularly as regarded the marked increase of diuresis. The dose given should be rather large; as much as 3 or 4 ounces of the fresh liver in the day. When the liver is dried under aseptic precautions 1 part of the preparation (*hepar siccatum*) is equivalent to 5 parts of the fresh gland, and about 5 drachms daily is the dose. The aqueous extract is very active, but must be made freshly for each application. The glycerin extract is perhaps the most convenient preparation. It can be given in doses of 4 drachms daily.

An interesting use of this remedy is for hæmorrhage. It has been proved that the liver contains a ferment which has the property of coagulating blood. Hepatic extract and powder have been tried in the cases of five phthisical patients, and have rapidly staunched the hæmoptysis without the use of any other

application. In other forms of bleeding, as epistaxis and metrorrhagia it has likewise been a success.

The experiments of Claude Bernard proved long ago that post-mortem changes take place with immense rapidity in the liver, and whilst it is still apparently fresh and sweet. The importance, then, cannot be exaggerated from the therapeutic point of view of endeavouring to fix and extract the characteristic ferments by impressing the gland in sterilised glycerin and salt solution whilst still hot from the animal, and thus preparing a stable glycerin extract.

LIEN PREPARATUS.—The spleen is the principal organ of the body, in which falls the duty of combating infection. It appears to contain a specific substance which is not destroyed by boiling, and which, when subcutaneously injected, produces a considerably increased proportion of hæmoglobine in the blood, and greatly increases the number of red corpuscles. Some observers believe that these effects may be due to the lecithine contained in the spleen. As splenic extract has also the power of increasing the number of white corpuscles, a nucleinic action is also ascribed to it. From the spleen a body containing iron and iodine, and named by its discoverers "linadine," has been extracted, but the therapeutic properties of this extract have not been yet investigated.

An aqueous splenic extract has been employed in the treatment of anæmia and chlorosis, and succeeded in improving the appetite, re-adjusting the menstrual irregularities, and increasing the weight of the body. In malarial cohexia accompanied by hypertrophy of the spleen, splenic extract and bone marrow have been used with most gratifying results.

LIEN.—There seems to be need of further elucidation of the pharmacy of the spleen, for Dr. Wood, who employed the extract successfully in Grave's disease, found that when the requisite doses were employed that it gave rise to dyspepsia and vomiting, whilst subcutaneous injection gave rise to local inflammation and suppuration. Merck recommends a powder, prepared by drying aseptically, the spleens of sheep or pigs (*lien siccatus pulverisatus*), of which one just corresponds to five of the fresh organ. The dose is from 4 to 12 grains thrice daily in water, gelatin capsules, or tablets.

MAMMÆ.—Dr. Robert Bell has obtained remarkable results by the use of preparations made from the mammary gland of the cow, in cases of uterine fibromata, menorrhagia, and metrorrhagia. He found that the tumour formation was reduced in a remarkably short time, the general conditions of the patient improved, and the pains subsided. The excessive uterine flow was also considerably checked, and in some cases disappeared entirely under the use of the mammary extract, in conjunction with suitable local treatment. The effects are probably due to a secretion from the mammary gland, which, when absent or insufficient in quantity, results in hypertrophy or disordered function of the uterus, and which, when supplied vicariously by means of preparations from the healthy glands of animals, can restore the uterus to its normal condition. The preparation hitherto used has been the powder from the fresh gland, of which 1 part is equivalent to 8 or 9 parts in the recent state. Of this from 5 to 10 grains are given thrice daily. Another preparation which is likely to be of more efficacy is made by treating the glands with saline solution, and is called *opomammium*. Of this from 1 to 2 drachms may be given daily.

PULMONES.—Prepared from the parenchymatous lung tissue of robust young sheep. Dr. Brunet having experimented on animals with extracts of lung tissue, and finding it to possess tonic properties in small doses and toxic effects in larger quantities, felt induced to employ the remedy in the human subject. In ten cases of chronic bronchitis, attended by emphysema, torpid and acute

tuberculosis, phthisis of the lungs and larynx, the use of the remedy was followed by considerable improvement. Brunet accordingly believes this treatment to be applicable to all chronic diseases of the lungs and pleura, pulmonary abscesses, etc. He gave subcutaneous injections of pulmonary juice in doses of about a drachm; or the juice with a little water on an empty stomach every morning. Dr. Grande treated a phthisical patient with the dried powder in doses of about a drachm daily, and effected an increase of the weight and dispelled the fever.

GLANDULÆ BRONCHIALES.—The bronchial glands are credited by physiologists with secreting a substance capable of resisting the entry of bacilli into the air passages. Hence it has been thought that the infected and diseased organism might have its natural healing powers increased by the artificial introduction of the glandular substance. This has accordingly been done in cases of tuberculosis, but the results were disappointing, as in each case fever was produced, with rapid emaciation and loss of strength. Discouraging as this result has been, it yet shows that the preparation is by no means impotent, and that, if pharmaceutical skill be brought to bear on the substance, and a preparation elaborated fell from those toxic albumins which cause the pyrexia, the bronchial gland preparations may yet prove of great value.

EXTRACTUM CORPORIS CILIARIS.—There is a little purplish-black substance in the eye-ball, called the ciliary body, which in its normal condition filters the serum and secretes into the eye a fluid, the aqueous humour, which is almost entirely free from albumin. In certain diseased conditions, such as sympathetic ophthalmia, the aqueous humour fails to be filtered properly, albumin enters it, and becomes deposited on the crystalline lens, thus gravely interfering with vision. Troubles of this kind can be modified considerably by the introduction of an extract from the ciliary body of the ox's eye, to which a little resorcin is added as a preservative. It can be injected under the conjunctiva or dropped into the eye, 1 drop every two hours.

GLANDULA PAROTIS.—A gland is situated in front of the ear, which, when inflamed, gives rise to that condition known as mumps. Frequently when inflammation leaves this parotid gland it settles in the ovaries or testicles. Hence it has been thought that an extract from the parotid might be useful in ovarian disease, and Drs. Bell and McGregor have cured ovarian affections by administering parotid substances. Dr. Bell reports over sixty cases of enlarged and painful ovaries, in which he not only asserted the necessity of an operation, but often effected complete recoveries by the use of the parotid treatment. Parotid gland preparations may be made from the organs of rams or ewes. The dried powder (*glandula parotis siccata pulverisatus*) is equivalent to ten parts of the recent gland, and may be given in 5-grain doses, or the warm gland may be treated with sterilised glycerin to form an extract, or with saline solution.

A few remarks on the general features which should characterise organo-therapeutic preparations may terminate this paper.

Organic juices, and all extracts made by the cold process should present the characteristics of albuminous solutions. They should be coagulable by heat, and be precipitated by strong nitric acid and by solution of potassium ferrocyanide with acetic acid. They give with strong alcohol in excess a precipitate which roughly indicates the strength of the solution, being greatest where the concentration is greatest. They should not give the reactions for albumoses indicated by a precipitation with acetified chloride of sodium, nor should they give the biuret reaction proper to peptones. Most of these preparations can be recognised as to their origin by the smell, or by microscopic examination of the residue evaporated after treatment with alcohol. When in solution they should be

be perfectly limpid and clear, with no trace of bacterial infection, as evidenced by the absence of any odour of putrefaction, though they may show traces of the characteristic odour of the organ with which they are obtained. All vessels containing organic extracts should be thoroughly sterilised, and such substances as tablets or powders should be freed from every trace of moisture and preserved in sealed bottles or in a receptacle containing lime.

Thyroid gland tablets should be suspected, unless they show traces of iodine. Dissolve a tablet in water and add some drops of strong nitric acid, afterwards a few drops of chloroform, which ought to show, after agitation, the characteristic violet tint.

NOTES ON FERRUM REDACTUM, P.B., 1898.*

BY E. SAVILLE PECK, B.A. (CANTAB), PH.C.

The British Pharmacopœia, 1898, describes this as "a fine powder, containing at least 75 per cent. of metallic iron, with a variable amount of iron oxide."

It characterises it as "a fine greyish-black powder strongly attracted by the magnet. It dissolves in hydrochloric acid with evolution of hydrogen and without any smell of hydrogen sulphide, and the solution gives a light blue precipitate with solution of potassium ferrocyanide." It then goes on to describe the method by which the percentage of free metallic iron can be arrived at. It was with a view to ascertaining to what degree commercial samples of ferrum redactum agreed with the tests of the P.B., 1898, that the following investigations were made:—

Fifteen samples were collected from different sources—wholesale houses, pharmacists, hospitals and drug stores. They were mostly received by post—one only being sent out in a bottle (sample X)—and immediately placed in bottles and weighing tubes.

The general appearance was noted in each case, and it will be seen in the subjoined table (B), that with few exceptions the more silvery grey the sample the more free metallic iron it contained. The brown masses mentioned consisted chiefly of ferric oxide (Fe_2O_3).

When treated with hydrochloric acid

- (1) No sample was found to dissolve completely, but left a variable residue of carbon and silica (SiO_2).
- (2) Hydrogen was liberated and in all cases yielded a smell resembling a hydrocarbon such as carburetted hydrogen or an olefine.
- (3) When this liberated hydrogen was passed through filter paper soaked in lead acetate solution, in every sample it caused a brownish to black coloration, due to lead sulphide, according to the quantity of sulphur present. The smell of hydrogen sulphide could not be always detected, being probably masked by the presence of the smell of the hydrocarbon. The presence of the sulphur doubtless points to the use of insufficiently purified hydrogen in the manufacture of the ferrum redactum.
- (4) The solution in hydrochloric acid gave with a solution of potassium ferrocyanide a blue precipitate varying from a light to dark colour.

ARSENIC.—In addition to the above pharmacopœial qualitative tests it was thought desirable to search for arsenic. The means selected was a modification of a test described in Crookes' 'Select Methods in Chemical Analysis,' under the names of MM. Mayençon and Bergeret. One gramme of ferrum redactum was placed in a small flask, and on to it was poured 20 C.c. dilute H_2SO_4 . The neck of the flask was lightly plugged with cotton-wool and tied over with a small filter paper. The latter was then moistened with 2 or 3 drops of mercuric chloride solution and the whole warmed gently. The presence of arsenic was indicated by the appearance of a

* Read at the British Pharmaceutical Conference, held at Belfast, August, 1898.

TABLE B.—Qualitative and Quantitative Analysis of Twelve Samples of Commercial Ferrum Redactum.

Sample.	General appearance.	Wt. taken for analysis.	Free Fe found.	Per cent. of do.	Sulphides indicated by smell.	Sulphides indicated by lead acetate paper.	Arsenic.	Insol. matter, such as silica and carbon.	Test with litmus paper.
A.....	Silvery-grey, slight lustre	·2345	·2080	88·67	Nil	Faint trace	Faint trace	Present	Nil
B.....	Grey with brown masses	·3575	·2599	72·71	Slight smell	Traces	Traces	"	Faintly alkaline
C.....	Silvery-grey with brown masses	·2165	·166	76·74	Nil	Traces	Faint traces	"	Nil
D.....	Grey with brown masses	·2515	·2117	84·18	Nil	Traces	Absent	"	Strongly alkaline
E.....	Black cakes	·326	·201	61·65	Distinct smell	Traces	Traces	"	Nil
F.....	Chocolate-black	·3335	·141	41·66	Distinct smell	Traces	Slight traces	"	Nil
G.....	Silvery-grey with brown masses	·603	·4073	67·22	Distinct smell	Slight trace	Faint traces	"	Nil
H.....	Black	·142	·1013	71·34	Strong smell	Heavy traces	Faint traces	"	Strongly alkaline
I.....	Black	·255	·170	66·69	Strong smell	Heavy traces	Faint traces	"	Strongly alkaline
J.....	Silvery-grey with few masses	·342	·2605	76·16	Nil	Faint trace	Absent	"	Nil
K.....	Dark grey	·8255	·3939	47·72	Nil	Traces	Faint traces	"	Nil
L.....	Chocolate-grey	·625	·552	88·33	Nil	Faint traces	Absent	"	Alkaline

lemon-yellow coloration, gradually deepening to pale yellowish brown. This is an exceedingly delicate reaction, the presence of 1 part of As_2O_3 in 100,000 parts of water being detected. This test is especially adapted to ferrum redactum, as no zinc is needed to be used, the action of the dilute H_2SO_4 upon the free metallic iron and arsenic generating the arseniuretted hydrogen, and, further, it is unnecessary to prepare a solution of the substance.

Nine samples out of twelve were found to contain traces of arsenic in variable quantities, and suggests the advisability of introducing a limit to its presence in future editions of the P.B.

Its source is probably from the impure zinc used in the generation of the hydrogen used in the manufacture of the sample.

ALKALIES, THE DETECTION OF THE PRESENCE OF.—One gramme of ferrum redactum was well shaken and slightly warmed with 5 C.c. of water, filtered and tested with red litmus paper.

When conducting this obviously simple test it is important that no ferrum redactum itself be allowed to come in contact with the litmus paper, because it was found that even those samples which, when treated in the above manner, yielded no alkaline reaction, yet when placed upon the red litmus paper in the dry state and moistened with a drop of water and exposed to the air, after a short while, turned it blue; doubtless due to the action of the oxygen and carbonic anhydride in the atmosphere.

Five samples were found to give distinctly alkaline reactions.

The presence of alkalies such as carbonates is of considerable importance from the fact that the free iron in samples containing them are more likely to become oxidised in a damp atmosphere.

Their probable source is doubtless insufficient washing of the precipitated hydroxide.

ASSAY.—The British Pharmacopœia, 1898, directs that .25 Gm. be added to a hot solution of 1 gramme of copper sulphate in 15 C.c. of water in a flask that can immediately be well corked, and the whole shaken occasionally during ten minutes. The liquid, after being rapidly filtered with minimum exposure to air and acidulated with sulphuric acid, should not cease to yield a blue precipitate with the solution of potassium ferricyanide until at least 33·7 C.c. of vol. sol. of potassium bichromate have been added.

This makes the minimum standard practically 75 per cent., or, more accurately, 74·9488 per cent.

In working the above method it appeared difficult to obtain concordant results until the following modifications and details were complied with.

(a) The ferrum redactum was finely powdered and intimately mixed until completely homogeneous.

(b) The solution of copper sulphate was tested for ferrous iron, found pure, and made according to the strength stated above.

(c) The ferrum redactum used was weighed out by noting the difference in weight of the corked tube containing it before and after pouring some of it out into a flask.

(d) The copper sulphate solution was added *cold* in the proportion of 15 C.c. to every .25 Gm. ferrum redactum taken. The advantage of adding it cold is that the action does not commence until each little particle of free iron has come into contact with the copper sulphate solution. It was found that when a hot solution was added little masses of iron became coated with metallic copper, and resisted the further action of the copper sulphate solution, and thus gave a slightly lower reading.

(e) The flask used was fitted with a Bunsen valve, this being simply a well-fitting cork pierced with a straight glass tube (about 30 Cm. in length), a small piece of indiarubber tubing with short slit in it, and glass rod to stop the open end. The oxygen of the air cannot enter, but the steam, etc., has free exit.

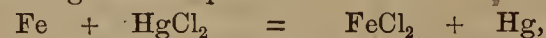
(f) The flask was then placed upon a water bath and shaken frequently during half an hour.

(g) It was then rapidly filtered, the precipitated copper and the iron oxides thoroughly washed with boiled distilled water, and the whole made up to 100 C.c. Of this 10 C.c. was taken and to it 10 C.c. dilute sulphuric acid added, standard permanganate of potassium solution (N/10 is a convenient strength) was then run in until faint permanent coloration took place. The mean of 3 or 4 determinations was taken, the number of C.c.'s used noted and calculated to percentage. The volumetric solution of potassium bichromate was used in the earlier determinations and was found to correspond with the potassium permanganate, but was afterwards discarded in favour of the latter, which was found more convenient in many ways.

By referring to table A it will be seen the results were satisfactorily concordant. By referring to table B it will be seen that five samples out of the twelve are above the standard of 1898, and six above that of 1885.

It appears therefore that while on the whole the percentage of free iron is fairly satisfactory, the presence of sulphides, carburets and arsenic points to insufficient care being exercised in some of the minor details of manufacture.

DETERMINATION BY MERCURIC CHLORIDE.—It was thought desirable to compare the foregoing results of the P.B., 1898, method with those of some other, and one was found in Berkurt's 'Analytische Chemie,' and this was afterwards found to be practically the same as that employed by the United States Pharmacopœia, 1890. The determination consists in the fact that the free metallic iron is converted by mercuric chloride into ferrous chloride ($FeCl_2$), according to this equation—



but there is evidently an intermediate stage, because mercurous chloride ($HgCl$) is undoubtedly formed and remains present throughout, being filtered off with the metallic mercury and undissolved oxides.

Process.—About .556 Gm. of ferrum redactum was carefully weighed out and placed in a flask with Bunsen valve, and upon

this was poured a solution of 2.5 Gm. mercuric chloride in 50 C.c. water, or in these same proportions, according to weight taken. The flask was then placed in a water bath and frequently agitated during one hour. It was then allowed to cool and made up to 100 C.c. and well shaken. 10 C.c. of the filtered solution was then taken, and to it added 10 C.c. dilute sulphuric acid, and titrated with the same standard solution of potassium permanganate until a faint permanent red coloration appeared, and calculated to percentage of free iron as before, see Table C.

TABLE A.—*Estimations by P.B., 1898, Method.*

Sample.	Weight of ferrum redactum taken.	Weight of free iron found.	Percentage of free iron.
X1 .....	.266	.2438	91.68
2 .....	.294	.2706	92.06
Y1 .....	.263	.1543	58.68
2 .....	.246	.1479	60.13
3 .....	.326	.2010	61.65
Z1 .....	.335	.1404	41.91
2 .....	.3385	.1410	41.66

To confirm the assay the slight red colour left over from above was decolorised by the addition of a few drops of alcohol, then about 1 Gm. of pure potassium iodide free from iodate added, and the whole kept at a temperature of about 40° C. for half an hour in well-corked flask. The liberated iodine was then titrated with standard thiosulphate of soda (N/10 being found convenient), and calculations made. Table C shows that concordant results can be obtained by this method.

TABLE C.—*Estimation of Ferrum Redactum by Mercuric Chloride Method.*

Sample.	Weight of ferrum redactum taken.	Weight of iron found.	Percentage do.	Percentage from thiosulphate confirmation.
X1 .....	.5595	.4795	85.74	—
2 .....	.6320	.5413	85.65	—
Y1 .....	.579	.2335	41.19	41.20
2 .....	.5835	.2438	41.79	41.85
Z1 .....	.850	.2722	32.03	32.07
2 .....	.602	.1876	31.16	31.13
3 .....	.480	.1527	31.82	31.93

By comparing the two methods, as in table D, it will be readily seen that the copper sulphate method invariably yields a higher percentage of free iron than the mercuric chloride method, but the difference between the two estimations keeps constant.

The reason for this discrepancy appears difficult to tell.

TABLE D.—*Comparison of Copper Sulphate (P.B., 1898), with Mercuric Chloride (U.S.A., 1890) Method for Estimation of Ferrum Redactum.*

Sample.	Percentage of iron by copper sulphate method, P.B., 1898.	Percentage of iron by mercuric chloride method, U.S.A., 1890.	Percentage. Average difference.
X1	91.68	85.65	} 6.18
2	92.06	85.74	
Y1	60.13	41.19	} 19.40
2	60.65	41.79	
Z1	41.91	31.16	} 10.29
2	41.66	31.82	

It was found that the solution of copper sulphate (as is invariably the case) gave an acid reaction with litmus paper, and it is conceivable that this acid formed with the ferrous oxide (FeO) frequently present in black samples such as Y, ferrous sulphate, and so tended to give a higher reading than the correct one. On the other hand, in the mercuric chloride method, the presence of mercurous chloride may have a deterrent effect upon the oxidising action of mercuric chloride upon the free iron present, and so tend to lower the

reading in this case, but up to the present I have been unable to find a satisfactory reason for the discrepancy.

SEPARATE DETERMINATIONS of the different oxides (FeO, if present, Fe₂O₃ and Fe₃O₄) might throw light upon the subject.

In conclusion, I would venture to suggest that in the preparation of ferrum redactum

(a) The ferric hydroxide should be ordered to be thoroughly washed and the hydrogen carefully purified ;

(b) That more stringent tests be added to ensure the absence of sulphides ; of more than 1 per cent. of insoluble residue and of alkaline carbonates ;

(c) That there should be a limit to the amount of arsenic present, and (d) that various modifications be made in the method for estimation.

I have to thank Mr. R. Foster Moore for his valuable assistance in many of the weighings and titrations.

NOTES ON "CONCENTRATED OIL OF LEMON."*

BY T. H. W. IDRIS, F.C.S.

At a meeting held in a city so well-known in connection with the aerated water industry as Belfast, and with which industry I have been connected for the greater portion of my life, it has occurred to me that notes on the two principal flavourings used in that industry would be of interest to pharmacists as well as to mineral water manufacturers.

Under the presidency of a gentleman who has done good work in this direction, I venture to offer some casual observations on the general results of investigations that have been carried on by me in the laboratory of my firm at various times, extending over many years, personally, and in conjunction with Dr. Symons, Mr. R. A. Cripps, Mr. Ernest J. Parry, and Mr. Frank Stephens.

It is not necessary for me to recapitulate the various well-known data respecting oil of lemon, such as the specific gravity, rotation, and boiling points of the oil and its various constituents, which can be found in the text-books on the subject and in the published results of Tilden, Bourchardat, Lafont, Beck, Schimmel, Ladell, Criswell, Hofmann, Doebner, Umney and others, but it may be desirable to remind ourselves that the well-defined constituents of lemon oil consist of limonene C₁₀H₁₆ (a terpene), the aldehydes, citral C₁₀H₁₆O, and citronellal C₁₀H₁₈O, with a small quantity of non-volatile matter. Small quantities of other bodies have been found by different experimenters, and my experience leads me to the conclusion that even pure lemon oil is a much more variable article than is generally supposed, and commonly contains about 4 per cent. of some body or bodies heavier than terpene and which cannot be classed amongst the other constituents mentioned. With a view of elucidating this I hope to carry out more complete experiments and to report the result later on, but this note is not written with the intention of explaining any complex chemical problem relating to the exact constitution or the composition of lemon oil and of the various bodies contained in it, but more with the idea of showing how some easily separable substances can be obtained from lemon oil, and which contain in a concentrated form most of the odoriferous and flavouring principles of the oil. The term concentrated oil of lemon is, of course, a misnomer, as the terpene (limonene) has a flavour and pungency which are peculiar to itself. It is well known that, in addition to the changes which occur from age or from exposure to air, oil of lemon decomposes much more rapidly when diffused in water or aerated water, and this most objectionable occurrence from a manufacturer's point of view renders lemonade made from oil of lemon

* Read at the British Pharmaceutical Conference held at Belfast, August, 1898.

unpalatable in a very short period, and this change is generally, and I think rightly, attributable to a change in the terpene, an odour of turpentine being developed. To obviate this difficulty various tinctures of lemon peel are used by many manufacturers, but lemonade prepared in this way, although having much better "keeping" qualities, is somewhat deficient in the aroma of lemon aldehyde which is desirable in a good beverage.

Essence dealers and manufacturers have accordingly been offering various forms of "concentrated soluble essence of lemon." The first specimens which I came across under this designation were simply oil of lemon with an addition of alcohol, but although the addition of alcohol in a proportion of not less than 10 per cent. absolutely prevents change in oil of lemon, and is consequently a desirable adjunct, the change in the oil when diffused in water is not lessened.

Other samples that I met with contained in addition to the alcohol other flavourings which appeared principally to be additions of small quantities of lemon grass oil or of citral¹ obtained from that oil, and in some cases an admixture of ethers with the oils of lime and orange. All these mixtures are not of much value to the mineral water manufacturer, but the so-called "terpeneless oils" have been an introduction of decided utility. These "terpeneless" oils as sent out by the makers differ considerably, and the principal object of my note is to call attention to a method by which the lemon aldehydes in oil of lemon can be separated without much change and in a state of comparative purity. Fractional distillation of oil of lemon cannot be carried out at the normal pressure of the atmosphere without considerable change in the oil and in the products, but this difficulty is overcome by fractional distillation under reduced pressure. If oil of lemon be treated in this way, and about 85 per cent. distilled at a temperature below 100° C., the distillate will be found to be perfectly white; with a very poor lemon odour, the specific gravity being that of terpene. The distillate will not give any aldehyde reaction. If the remaining 15 per cent. of residue be treated with bisulphite of sodium in the usual way a crystalline mass will be obtained. I find, however, in practice that it is more desirable to distil about 90 per cent. of the original oil. The remaining 10 per cent. is an oily liquid which, on cooling, deposits a white sediment. The gravity is about 0.902 to 0.905, and when mixed with rectified spirit it deposits a dense flocculent precipitate. If distillation of the 10 per cent. residuum is continued under reduced pressure, a very aromatic, colourless oil is obtained, amounting to about 7 per cent. of the original oil; but I find that a better product results from passing steam through the residuum when a pale yellow oil is carried over and floats on the water. This possesses to a very marked extent the pure lemon aroma, and is a very different article from citral. The final yield from most oils operated upon in this manner is approximately 6 per cent. to 7 per cent. of the original oil, and it is found to be very useful in improving the flavour and aroma of lemonade. The residue solidifies on cooling, and only faintly smells of lemon. The terpene from treating considerable quantities of oil of lemon was not thought to be of much value, but I found later on that it could be readily disposed of at about one-third of the cost of oil of lemon, and the eagerness displayed in buying at this price suggested to me that it must be used as an adulterant, and it will be readily seen that it is quite possible to prepare an oil from what appears to me to be the useless residues and the addition of citral from lemon grass oil, which would have the correct gravity, boiling point and rotation of oil and rotation of distillate (B.P., 1898 test), and with or without being mixed with the genuine lemon oil well-nigh impossible to detect, showing even the normal amount of aldehyde. I am also

of opinion that mixtures of lævo-rotatory (French) turpentine or dextro-rotatory (American) turpentine with other oils and citral can be made and are made, so that it is impossible to distinguish them from pure lemon oil by any known chemical or physical test. The question naturally arises, how is it possible to judge of the purity of lemon oil if all the usual tests have proved to be futile? I venture to suggest that the best test of the purity of oil of lemon is treatment in the way that I have indicated, and then to judge of the value of the oil by the flavour and aroma of the separated aldehydes.

Modifications of this process of concentration and subsequent separation under diminished pressure are applicable for preparing terpeneless lime, orange, and many other oils.

THE GALENICAL PHARMACY OF THE 1898 PHARMACOPŒIA.*

BY F. C. J. BIRD.

The storm of adverse criticism which greeted the appearance of the last Pharmacopœia in September, 1885, affords a striking contrast to the comparatively mild protests against alleged defects in the formulæ and processes of the present volume which have as yet appeared. Nor on this occasion has it been found necessary to mar the reputation of the Pharmacopœia by the publication of a lengthy list of errors and corrections—ample evidence of the greater care and more practical knowledge brought to bear upon the compilation. Processes devised in the experimental laboratory, or at the working bench of the retail pharmacy, must be based on thoroughly sound principles if they are to successfully pass through the ordeal of trial on the manufacturing scale, the true test of perfection in any process. Shortcomings in an official formula may, when small quantities are concerned, usually be compensated for by dextrous manipulation, but as soon as grammes give place to kilos any error becomes highly magnified, and the difficulty of successfully carrying out the operation enormously increased.

Sufficient time has now elapsed for exhaustive trials of the new and altered official formulæ, and the fact that so few serious faults have been discovered completely raises the labours of the compilers above that reproach of "easy-chair work" which was thrown, perhaps not quite undeservedly, at the last edition of the Pharmacopœia.

The objects of the present short paper are to briefly convey a general idea of the influence which the galenic pharmacy of the new Pharmacopœia has had upon the work of the wholesale laboratory, and more particularly to elicit the experience and views of fellow-workers from the retail stand-point in the useful discussion which I trust will follow.

Two apparently incompatible incentives are ever present to those who have control of commercial laboratories, viz., excellence of product combined with economy of production. Even a Pharmacopœia cannot afford to neglect these indispensable elements of successful work, and that this has been recognised is evidenced by the fact that some of the most rational and useful of the alterations in official processes are based on the practice of the manufacturing laboratory.

A somewhat revolutionary principle is involved in the omission of a detailed description of processes which can only be conveniently and economically carried out on the large scale. Not so many years ago the man who not only guaranteed the preparations on which his reputation depended, but actually made them himself, was alone considered to be a pharmacist in the highest sense of the

* Read at the British Pharmaceutical Conference, held at Belfast, August, 1898.

word. But as extremes of all kinds are generally bad, the conviction has forced itself upon us that too strict an adherence to the hard and fast lines of ideal pharmacy is fraught with disadvantage. Specialism and division of labour are the tendencies of the age. The conservatism of pharmacy has long and stubbornly struggled against their influence, but the pages of the new Pharmacopœia reflect the result of the unequal contest. The pharmacist of to-day is, by education and training, in a position to guarantee the quality of the chemicals and preparations which he vends. Not that he necessarily has made them himself—the traditional pharmacist of a previous generation may have done so—but with confidence in the source of those preparations which he does not manufacture, supplemented by his own practical knowledge, he may, without diffidence, take the full responsibility of his wares, and continue to occupy that honourable position in the community to which he is justly entitled.

Concentrated infusions, the horror of the pharmaceutic purist, and the theme of many a solemn admonition to the younger generation, have at length insinuated themselves within the pages of our official guide under the guise of Liquores Concentrati. Nor on reflection does it seem unreasonable that the same skill and perception of the idiosyncrasies of a particular drug under treatment which enables the pharmacist to prepare a perfect tincture or liquid extract should also aid him to solve, under somewhat different conditions, a similar pharmaceutical problem.

Uniformity is a dominating idea in the revised Pharmacopœia. The greater precision of language and more accurate definition adopted are welcomed in the laboratory, and will do much to prevent that undesirable variation in the physical character of the product of a given formula emanating from different sources which is always likely to occur when the wording of that formula permits of too much latitude in its interpretation.

It will only be possible in the limited space at my disposal to cursorily glance at the more important classes of galenicals and indicate the direction in which they have been affected by official alterations.

EXTRACTA.—The new and altered extracts are, on the whole, a greatly improved class of preparations. Chief amongst them must be mentioned Ext. Cascar. Sag. Liq., the formula of which is in every way an advance on that of 1885. By the new method the bark is completely exhausted (boiling water removes less than $\frac{1}{2}$ per cent. of tasteless extractive from the marc) and the tedious filtration necessary in the old process can now be dispensed with. The addition of the alcohol throws down an almost negligible precipitate, especially if the aqueous liquid has been carefully decanted before the final evaporation, and considering the enormous demand and large scale on which this preparation is made, the new process comes as a boon to the laboratory worker. Ext. Belladonnæ Alcoholic., whilst now possessing the advantage of a standard strength in alkaloid, cannot be regarded as a perfect galenical; in fact, as far as physical appearance is concerned, its claim to the designation of extract is not apparent. If made sufficiently soft to be of a pilular consistence, hardening occurs at the surface, with consequent variation in potency. Evidently a more suitable diluent is a desideratum. Ext. Belladonnæ Liq.: At the Oxford meeting of the Conference it was suggested that re-percolation might advantageously be adopted as an official process, and this is one of the instances in which the compilers of the Pharmacopœia have considered it applicable. Complete exhaustion of the belladonna root must not be expected by the process as written, for the condensation of the active principles of 2 lbs. of belladonna root in 12½ fl. oz. of product by following the official directions would tax the ingenuity of the most skilful operator. But the application of

heat, which is so detrimental to the colour of the extract, is avoided, and it is always open to the pharmacist to continue percolation (as is usually done) with more menstruum to exhaustion, the weaker fractions being reserved for use in a subsequent operation. Re-percolation gives excellent results with Ext. Sarsæ Liq.; it might also have been extended to Ext. Cocæ Liq. and Ext. Pareiræ Liq. Extractum. Ergotæ, 1885, was unsatisfactory on account of the indefinite expression "syrupy consistence" which occurred in the formula. Just according to the construction placed upon that expression, so the yield and presumably the activity of the product varied, but such a fault is avoided in the new process, which apparently leaves little to be desired. One of the greatest improvements from a laboratory point of view has been effected in the formula for Ext. Glycyrrhizæ Liq.: Made in the old way it was a constant source of trouble, for not only might the undecorticated root be employed for the 1885 preparation (to the detriment of its flavour and sweetness), but the proportion of rectified spirit was quite insufficient to prevent fermentation in hot weather, so that it was absolutely necessary to depart from the literal directions of the Pharmacopœia and evaporate to a higher gravity in order to admit an increased proportion of spirit without interfering with the volume of the product. These faults have now been corrected, and the present formula is an admirable one. Ext. Nucis Vom.: Standardisation with sugar of milk appears to be successful in this case, as unlike Ext. Bellad. Alch. there is sufficient evaporated liquid to take up the sugar of milk and at the same time retain the physical characters of an extract. Ext. Nucis Vom. Liq.: Here re-percolation is inferior to the official method, the whole of the alkaloids being with difficulty removed from the seeds by solvent already partly saturated with extractive matter. Percolation with fresh solvent and distillation as directed easily produce an extract of full strength. Ext. Ipecacuanhæ Liq.: The intention of the compilers was presumably to make this a 1 in 1 preparation, but the alkaloidal standard fixed upon (2.25 per cent.) rarely admits of 16 fl. oz. of extract being obtained from 1 lb. of root. Ext. Pareiræ Liq.: In spite of considerable criticism this process has proved a workable one and the extract deposits less than formerly. But re-percolation would probably have been more suitable, as already mentioned.

The more frequent instruction to "evaporate to dryness" and the introduction of extracts reduced to powder with sugar of milk is a distinct advance in the direction of uniformity, for in these cases the operator is now relieved of all doubt as to the meaning of such indefinite expressions as "suitable consistence," "consistence for forming pills," "soft extract," etc., which were of common occurrence in the last Pharmacopœia.

LIQUORES.—The liquores concentrati rank foremost in interest amongst the numerous additions to this class. Their insertion marks a change in the official attitude which, by many, has long been regarded as inevitable, for they are introduced as the result of many experiments made with the object of preparing decoctions and infusions in a highly concentrated state, which should resemble the liquids termed by manufacturers "concentrated infusions and decoctions." The methods given for the preparation of these liquors, although perhaps not so perfect as those followed commercially in the manufacture of concentrated infusions, are on the whole successful, the liquors sarsæ co., senegæ and quassiæ being amongst the best. Some are deficient in keeping properties, and in those formulæ constructed on the model of liq. chirata conc., it would seem to be more in accordance with the accepted principles of percolation to direct "that the marc be kept covered with menstruum, and the percolate allowed

to flow regularly at such a rate that the whole operation may extend over eight days." Considerable doubt exists as to the manner in which the compilers of the Pharmacopœia intend the Liquores Concentrati to be employed. May I suggest that the idea in their minds was that a medical man when writing a prescription would order the official dose of a liquor in place of the corresponding fresh infusion, and I think this view is supported by the statement in the preface that "the products of their dilution may be prescribed by practitioners in place of the corresponding official infusion." Naturally, in a mixture "Aquæ ad" would give the product of their dilution. Used in this way the Liquores Concentrati would neither interfere with the fresh infusion nor its concentrated representative. Liq. Calumbæ Conc.: Calumba Root is, in this formula, directed to be twice macerated and pressed with given quantities of distilled water, the expressed liquids being afterwards heated to 180° F. and mixed with alcohol. The quantity of expressed liquid obtained from a drug like calumba depends on the power of the press, hence an element of uncertainty exists which is likely to cause variation in the product. This could have been minimised by directing sufficient water to be taken for the second maceration to furnish a definite volume of expressed liquid. Liq. Sennæ Conc.: The product of this formula does not usually measure one pint, as evaporation during the heating of the liquid, precipitation, by the alcohol, and absorption by the filter together tend to make the loss in volume more than the $\frac{1}{2}$ oz. allowed. If the liquid after heating were made up to 16 fl. oz., and the well-drained filter washed, if necessary, with 20 per cent. alcohol to 20 fl. oz. product, greater uniformity would be ensured. Liquor Thyroidei is the herald of a new series of preparations which is probably destined to find a permanent place in future editions of the Pharmacopœia. Scrupulous cleanliness and perfectly fresh and healthy glands, free from cysts, are absolutely essential for the preparation of a reliable thyroid solution; in other respects the process presents no difficulty if the official directions are closely followed. Half per cent. phenol solution in conjunction with glycerin is used as a preservative, but it is doubtful whether this is the most efficient that could have been employed.

SPIRITUS.—The process for Spiritus Ætheris Co. involves distillation of a mixture of alcohol and sulphuric acid at a high temperature. Few ordinary pharmacists, unless possessing special facilities, would undertake the risk of this operation, and under the circumstances a modified formula embracing an outline process, with characters and tests for oil of wine, and directions for its solution in spirit and ether, would have been preferable. Spirit Æther. Nit.: Deficiency of product due to loss of nitrous ether in the old process is now avoided by placing a portion of the alcohol in the receiver, in order to absorb any ethereal vapour which may have escaped condensation. A better yield is thus secured which may still further be increased by conducting the distillation under slight pressure as advised some years ago by Mr. E. H. Farr. The apparatus (all joints of which must be quite air-tight) is set up as usual, but a tube led from the receiver is made to dip under the surface of mercury to an extent dependent on the pressure which the retort, etc., will safely stand.

SPIRITUS RECTIFICATUS.—The change in the strengths of the official alcohols is the most important and far-reaching of any that have affected the characters of the galenic preparations of the new Pharmacopœia. I must confess to not sharing the regret with which the disappearance of proof spirit has been viewed in some quarters. As long as the word "proof" remained on the official page there was always an inducement to use it as a standard of alcoholic strength, but its removal has cleared the way for the

more rational, scientific, and infinitely more convenient centesimal system now happily adopted. Long custom and daily contact with the proof standard have rendered it indispensable to the British Excise, but for pharmaceutical purposes the new method of expressing alcoholic strength has all those advantages over the old which metric weights possess when compared with avoirdupois weights. Forty or fifty over-proof is meaningless to the average mind as an expression of alcoholic strength, whilst the terms 40 or 50 per cent. alcohol at once call up a tangible idea of relative alcoholic value. The ease with which volume-percentage has displaced proof degrees in the routine of the laboratory is surprising, and the compilers of the Pharmacopœia are to be congratulated on having so boldly departed from the beaten track by authorising a system both convenient to work with and widely acceptable. Mixture by weight, where liquids are concerned, is not the general rule of the Pharmacopœia. There are, however, instances in which it has been thought desirable to order liquids in parts by weight; for example, the liquid ingredients of the ointments. This principle, which is particularly applicable when rise of temperature is a consequence of the act of mixing, might, with the view of increasing the usefulness of the formulæ, have been extended to the diluted alcohols and to certain of the diluted acids, for it is obvious that when the components of mixtures have to be measured at 15°·5 C. and the final volume adjusted at that temperature mixture by weight is in such cases both quicker and more accurate.

SYRUPS.—Keen disappointment has been felt at the absence of Syr. Ferri Phosph. Co. and Syr. Hypophosph. Co. These two syrups are manufactured in enormous quantities, but as all makers do not follow the B.P.C. Formulary there is great variation, and authoritative processes for their preparation were eminently desirable. Syrupus Aurantii is improved in flavour by the tincture of fresh peel now used. Syrup. Ferri Iodid. has changed for the better in several respects. The useless and detrimental boiling together of syrup and ferrous iodide solution is omitted, the loss of iodine by volatilisation and absorption in the filter paper, which formerly rendered it impossible to produce a syrup of full official strength, is now prevented by boiling slightly and washing flask and filter with diluted syrup—practical details of great importance. Although the much needed reduction in the quantity of sugar has been effected, the sp. gr. remains about the same on account of the ferrous iodide having been increased to 10 grammes in 100 C.c., probably to bring the syrup into line with the percentage system of the Pharmacopœia. Formulæ for Syr. Ferri Bromidi and Syr. Picis Liquid., two syrups in very general demand, might usefully have been included. It is disappointing that the faults which have so frequently been pointed out in the process for Syr. Rhei are still left uncorrected. Amongst other defects may be mentioned the wasteful procedure (surely unworthy of official sanction) of evaporating an alcoholic percolate. Syr. Rcsæ, an unimportant syrup, also remains unaltered; it might advantageously have been remodelled on the lines of the U.S.P. formula. Syr. Sennæ: This is a great advance on the old syrup. The senna is "extracted by pressure," by which the greater part of the injurious and lengthy evaporation of the old process is avoided, and a product obtained which, although rather thin, is of excellent appearance and aroma. Syr. Papaveris has been omitted without the provision of any adequate substitute. The undesirability of officially retaining a powerful narcotic like Syrup of Poppies, "which is of variable activity, cannot be standardised, and is unfit for medicinal treatment, especially of children," is the alleged reason for its deletion, but although this is certainly consistent with the general principles of the new Pharmacopœia, the preparation in question

being extensively used in domestic medicine, will still be manufactured and sold, and it is doubtful if the object of its omission will be attained. The difficulty might possibly have been overcome by introducing, under some such title as *Syr. Opii Co.*, a formula for a similar syrup, based on a standardised preparation of opium. Would the B.P.C. Formulary Committee consider the suggestion?

TINCTURÆ.—The new and altered formulæ of the tinctures, foreshadowed by the work of Farr and Wright, were finally adopted by the Pharmacopœia Committee of the General Medical Council, after an examination of "some hundreds of tinctures, spirits, etc.," prepared by the Editor of the Pharmacopœia; and the result of the alterations, extensive as they are, has, from a laboratory point of view, proved in most cases entirely satisfactory. *Tinct. Aurantii* is far superior in aroma to the 1885 tincture. The objection that has been raised to the use of the fresh peel, viz, that it can only be obtained at a certain season of the year, can hardly have much weight when it is remembered that many other official drugs (poppy petals, green herbs, etc.) labour under the same disadvantage. *Tinct. Opii*: The well-known faults of the 1885 process have been corrected. The new method is quicker and more easily carried out, exhaustion can be completely effected, and by the final adjustment in strength (a most important improvement) uniformity is ensured. *Tinct. Rhei* is remarkable for the omission of saffron and replacement of part of the 60 per cent. alcohol by glycerin. It is the only tincture prepared by percolation which contains glycerin. The result, however, is in this instance a decided success.

UNGUENTA.—Many improvements have been effected in this group. Experience in the use of the paraffin basis inaugurated in the last Pharmacopœia has had its effect on the present formulæ, and generally they may all be said to be highly satisfactory. Variation in colour of certain of the ointments has been prevented by designating the particular variety of paraffin to be used—a much needed provision, which will ensure uniformity in the future. *Unguentum Hydrargyri Nitratis* apparently still continues an unsolved problem. The formula as it stands does not in all cases give a perfect result, for the ointment is neither of a very good colour when made, nor does it retain its colour for any length of time when kept. Moreover, the high temperature to which the fat and oil are directed to be heated renders the operation a difficult one to carry out, especially on the large scale. A modification of the official process, which yields an excellent product, depends on the fact that lard, either crude or imperfectly oxidised, has a powerful reducing action on nitrate of mercury ointment, whilst olive oil has little or none.

If, therefore, the lard be heated on a water bath with the nitrate of mercury solution to as high a temperature as possible until reaction nearly ceases, and the olive oil then added, the heat being continued for a short time, a product of excellent colour and consistence will be obtained. This process is more manageable than the official one; by completely oxidising the lard with excess of solution of nitrate of mercury the keeping qualities of the ointment are greatly improved. *Ung. Conii*: The boric acid is omitted; this ointment now becomes mouldy on keeping.

The assay processes of the new Pharmacopœia have been found to work well in the analytical laboratory. The one for morphine in opium is now trustworthy and free from error. H. Wilson has shown that in some instances the analytical details may be simplified or shortened, sources of loss eliminated and slightly higher figures obtained; probably with the record of more experience other suggestions will follow. At a certain stage in the *nux vomica* estimation, for example, the

alkaloid is directed to be precipitated in a stoppered flask, the strychnine ferrocyanide transferred to a small filter, washed, and rinsed into a separator, an operation presenting some slight difficulty with the possibility of loss. A more convenient plan is to precipitate the alkaloid in the separator itself (which must have a capacity of 200 C.c.), having previously inserted a minute tuft of cotton wool in the tube of the separator just above the tap. The precipitate is readily kept back by the cotton wool, on which it collects, and the column of liquid in the tube below the tap accelerates the drawing off of the mother liquor and thorough washing of the precipitate. The cotton wool in no degree interferes with the subsequent part of the process.

The standardisation of so many galenicals calls for increased care and more intelligent application of pharmaceutical principles on the part of the laboratory operator, which, however, have their recompense in the comparatively simple processes now given for those preparations which are based on assayed extracts, etc. It cannot be denied that the alterations and improvements in the galenicals are calculated to render them, as a class, more unvarying in activity and more uniform in physical characters than their forerunners in the Pharmacopœia of 1885, whilst the impression gained by a practical experience of the working of the official processes on the large scale since the day of their publication in May last is, that generally speaking, the galenical pharmacy of the 1898 Pharmacopœia is sound, up to date, and thoroughly abreast of the requirements of modern pharmacy.

THE GREEN EXTRACTS OF THE PHARMACOPŒIA.*

BY W. A. H. NAYLOR, F.I.C., AND JOHN J. BRYANT.

The results embodied in this paper are intended to supply data that may assist in framing a reply to question No. 48 of the Conference Blue List, the exact wording of which is as follows:—

"It is obvious that green extract of belladonna, extract of henbane, and extract of stramonium should be standardised. A simple process of assay and definite proposals for standard strengths are desirable."

No mention will be made of extract stramonium, as we have been unable to obtain samples made from the juice of the plant. It may be surmised that the Committee of Revision of the Pharmacopœia refrained from fixing the amount of alkaloidal content until pharmacists could show that what was desirable was also practicable. In the sixteenth edition of Squire's 'Companion' the alkaloidal strength of ten samples of the extract of belladonna are given. No indication of the method by which they were assayed is afforded.

The process we have adopted may now be described:—

From 2 to 5 Gm. of the extract is weighed into a wide mouth flask (for convenience an Erlenmeyer flask is recommended), 25 C.c. of 90 per cent. alcohol is added, and the flask with its contents heated on a water bath under an inverted condenser or other arrangement that prevents loss of alcohol and provides facilities for exhaustion. This operation is twice repeated with two more quantities of 25 C.c. of 90 per cent. alcohol. After each operation the alcoholic solution in the flask is allowed to become cold, and filtered, and the filtrates are united.

To make sure that extraction of the alkaloidal content is complete, the residue in the flask is warmed with a 5 per cent. solution of hydrochloric acid and filtered. The filtrate is then tested with solution of iodine in potassium iodide. We have found that three extractions with alcohol are sufficient for the purpose.

To the alcoholic solution of the alkaloid an equal volume (75 C.c.) of a 5 per cent. solution of the hydrochloric acid of the

* Read at the British Pharmaceutical Conference, held at Belfast, August, 1898.

Pharmacopœia is added, and the mixture shaken up three times successively with 15 C.c. chloroform. After separation and rejection of the chloroformic liquids the acid solution is rendered distinctly alkaline by the addition of solution of ammonium hydroxide and again shaken up three times successively with 10 C.c. chloroform. The chloroformic solutions, after withdrawal, are mixed and evaporated, and the residue dried over a water bath until it ceases to lose weight. The dry alkaloidal residue is titrated as the Pharmacopœia directs in the final stage of the process for determining the proportion of alkaloid as given under *extractum belladonnæ liquidum*.

The chloroformic separations take place quicker and cleaner than is the case in the Pharmacopœia process for liquid extract of belladonna.

It may be noted that the difference between the amount of alkaloid obtained by weighing and that indicated by subsequent titration is less than 0.01 Gm.

The following table gives the exact results obtained from weighing and titration, and shows by difference the amount of impurity in the alkaloidal residue. Two estimations of each sample of extract are given. In the table are included the published analysis, by John Barclay, B.Sc., of the green extracts of belladonna* met with in commerce, and also those given in the seventeenth edition of Squire's 'Companion':—

One great drawback to Barclay's process is, it is unnecessarily complex, inasmuch as it effects the solution of mucilaginous substances which in a subsequent operation have to be precipitated and rejected.

Green Extract of Belladonna.

No.	Amount taken.	Weight of alkaloid.	N/10 acid HCl consumed.	Yield of alkaloid by titration.	Amount of impurity.	Per cent. of alkaloid by weighing.	Per cent. of alkaloid by titration.	Barclay's		Squire's 'Companion.'
								Per cent. of alkaloid by weighing.	Per cent. of alkaloid by titration.	
1	4.824	0.079	2.5	0.07175	0.00725	1.637	1.487	1.32	1.24	0.94
	4.070	0.070	2.1	0.06027	0.00973	1.719	1.480			
2	5.005	0.085	2.75	0.078925	0.006075	1.698	1.576	1.37	1.14	1.17
	3.672	0.0645	2.0	0.0574	0.0071	1.756	1.563			
3	3.858	0.027	.9	0.02583	0.00117	0.699	0.669	1.23	1.04	1.11
	4.879	0.040	1.15	0.033005	0.006995	0.819	0.676			
4	4.488	0.035	1.1	0.03157	0.00343	0.7798	0.7034	1.00	0.97	.73
	5.534	0.048	1.4	0.04018	0.00782	0.8673	0.726			
5	6.142	0.118	3.8	0.1906	0.00894	1.921	1.775	1.02	0.97	1.26
	4.720	0.092	2.9	0.08323	0.00877	1.949	1.763			
6	3.682	0.028	0.7	0.02009	0.00791	0.760	0.545	0.97	0.87	1.22
	3.941	0.030	0.75	0.021525	0.008475	0.761	0.546			
7	6.925	0.092	2.9	0.08323	0.00877	1.328	1.201	0.87	0.77	1.16
	4.011	0.056	1.7	0.04879	0.00721	1.396	1.216			
8	4.038	0.037	1.0	0.0287	0.0083	0.9162	0.7107			1.21
	5.011	0.041	1.25	0.03587	0.005125	0.8181	0.7159			
9	5.010	0.053	1.6	0.04592	0.00708	1.057	0.9165			1.21 - 1884
	4.102	0.044	1.3	0.03731	0.00669	1.072	0.9095			
10	4.320	0.052	1.7	0.04879	0.00821	1.2037	1.1293			1.17 - 1892
	5.050	0.062	2.0	0.0574	0.0046	1.2277	1.1168			

The extracts of henbane were assayed by the process described and adapted for extract of belladonna, and the results obtained are given in the subjoined table. Two assays of each extract are given:—

We desire to direct attention to the fact that the extracts referred to in both the tables were supplied by growers of belladonna and henbane, who are also makers of the corresponding green extracts, or by makers (not growers) on a larger scale. They are all made from herbs grown in England in localities for

* *Pharm. Journ.* [3], xxiii., pp. 740.

the most part far removed from each other. They may be accepted, therefore, as representative samples, that is, as representing the extracts supplied to dispensing pharmacists by wholesale firms of acknowledged repute. There is no reasonable ground to hope that an examination of samples taken from the dispensing counter of chemists throughout the country would show a much nearer approach to uniformity of strength. They suffice to confirm the observations of others as to the great variation in alkaloidal strength that exists in extract of belladonna,

No.	Amount taken.	Weight of alkaloid.	N/10 acid HCl consumed.	Yield of alkaloid by titration.	Amount of impurity.	Per cent. of alkaloid by weighing.	Per cent. of alkaloid by titration.
1	3.715	0.010	0.3	0.00861	0.00139	0.269	0.231
	6.333	0.023	0.5	0.01435	0.00865	0.363	0.226
2	3.884	0.015	0.3	0.00861	0.00639	0.386	0.221
	5.430	0.020	0.4	0.01148	0.00852	0.368	0.2114
3	4.530	0.018	0.5	0.01435	0.00365	0.3973	0.316
	5.782	0.025	0.65	0.018655	0.006345	0.4323	0.3226
4	5.370	0.027	0.8	0.02296	0.00404	0.5027	0.4275
	4.410	0.022	0.65	0.018655	0.003345	0.4989	0.423
5	4.942	0.011	0.25	0.007175	0.003825	0.2225	0.1451
	3.003	0.010	0.15	0.004305	0.005695	0.333	0.1430
6	4.031	0.014	0.3	0.00861	0.00539	0.3473	0.2135
	2.687	0.009	0.2	0.00574	0.00326	0.3349	0.2136
7	7.045	0.008	0.5	0.01435	0.00335	0.2555	0.2036
	4.225	0.011	0.3	0.00861	0.00239	0.2603	0.2037
8	6.291	0.015	0.45	0.012915	0.002085	0.2384	0.2051
	5.652	0.014	0.4	0.01148	0.00252	0.2476	0.2031
9	4.122	0.013	0.3	0.00861	0.00439	0.3153	0.2038
	5.500	0.019	0.4	0.01148	0.00752	0.3454	0.2087

and they also show that the variation is proportionately great in the case of extract of henbane. It would be an advantage if growers of these herbs who also make these extracts would supply to the British Pharmaceutical Conference data bearing upon the influence of soil and seasons in respect of yield of alkaloid.

The extracts are widely used, and so long as they find a place in the British Pharmacopœia it is desirable to fix for them a standard of alkaloidal strength. The experience of one of us proves that there is no difficulty in making green extract of belladonna to contain 1 to 1.25 per cent. of alkaloid. Why, then, not fix the strength of the extract at 1 per cent. of alkaloid, using, when necessary, sugar of milk as a diluent, and so bring it into line with the official alcoholic extract? For the extract of henbane we suggest 0.2 per cent. of alkaloids.

THYROGLANDIN.*

BY E. C. C. STANFORD.

There is a pretty general opinion amongst medical practitioners that the various known preparations obtained from the thyroid gland of the sheep leave something to be desired in uniformity of action and in efficiency as a substitute for the raw gland. The absolute cure of a fatal, though fortunately rare, disease, myxœdema, and the importance of its use in commoner complaints, such as obesity and psoriasis, have brought the thyroid gland into prominent notice and into daily extending use. This is shown by the fact that the new British Pharmacopœia has two preparations of it, one, *thyroideum siccum*, is simply the gland dried at a temperature of 90° to 100° F., and the other, *liquor thyroidei*, a glycerin and phenolised cold water extract. There are a number of other preparations in the market, the most important of which is thyroïdin, discovered by Baumann. Probably the most efficient, as well as the most largely used, is the dried gland. The objection to the use of this form is that it is just as dangerous as the raw gland, in that it may introduce into the system bacteria or other matters of foreign origin, which may give rise to disagree-

* Read at the British Pharmaceutical Conference, held at Belfast, August, 1898.

able symptoms, and, indeed, these have been complained of and are already known as thyrioidism. The objection to the glycerin extract is that it does not dissolve out the thyrioidin, and the objection to the use of the thyrioidin alone is that, although perhaps the most active principle, it does not represent all the active constituents of the gland.

Thyrioidin is obtained in destroying the greater part of the gland by boiling for thirty hours in 10 per cent. sulphuric acid (Bayer's Patent, No. 12295, 1895) or by boiling it in 3 per cent. caustic soda solution, and precipitating the thyrioidin by an acid (Bayer's Patent, No. 20827, 1895), or by digesting the gland with pepsin, or by heating it in a close vessel at 180° C. with water (Bayer's Patent, No. 9576, 1896). In each case the gland is destroyed and the thyrioidin only extracted. The thyrioidin is a stable compound and not easily decomposed. It exists, according to Bayer, in small proportion, about 1 in 333 or 3 per mille. The thyroid gland contains two important principles, each containing iodine, iodo-globulin, and thyrioidin. The iodo-globulin in all the above methods is destroyed. I find it can easily be extracted by cold water, and that this solution can be evaporated at 212° F. without in any way impairing its activity. This substance amounts to about 17 per cent. of the raw gland, and is quite active alone. It contains iodine.

The thyrioidin, which is more active, but existing in smaller quantity, can then be extracted from the residual gland, after maceration in cold water, by boiling it with weak caustic soda solution for an hour, and precipitating by an acid. The process I adopt then is as follows:—The thyroid glands, freed from fat, are first minced, macerated in four to five times their weight of cold water (using ice, if necessary, in summer, to keep down the temperature to 50° F.) for twenty-four hours, and this maceration is repeated. The solutions are filtered off and evaporated to dryness at a temperature not exceeding 212° F. The extract is powdered, and represents the iodo-globulin and a small proportion of saline matter. The residue from the cold water maceration is boiled for one hour with a 1 per cent. solution of caustic soda in the proportion of 1 per cent. of caustic soda to the original gland. This solution is allowed to cool, to deposit the fat, and filtered off. The solution is then carefully neutralised with hydrochloric acid and evaporated to dryness at 212° F. The residue, which contains all the thyrioidin, is then powdered and mixed with the iodo-globulin obtained in the first process. The resulting powder is the new preparation to which the name of thyroglandin has been given. The last evaporate may be digested with petroleum spirit to remove traces of fat, but in all ordinary cases the amount is so small that this is unnecessary.

It may be asked why I do not separate the thyrioidin by acid precipitation. The reason is that the precipitation is never complete on account of its partial solubility in the saline mother liquor. Even in Baumann's process of boiling with 10 per cent. sulphuric acid only a portion is thrown down; much remains in the acid solution, and after neutralising it with soda and evaporating the sodium sulphate liquor it continues to deposit even down to crystallisation, and cannot be entirely removed. In four experiments with this process I found an average yield of 3.34 per cent. thyrioidin, of which 0.55 per cent. was precipitated and 2.99 per cent. recovered from the mother liquor.

My experience with acid precipitation from soda solutions is that the thyrioidin is even more soluble and difficult to remove. So I retain it all by evaporation, with the addition of a small quantity of sodium chloride. This addition makes it a palatable preparation, and consequently no objection on the part of the patient is made to taking it in powder. The result gives about

8 per cent. on the gland, so that the usual yield of thyroglandin is about 25 per cent. The gland yields 29 to 30 per cent. of dry matter, so that the dose is rather less than that given in the B.P., which is 3 to 10 grains. The weight of the thyroid gland differs enormously; I have found them vary from 24.2 grains to 136 grains, but the most usual weight is 33.3 grains, or about 3 glands to 100 grains, so that 8.6 grains thyroglandin = 1 gland. The dose, therefore, if half a gland is taken is 4.3 grains, a quantity not too large for ordinary patients to take in powder. Of course it may be compressed into pellets if desired. By one gland I mean one lobe, of which there are two in the animal.

I claim that this preparation does really represent the activity of the raw gland without its disadvantages and dangers, and that it contains the active principles in the form and proportion in which these exist in the raw gland. Considering the raw material used, this preparation is remarkably uniform. This is proved by the cases given by Dr. McLennan, of Glasgow University, in the *British Medical Journal*, July 9, 1898, and by several other observers, whose reports have not yet been published. No unpleasant symptoms were observed in any of the patients who took this preparation.

An outline of the process was given in Dr. McLennan's paper, and it has been criticised in the *British Medical Journal*, July 16, 1898, by Dr. Hutcheson, who naturally prefers a process of his own. This consists in macerating the glands in cold 1 per cent. caustic soda solution, and precipitating the colloids by acetic acid. This would be a convenient method if it were effectual; but the caustic soda in the cold does not dissolve out the thyrioidin, for on boiling the residue with 10 per cent. sulphuric acid much thyrioidin can be extracted. Then the iodo-globulin, which is easily extracted by cold water, is altered by caustic soda, so that the colloid precipitated by acetic acid is not the same as the iodo-globulin dissolved, as might be expected, with such an easily altered body. The precipitation is not complete, for the acetic acid mother liquor, if neutralised and evaporated down, still contains a considerable proportion of the iodine.

My results in this process gave precipitated colloids, 6.67 per cent.

Thyrioidin in residue, 15.25 per cent., very hygroscopic, extracted by boiling in 10 per cent. sulphuric acid

In another German patent the glands are extracted by a $\frac{3}{4}$ per cent. solution of sodium chloride and the solution precipitated by tannic acid, but here a foreign body is introduced into the colloid. The precipitation is not complete, the mother liquor contains iodine, and the residual gland contains thyrioidin.

My results with this process gave—

Colloid tannin precipitate, 16.94 per cent.

Thyrioidin in residual gland, exhausted by boiling in 10 per cent. sulphuric acid, 0.234 per cent.

Here, again, the active principles are not all exhausted, as the sodium chloride does not dissolve out the thyrioidin.

In both these cases more thyrioidin might have been recovered from the saline solution, as only that precipitated is given.

HYDROGOL AND ORANGOSOL.—Schneider gives these names to two solutions of colloidal silver, the first of which is prepared with water and the second with an organic fluid, *i.e.*, alcohol. Colloidal silver is a modification of metallic silver soluble in water obtained by precipitating solutions of nitrate of silver with certain reducing agents. Credé recommends colloidal silver as a substitute for his actol and itrol in those cases where the introduction of silver salt into the circulation produces undesirable effects.—*Pharm. Post.*, xxx., 588.

KIESELGUHR AND OTHER INFUSORIAL EARTHS.*

BY JOHN MOSS, F.I.C., F.C.S.

Infusorial earths having recently come into request by pharmacists, and being very diverse amongst themselves, as well as suitable for a variety of purposes, it may be useful to collect leading facts of special interest concerning them, and to indicate particular applications of which they are susceptible. That is all this short paper professes to do.

KIESELGUHR is the German name for an infusorial earth which is found in Hanover. It means siliceous deposit, and aptly defines a geological formation consisting of the minute fossil shields of diatoms, which is nearly pure silica in those parts nearer the surface, whilst in others lower down it is contaminated with more or less organic matter. In Hanover the deposit is 150 feet thick from the surface downwards. The upper stratum is nearly white, with very little organic matter; lower down it is grey, with very little sand, but more organic matter. The lowest and thickest stratum is, according to Thorpe, from 50 to 100 feet thick and contains up to 30 per cent. of organic matter. We might argue from these facts that a process of oxidation goes on in the upper stratum, which changes the nature of the organic matter, rendering it more soluble and less coloured. A sudden rainfall would effectively wash this stratum, carrying the organic matter downwards to the lower stratum, which, being charged with air to an inferior degree, is less capable of assisting change; indeed, it would seem to have the power of preventing it, hence the accumulation of green colour and organic matter, which are said to be due to extractive from the pine needles strewing the surface of the earth above the deposit. This organic matter, together with the colour, is got rid of by calcining in small furnaces, which are filled with the kieselguhr and then lighted at the bottom. The organic matter suffices to keep the whole in a glow, like peat, and the process is made continuous by raking out below and supplying fresh material at the top. The calcined product consists almost exclusively of silica, and varies from very pale cream to a reddish colour, according to the proportion of ferric oxide present. Beckerhinn found 95 per cent. of SiO_2 and a specific heat of 0.2089. The strongest acids have, of course, no action upon it, but with alkalies it fuses easily, and a variety of soluble glass may be made in this way.

In France there occurs a similar siliceous earth called Randanite (from Randan in the Puy de Dôme).

Other deposits are found in Scotland, near Aberdeen, and in the island of Mull; in Norway, where it is called *bergmehl*; under the city of Richmond in Virginia, in the Bermudas, in Australia, in Algeria, in North Wales, at South Mourne and in many other parts of the earth.

Infusorial earth consists of the siliceous envelope of Diatomaceæ, a family of minute uni-cellular plants, also called "Brittleworts," from the facility with which they may be cut or broken through. The siliceous envelopes, or *diatoms* as they are commonly called, are usually of the most perfect symmetry, and often exhibit elaborately marked patterns of great delicacy, which endow them with extreme interest as microscopic objects. The forms may be simple or intricate, but all are beautiful. There are few objects so attractive to the microscopist as the minute siliceous framework of these low forms of plant-life, and many hundreds of different varieties have been catalogued.

Having regard to the origin of these deposits, diatomite would seem to be a name generally appropriate, and I purpose using it in this sense, as including all the varieties of siliceous earth above referred to. I cannot hope to name every kind of diatom which has

contributed to form each one of the deposits, but having examined several microscopically I may succeed in enumerating some of the more important individuals.

1. KIESELGUHR.—In this the forms recognised are *Surirella*, *Gaillonella*, *Diademesis*, *Pleurosigma*, *Synedra*, *Stephanodiscus*, *Spongolithis*, *Amphora*, *Melosira*, and *Navicula*.

2. SCOTCH DIATOMITE.—This occurs in the Island of Mull and near Aberdeen, and includes amongst other forms *Diatoma*, *Cymatopleura*, *Synedra*, *Gomphonema*, *Cocconema*, *Surirella*, *Primularia*, and *Rhabdonema*.

3. VIRGINIAN.—A stratum 18 feet thick underlies the whole city of Richmond, extending, indeed, over an indefinite and unknown area. It is so compact as to be capable of being carved into small objects, such as the bowls of tobacco pipes, but is at the same time light and friable. It is celebrated for the number and beauty of its forms, including *Coscinodiscus*, *Dictyolampa*, *Rhabdonema*, and *Triceratum*.

4. AUSTRALASIAN.—According to Dr. J. D. Hooker* there is a deposit consisting chiefly of the siliceous loriceæ of Diatomaceæ, not less than 400 miles long and 120 miles broad, at a depth of 200 to 400 feet on the flanks of Victoria Land in 70° south latitude.

5. SCANDINAVIAN.—This is known locally as *bergmehl*, a mountain flour, and contains sufficient organic matter to occasion it in times of scarcity to be mixed with dough in making bread. I have seen no specimen of this, and am unable to describe its appearance, or to name any diatom occurring in it.

6. AUSTRALIAN.—This is a beautiful white fluffy powder, of which specimens came into my hands in 1894, through the kindness of the South Australian Government and others. It consists almost solely of the loriceæ of *Tetracyclus*, with occasional *Pleurosigma*, *Surirella*, *Amphora* and *Diatoma*. There is ground for assuming that this and the Australasian deposit referred to above (which I have not seen) are the same.

The examination of eight different specimens of infusorial earth obtained from as many different sources shows important variations in composition. In no case does the silica (SiO_2) exceed 96 per cent., and it falls as low as 70 per cent., the differences being made up by moisture, organic matter, ferric oxide, and alumina. Moisture varies from 2.64 to 7.8 per cent., the average being 5.73 per cent. Organic matter ranges from 2.43 to 23.6, giving an average of 7.43 per cent. Of the professedly calcined earths, I have met with specimens containing so little as 0.4 per cent. of organic matter, but the proportion usually present is from 2.5 to 3 per cent., showing that the calcining is not perfect. Again, in some earths the iron oxide is as low as 25 per cent., and in others it is as much as 7 per cent.

USES.—Since 1866 diatomite has been largely used in the manufacture of dynamite. This is because it is capable of absorbing a larger proportion of fluid than any other known material that is at all available to the same extent. It will absorb three times its own weight of nitro-glycerin, and then be capable of being pressed into solid blocks.

It is also used to make so-called "dry sulphuric acid." One part of diatomite to 3 or 4 parts of oil of vitriol by weight may be mixed so as to form a mobile powder capable of being worked with iron implements and enclosed in iron drums for export without attacking the metal. I am informed that the success of this expedient is not yet fully assured.

A very important demand for diatomite is for a basis for disinfecting powder, to make which it is charged with 10 or 20 per cent. of carbolic acid or other liquid disinfectant. Such a powder is much lighter than are those with chalk or lime as a basis, and

* Read at the British Pharmaceutical Conference, held at Belfast, August, 1898.

* Carpenter, 'The Microscope,' fourth edition, p. 311.

possesses the advantage of floating on the surface of any liquid upon which it is sprinkled, so that what effluvium arises must pass through the disinfectant. The crudest forms are suitable for this purpose, and one pound occupies the bulk of three pounds of chalk.

Another very important application of diatomite is found in the ease and perfection with which metals may be polished by its means, either in the form of powder or of a paste made with a soft paraffin. For this purpose grit of all kinds must, of course, be carefully removed, leaving a powder of such a degree of fineness as not to scratch gold plate, yet impart a very high polish to it.

I have used diatomite associated with sodium silicate and fibrous material, such as cow-hair, for making an adherent covering for steam boilers, pipes, and pans. Loss of heat by radiation being prevented there is a corresponding economy of fuel, and the temperature of the laboratory is moderated, to the great comfort of those who work in it.

Safe makers take advantage of its non-conductivity in the construction of fire-proof chambers. This property makes it valuable also in the construction of ice houses, and, indeed, wherever it is desirable to prevent too great loss or accession of heat.

Diatomite is said to find its way even into soap, and there is no doubt of its employment in the manufacture of ultramarine and of artificial meerschaum.

Its non-conductivity is not confined to the heat wave. It effectually smothers other undulations, and is therefore equally useful for making walls sound proof, so that the inmates of a class room in a musical seminary may practise without disturbing or being disturbed by similar students in the next chamber.

The properties of diatomite above indicated are naturally suggestive of certain uses in pharmacy. For some of these the absence of gritty particles is absolutely necessary, and freedom from organic matter is desirable for all.

AS A FILTERING MEDIUM.—My attention was first attracted to diatomite for this use. Provided it were possible to obtain or prepare it free from organic matter, it seemed to possess all needful qualities for filtering liquid galenicals and certain solutions of salts and acids. Silica has powers of resistance to solvents far greater than the filtering powders in common use, viz., the carbonates of lime and magnesia, phosphate and sulphate of lime, talc, and asbestos. All these, being compounds, are susceptible of decomposition; indeed, the four first mentioned are of more than doubtful utility, and should be banished from the laboratory for purely filtering purposes. Diatomite, which may be regarded as pure silica, is absolutely indifferent to all but the strongest alkalies at a high temperature—involving a set of conditions which the pharmacist does not have to consider. There is the further advantage that it does not clog up the filtering bag to the same degree as either talc or asbestos, and filtration is consequently more rapid. The benefit of this is not confined to the manufacturer, who is thus able to accomplish more work in the same time, but what is of greater importance, it extends to the preparation also, which must be the better for less handling and exposure. This is not secured at any sacrifice of efficiency. Note may be made of a practical point here. Diatomite does not mix readily with liquids, and should not be dusted on the inner sides of the filter bag in the expectation that it will diffuse through the liquid which is afterwards poured in; nor can it be satisfactorily mixed with the bulk of the liquid. It should be worked down in a mortar with a little of the liquid to be filtered, so as to form a smooth thin paste, which can then be mixed with more of the liquid to set the filter. This takes place almost at once, and but little of the filtrate requires to be returned. Inattention to this

point has occasionally caused failure with diatomite as a filtering medium.

Small though the particles of diatomite may be, they appear to be large enough, and to present irregularity enough, to keep apart the particles of albuminoid or starchy deposit sufficiently for the passage of the still smaller particles of liquid. It is obvious that the diatomite used for filtering must be free from organic matter—a few particles of sand may be disregarded.

DENTIFRICES.—For making these diatomite must be free from sand and also from organic matter, which is apt to suggest a disagreeable earthy taste. It should be as white as possible, so as to exclude interference with the tint of the ingredients. These conditions secured, it may with advantage take the place of ground pumice and cuttlefish bone in all cases, and of precipitated chalk in pastes and powders, which contain other alkaline bodies, such as bicarbonate of soda and borax. If no alkali is present, or if diatomite alone is considered too light, some chalk may be retained in a powder dentifrice with benefit. Diatomite properly refined is not gritty between the teeth, and polishes without scratching the enamel. Bulk for bulk it is half the weight of the lightest precipitated chalk. The formulæ appended* are merely suggestions as to the proportions in which diatomite may be used in dentifrices, and are of course susceptible of an infinity of variation, according to taste and experience.

DUSTING POWDERS.—By virtue of its enormous and unequalled absorbent property diatomite is unrivalled as a dusting-powder basis. It must be the very purest than can be produced, and when absolutely free from organic matter and grit is more smooth and less irritating than any other powder. Unlike vegetable powders it does not contribute to decomposition of the exudation, but keeps sweet for a long time, and may, of course, be associated with antiseptics with equal facility and greater advantage. Smoothness is imparted by the addition of boric acid in very fine powder. Oxide of zinc, kaolin, talc, or Fuller's earth may be added according to circumstances and the object aimed at, as also such antiseptics as salicylic acid, iodoform, thymol, etc. Diatomite as a polisher of metals has already been referred to, and it only remains to say of it in this connection that it is obtainable of all degrees of fineness, suitable for fire irons and fenders at one end of the scale and for the finest gold plate at the other.

IN DISPENSING.—The last suggestion I have to make relative to the use of diatomite in pharmacy is perhaps more debateable than any of the preceding. I mean as a diluent for hygroscopic powders, such as euonymin when made by the late Pharmacopœia process. However carefully this may be prepared according to the official directions, it presents difficulties which are more or less great with different batches of the drug. Being absolutely inert and insoluble in the stomach juices, diatomite cannot react on the drug as chemical powders, like magnesia may, and the mixture is much more easily reduced to powder than when sugar of milk is used; it also remains pulverulent. On the other hand, the question arises as to how far it is advisable to introduce silica however finely divided into the stomach. The quantity at most is a few grains; and may be less than one grain, and when it is remembered that at times of scarcity or famine the Norwegian peasantry have been compelled to eat ounces and even pounds in one week, the doubt is deprived of much of its significance. Further, whole-meal

* Diatomite Tooth Powder.		* Diatomite Tooth Paste.	
Diatomite	1 oz.	Diatomite	1½ oz.
Creta Præcip.	1 oz.	Alum. Ust.	¼ oz.
P. Sapo. Alb.	1 oz.	P. Myrrhæ	¼ oz.
Otto Rosæ	℥ij.	Ol. Caryoph.	℥vj.
Ol. Caryoph.	℥j.	Glycerin	½ oz.
Ess. Ment. Pip.	℥v.	Ext. Cocci Liq.	q.s.
Sacch. Lact.	3j.	M.S.A.	

bread is recommended and largely consumed for the wholesome action of the siliceous particles (much coarser than diatomite) in the grain husk, on the intestinal canal, so that it would seem as if only beneficial effects would be produced by the minute proportion in a dose of euonymin or similar remedy whether given in the form of a powder or of a tablet. The binding power of diatomite under pressure suggests its use in the last-mentioned form for drugs which compress with difficulty.

GLUTEN FLOUR.*

BY VICTOR G. L. FIELDEN, M.B.

The subject of this paper suggested itself to me some time ago when my friend Dr. Whitla asked me to roughly examine a sample of gluten flour which a diabetic patient of his was using, and about which he had suspicions. The iodine test in this sample showed abundance of starch, and microscopic examination revealed myriads of starch granules. I also washed a portion of it in muslin in a stream of water, and was astonished at the small amount of gluten I obtained. I determined therefore to examine at an early date several samples of this substance.

As you all know, gluten flour is used principally, if not exclusively, as a substitute for ordinary flour in making bread, cakes, etc., for persons suffering from diabetes, so that the conversion of starch into sugar in the human laboratory may be reduced to as low a point as possible. The more starchy food that is taken the greater is the production of sugar, and it behoves physicians in treating this disease to administer such a diet that, as far as possible nourishment may be at a maximum and the production of sugar at a minimum. Saccharin can be used as a splendid substitute for sugar itself as a sweetening agent, but a substitute for the staff of life is not such an easy problem to solve. Almond, bran, and gluten in the form of cakes, bread, and biscuits are in everyday use, and it is but right to expect that those who are unfortunate enough to require these necessaries should get them as nearly pure as possible, and chemists who supply the public should see that they are selling a really good article; hence my reason for bringing the subject before a representative meeting of chemists from all parts of the kingdom. Medical men also should know what their diabetic patients are taking, and should examine occasionally the gluten flour to see that it is of good quality. My paper, therefore, will prove, I hope, interesting and instructive to members of my profession also, so that I think I am killing two birds with one stone.

Gluten is the most nutritious part of wheat flour, being equal to that of flesh meat, but its preparations are not by any means so palatable as those made from ordinary flour, therefore its manufacture in agreeable forms has become quite an industry in itself, but I need not dwell on this. The constitution of gluten, however, is such that it possesses very nutritive qualities, and as an article of diet is most useful, and crude gluten is recommended as a fodder. It is contained in many plants, but chiefly in the cereals, wheat being richest in this substance. Hard wheat contains more than soft wheat, and conditions of growth such as soil, climate, temperature, manure and the season when sown greatly influence its amount. The best qualities of wheat contain from 10 to as much as 15 per cent., whilst inferior kinds contain 8 or 9 per cent. Kenwood states that wheat flour contains from 8 to 12 per cent. gluten, and if it contains less than 8 per cent. it is not pure wheat flour. Maize contains a good proportion, whilst barley, rye, and oats have less.

Martin has demonstrated that gluten does not naturally exist in

flour, none being obtained if water at 2° C. be used to wash it. When water of a higher temperature is employed gluten is formed probably by a ferment action on the proteids in the flour.

Gluten is not a definite chemical compound, but consists of three substances, which are closely allied to one another. One—vegetable fibrin—is insoluble in boiling alcohol, and two are soluble, one of which—mucin—separates on cooling, and the other—glutin or gliadin—remains in solution, but is thrown down on addition of water.

Gluten is soluble in alkalis. It is chiefly obtained from the waste products in the manufacture of starch; but it depends upon the process adopted for obtaining the starch how much gluten is recoverable. In one, termed the "sour" process, the starch granules are freed by a process of fermentation which goes on at the expense of the gluten, and in this there is consequently some destruction of this substance. Another process consists in treating the material with dilute solution of caustic soda, which, at least in part, dissolves the gluten, and the starch granules are more readily set free. By this process the maximum amount of gluten can be obtained, for that remaining undissolved with the starch is separated by passing the washed starch through fine sieves, which retain the gluten, and that dissolved in the alkaline solution is recovered by precipitating with an acid.

Wheat starch may also be prepared from wheat flour by making into a dough with water and washing out the starch, the gluten being left in a fine sieve.

A process for the manufacture of maize starch (used largely in America) consists in mechanically separating the husk and germ, which contain the gluten, albuminoids, and oil, from the white starchy portion, any gluten retained in this being removed by washing the powder and straining through a fine sieve.

The old and not economical method used in obtaining potato starch by rasping or crushing the starchy material and subsequent washing need simply be mentioned.

There are several large houses in Britain which supply gluten preparations, and I obtained five samples of flour from different sources for examination. I did not attempt to make a complete analysis of each, but contented myself with assaying those portions which more intimately concerned me, viz., the gluten and the starch together with the sugar. In one sample only, by way of checking myself, I determined the amount of moisture, the most abundant constituent left, and I found that I was able to account for the composition of over 95 per cent. of the sample.

The plan I adopted for assaying the gluten was to wash 10 grammes thoroughly in a bag of close muslin (like this sample) in a stream of water until a small quantity of the washings when boiled gave no blue colour with tincture of iodine. This method I preferred, as being more thorough, to rubbing the flour into a paste in a mortar with water and transferring it to a conical glass, in which it is washed with successive quantities of water. The plastic mass I then dried in a tared dish in this water-oven until it ceased to lose weight when it was weighed and the percentage calculated.

The starch I assayed by converting it into sugar by boiling 2 grammes of the flour with 20 C.c. of sulphuric acid and 200 C.c. of water for three or four hours. Any sugar naturally occurring in the flour was consequently determined at the same time, and, both being equally harmful to a diabetic patient, can conveniently be taken together. After boiling, the liquid was neutralised with caustic soda and made up to a known bulk with water, and the amount of glucose determined by means of Fehling's solution, 10 C.c. of which was equivalent to 0.05 gramme of dextrose or glucose or 0.045

* Read at the British Pharmaceutical Conference, held at Belfast, August, 1898.

gramme of starch. With these figures a simple calculation gave the percentage of starch in the gluten flour.

	A.	B.	C.	D.	E.
Gluten.	76 p.c.	60 p.c.	65 p.c.	8.5 p.c.	66 p.c.
Starch and Sugar.	7.6 p.c.	16.7 p.c.	13.26 p.c.	68.8 p.c.	11.63 p.c.

From the foregoing table it will be seen that with the exception of sample D all contained a large percentage of gluten, ranging from 60 per cent. in B to 76 per cent. in A, samples C and E containing 65 per cent. and 66 per cent. respectively. D contained only 8.5 per cent. of gluten.

With regard to the amount of starch and sugar it will be seen that A again took first place by containing the smallest amount, viz., 7.6 per cent., E came next with 11.63 per cent., then C with 13.26 per cent., and B with 16.7 per cent., whilst D, as was to be expected, contained a very large proportion, viz., 68.8 per cent. This bad sample (D), I learn, is what is sold as crude gluten and is of American origin, and considering that wheat flour, as Kenwood states, contains from 8 to 12 per cent. of gluten, a diabetic gains nothing but rather otherwise by using such a gluten flour as sample D in preference to a good wheaten flour. Sadtler mentions that it has been found that by the process of prolonged boiling with diluted sulphuric acid only 95 per cent. of the starch is converted into dextrose, other non-reducing bodies being formed at the same time. This being so, the percentage of starch would be even higher than my results, as noted in the table, show.

As it is such a simple matter to find out the proportion of gluten by simply carefully washing the flour in a muslin bag and drying, I would suggest that all chemists who sell this article occasionally test their stock, and supply only a good and reliable gluten flour, for the feeding of a diabetic is everything in the treatment of his disease, drugs holding a very secondary place indeed. To feed him on starch is only adding fuel to the fire, which is surely and often rapidly hurrying him to his grave.

Since writing the foregoing, I have been much interested in a leader in the *British Medical Journal*, of July 16, on "The Chemistry of Diabetic Foods." In this article, a paper by Dr. F. Kraus, jun., of Karlsbad, is mentioned, in which, they say, he "illustrates the futility of trusting to the general run of commercial articles sold as diabetic bread by a table showing the carbohydrate contents of most of those used in Germany. Of the nineteen specimens enumerated, only five contain less than 30 per cent. of carbohydrate, four are between 30 and 40 per cent., four between 40 and 50 per cent., two between 50 and 60 per cent., and four over 60 per cent., as against ordinary white wheaten bread, which contains 60 per cent." They also make the statement that they "could produce parallel examples of English diabetic bread and flour in every respect as bad as those made in Germany." A lesson that is desired to be taught is that "it is much better to allow a definite quantity—for example, two to four ounces of potato or toast, than to allow an unlimited amount of 'diabetic bread' of unknown composition."

This warning, coming independently of mine to beware of the quality of diabetic food-stuffs, increases the necessity for care, and I refer to this article so as to still further impress the warning note upon the minds of all.

In conclusion, I beg to thank Professor Letts, of Queen's College, for having kindly lent me most of the apparatus necessary for carrying out the examination of which I have described the results.

THE CHARACTERS AND METHODS OF ASSAY OF THE OFFICIAL HYPOPHOSPHITES.*

BY H. A. D. JOWETT, D.SC.

It is generally recognised that the methods at present known and employed for determining the amount of hypophosphite contained in the commercial salts are unsatisfactory. The object of this investigation was, therefore, to devise an accurate method for such determinations, and having accomplished this, it was thought of interest to supplement its description with an account of some of the properties of the various hypophosphites prepared for the purpose of this inquiry.

Hypophosphorous acid was discovered in 1816 by Dulong, and several of its salts were prepared and their properties examined by Rose. Those of interest to the pharmacist and dealt with in this paper are the potassium, sodium, calcium, barium, iron, and manganese salts. The calcium and barium salts are obtained directly, being obtained by evaporation from the resulting aqueous solution. The sodium and potassium salts are prepared by double decomposition from the calcium salt, and may be purified by crystallisation from alcohol, in which both are soluble. The iron and manganese salts can also be prepared by double decomposition or by general methods, but they are insoluble in alcohol. All the hypophosphites are more or less soluble in water, and are easily oxidised to phosphites and ultimately to phosphates. Impurities may be detected by the ordinary reagents, phosphite being detected by the reaction with barium chloride or lead acetate, since barium phosphite is but slightly soluble in water, and lead phosphite insoluble.

P. de St. Gilles first proposed to assay hypophosphorous acid or its salts by titration with potassium permanganate, stating that the oxidation was easily accomplished, whilst Rose proposed the oxidation of the acid by mercuric chloride, and determination of the amount of hypophosphorous acid present by weighing the calomel formed.

In 1887 Lunan (*P.J.*, 1887, p. 773) in examining the acids rejected the permanganate method and adopted the calomel assay method, but did not give any reason for this, nor are any data given to show the accuracy of the latter method.

In 1889 Moerk (*A.J.P.*, 1889, pp. 326, 386, 459) published a lengthy paper dealing with the qualitative and quantitative examination of hypophosphorous acid and such of its salts as are largely used in America. In addition to the permanganate and calomel methods, he assayed the salts by first oxidising with bromine, and then determining either the hydrobromic acid or the phosphate formed, by general methods. He found the permanganate method unsatisfactory, as a brown precipitate is formed even in acid solution, which only slowly oxidises the phosphite. Good results were, however, obtained with the calomel and bromine methods. No evidence of the accuracy of these methods is given, and apparently impure material was used, as in the course of the paper it is mentioned that unsatisfactory results were obtained owing to "the alkaline hypophosphites containing probably chlorides," and a correction is introduced in a later paper for the impure bromine used for oxidation. Assuming that concordant results were obtained, this is no proof of the accuracy of the methods, and it is not stated that even these were obtained. In the qualitative examination of several salts, phosphite was only met with in one case, viz., a potassium salt stated to contain 13 per cent. of phosphite, and which gave no precipitate with lead acetate and acetic acid. The evidence on which the presence of phosphite was based was a small difference in results obtained by different analytical methods. These results are contrary to pub-

* Read at the British Pharmaceutical Conference, held at Belfast, August, 1898.

lished statements and my own experiments, as lead phosphite is insoluble in water acidulated with acetic acid, and it is only rarely that commercial specimens are met with which are free from phosphite. There are other statements in the paper referred to which require modification, and one is regretfully led to the conclusion that little reliance can be placed on the author's results.

In 1891 Amat (*Compt. rend.*, cxi., p. 676) recommended the calomel method, urging that with permanganate there is a tendency to two errors: (1) By incomplete oxidation of the hypophosphite; (2) by decomposition of the permanganate at high temperatures. He also noted the formation of a brown precipitate during titration with permanganate, which was only completely dissolved on the addition of oxalic acid.

The U.S.P. adopts the permanganate method and makes the curious mistake of requiring the oxalic acid to discharge the "red" colour, whilst in reality it is a brown precipitate which is gradually decomposed by the oxalic acid. No tests are given for phosphites, except in the case of the calcium salt, when the lead acetate test is erroneously stated to detect acid phosphate, a most unlikely impurity. The sodium salt is described as hydrated, that found in the European and American markets (with one exception) is almost anhydrous.

In 1893 Roe (*P. J.*, 1893, p. 473) pointed out that phosphites appeared to be a common impurity in commercial hypophosphites.

In 1897 Tyrer (*P. J.*, 1897, p. 150), in a paper read before this Conference, stated that the permanganate method is unsatisfactory, and pointed out that phosphites are the most likely impurity. He suggested a new method of determination, which was to first precipitate with barium chloride for the removal of phosphates, phosphites, sulphates, or sulphite, to filter, and then to estimate the hypophosphite in the filtrate by the reduction of copper sulphate. Determinations by this method are stated to be very accurate, but as no experimental data are given, it is impossible to say whether the author checked his method by analyses of pure material. It is stated that the U.S.P. method of titration gave good results, as the sulphuric acid in excess keeps the manganese in solution; I am unable to confirm this statement, as I have always found that a brown precipitate is formed as stated by Moerk and Amat. Again, hypophosphites are stated to react with mercuric chloride in the same way whether excess of mercuric salt or of hypophosphite be present, becoming in the cold partially reduced to subchloride, and on boiling reduced to mercury.

I have found that if the mercuric chloride is in excess, calomel only is formed, but if the hypophosphite is in excess, reduction takes place to mercury. That this is so follows from the method proposed by Rose and others, and which depends on the determination of the calomel thus formed. This method is further stated to be unsatisfactory because of a tendency to complete reduction to mercury, but I have found that this is easily remedied by pouring the solution of the hypophosphite into an acid solution of mercuric chloride in excess, when the calomel is obtained quite white and with no tendency to further reduction. Finally, the new B.P. (1898 edition) adheres to the unsatisfactory tests of the old edition, and gives no method of assay, but simply directions to boil a given quantity of the salt with potassium permanganate, when, on filtration, a "nearly" colourless solution should result. It is also stated that the solution of the salt should give little or no precipitate with lead acetate, and it has been repeatedly shown that it is very seldom a commercial salt meets this requirement. Further, the standard of purity required for the permanganate test is not the same as that for the lead acetate test, for a salt that

gives quite a considerable precipitate with lead acetate will yield, when tested as directed, a nearly colourless solution.

In reviewing these proposed methods of assay it will be noticed that no author adduces the necessary proof of the accuracy of the method, viz., analyses of pure material and of mixtures containing a known amount of impurity. Further, in every method except that of Tyrer no notice is taken of the well-known fact that the chief impurity present, viz., phosphite, will behave in a similar manner to oxidising agents as the hypophosphite. Any method, therefore, to be accurate must either be uninfluenced by any impurities present, or the disturbing impurities must first be removed. Since only Tyrer's method fulfils this first essential condition, it is the only one which calls for comment. His method depends for its accuracy on the completeness of the removal of the impurities by barium chloride, since if any phosphite remained in solution it would reduce the copper sulphate in the same manner as the hypophosphite. Barium phosphite, however, is slightly soluble in water, and this can be easily demonstrated by dissolving the barium hypophosphite of commerce and adding a drop of lead acetate solution, when a precipitate of lead phosphite will be thrown down. This being the case, the method cannot be accepted as accurate, owing to the incomplete removal of impurities. It is thus clear that no method of assay previously described can be considered satisfactory.

In the method I propose, the impurities are first removed by lead acetate, lead phosphite and other impurities being insoluble in water. The excess of lead is then removed by hydrogen sulphide, and the filtrate containing the hypophosphite completely oxidised to phosphate, which is determined either gravimetrically or volumetrically by the usual methods of analysis. I have proved the accuracy of this method by the analysis of pure material and of mixtures of pure material with known amounts of likely impurities. In the course of the investigation I have prepared some pure salts and examined their properties, have made some experiments with the hypophosphites of iron, and have finally made a complete examination of the principal salts of the leading British and American manufacturers, which has afforded some interesting results.

EXPERIMENTAL.

SODIUM HYPOPHOSPHITE.—The commercial salt was purified by boiling a portion with strong alcohol, filtering, and allowing the filtrate to cool, when long, transparent, prismatic crystals, sometimes an inch in length, separated. The purity of the salt was proved by taking a concentrated aqueous solution and adding a drop of acetic acid and then a few drops of lead acetate solution. If the liquid remained quite clear it was regarded as pure, freedom from other ordinary impurities having been previously ascertained. These crystals were found to contain one molecule of water of crystallisation and to be extremely deliquescent, apparently much more so than the granular salt of commerce. Experiments were made to see if the salt could be dried without decomposition. The pure salt was heated for two hours at 100°, and afterwards for one hour at 110°, when it had ceased to lose weight, and on testing with lead acetate was found to be quite pure. Experiments were made also to see if a solution of the salt in air free water could be boiled without decomposition. This was found to be the case if the water is boiled for at least ten minutes and the salt quickly added, it then suffers no decomposition on further boiling. In the following experiments the salt was dried for one hour at 110°, experiments showing that this procedure dried the salt completely, and without decomposition. The first experiments were made with the permanganate method as follows:—About 0.1 gramme of the dried salt was

dissolved in a convenient quantity of water, 1 C.c. sulphuric acid and 50 C.c. N/10 potassium permanganate added, and the mixture boiled for fifteen minutes, then N/10 oxalic acid added till colourless, and finally N/10 permanganate till the faintest pink coloration is evident. If, on standing five minutes, the coloration is unchanged, the calculation is made from the data in the usual way. If, however, the pink coloration fades or changes to a brownish tint, the hypophosphite has not been completely oxidised, and more permanganate must be added, and the operation repeated.

The following results were obtained :—

(1) 0.072	gramme pure salt required	33.1 C.c. N/10 KMnO ₄	= 101.1 per cent.
(2) 0.0874	" "	40.2 "	= 101.1 "
(3) 0.1296	" "	58.7 "	= 99.6 "

The last experiment required an hour's boiling for complete oxidation. The method not giving accurate results, experiments were made to determine the cause of error. A blank experiment showed that, under these conditions,



proving that a portion of the permanganate is decomposed on boiling. This fact and the difficulty of completely oxidising the hypophosphite caused me to abandon this method. In addition to these two errors, there is a third, due to the presence of chlorides, which are frequently found in the commercial salt, and which reduce permanganate. As these errors give respectively too high or low results, it is possible that under certain conditions they might balance each other and give an apparently correct result.

The calomel method was next tried, though there is an initial difficulty by this method in properly drying the calomel. The solution of the pure salt was poured into a solution of excess of mercuric chloride acidulated with hydrochloric acid and the mixture heated on a water bath for one hour, and the calomel separated and weighed.

0.0438	gramme salt gave	0.4746	gramme calomel	= 101.4 per cent.
0.0934	" "	1.0092	" "	= 101.2 per cent.

These results and the difficulties of the method led to its abandonment.

The next method tried was that of oxidation and subsequent determination as phosphate. The oxidation is carried out by bromine, or better, by potassium chlorate and hydrochloric acid in the usual way, and the resulting phosphate estimated gravimetrically or volumetrically by the usual analytical methods. The results thus obtained were very accurate.

0.3096	gramme pure salt gave	0.3924	Mg ₂ P ₂ O ₇	= 100.25 per cent.
0.3176	" "	0.388	" "	= 99.76 per cent.
0.298	" "	req. 48 C.c. standard	uranium acetate solution (1 C.c. = .005 P ₂ O ₅)	} = 99.88 per cent.

This method having been proved accurate on pure material, it was consequently adopted.

The next experiments were made on a mixture of pure sodium hypophosphite with sodium phosphate.

This sodium phosphite on analysis was found to contain—

Sodium Phosphite.....	61.33 parts.
Sodium Phosphate	11.00 parts.
Sodium Carbonate.....	27.67 parts (by difference).

The mixtures thus made would approximate closely to the commercial article, and any other impurities present would either be removed by the lead acetate or would not interfere with the phosphate determination.

After many experiments the best way of carrying out the analysis was found to be as follows :—

About 0.3 gramme of the dried salt is dissolved in 10 C.c. of water, 3 C.c. of a 10 per cent. solution of lead acetate added, and

the mixture allowed to stand twelve hours. It is then filtered, the precipitate thoroughly washed, and the washings added to the filtrate, which is acidified with hydrochloric acid, and then saturated with hydrogen sulphide, boiled, filtered, and the lead sulphide thoroughly washed.

The mixed washings and filtrate are then evaporated to a low bulk and 5 C.c. hydrochloric acid and 1 gramme potassium chlorate added and gently heated for half an hour, then concentrated to about 20 C.c., and the phosphate finally determined either gravimetrically or volumetrically by the usual method. The results were as follows :—

Composition of the Mixture.		Found.
Per cent. of NaPH ₂ O ₂ present.....	{ 90.96	90.38
	{ 98.56	93.30

The method having been thus proved accurate within the usual limits of experimental error, the method of qualitative examination was investigated.

The usual tests were made for metallic impurities, calcium, carbonate, sulphate, and phosphate. With regard to the latter, it must be remarked that the absence of a precipitate with magnesia mixture does not necessarily imply that no phosphate is present, as the test is not so delicate, but that it is certainly not present in more than traces. Attention is also directed to the test for chlorides. Contrary to general statements, it is not easy to completely oxidise this salt by means of nitric acid, and it is therefore necessary in carrying out this test to boil for at least five minutes with nitric acid, then add the silver nitrate and boil for another five minutes if any precipitate is formed. Phosphites and sulphites were tested for in the precipitate produced by lead acetate by the method described by Tyrer. Carbonate and moisture were estimated in the usual way. A series of parallel experiments were made on a sample of commercial sodium hypophosphite, using different methods of assay.

Method.	U.S.P.	Calomel.	Magnesia.	Uranium.
Pure Salt.....	101.1	101.3	99.76	99.63
Coml. Salt.....	92.85	92.69	91.40	91.65

} per cent.

Whilst the results obtained by the uranium and magnesia methods agree, those obtained by the other methods show a higher percentage, due to errors of the method, and also to the presence of phosphite, which would give a high result.

POTASSIUM HYPOPHOSPHITE.—This salt is anhydrous and can be purified in a similar manner to the sodium salt, but this purification is a little more difficult, due to the limited solubility of the salt in alcohol. The quantitative and qualitative examination of this salt is carried out in a similar manner to the sodium salt, except that in the case of this hygroscopic salt the moisture is not determined.

The assay of a commercial sample by different methods gave a similar result to the sodium salt.

U.S.P. method.....	95.5 per cent.
Calomel "	97.3 "
Magnesia "	94.82 "
Uranium "	94.42 "

CALCIUM HYPOPHOSPHITE.—This salt is not easily obtained pure, and some commercial specimens do not form a clear solution with water. When the salt is crystallised from water by evaporation *in vacuo* at the ordinary temperature three separate fractions gave the reaction with lead acetate, consequently it is not possible to purify the salt by recrystallisation. It may, however, be prepared quite pure in the following manner :—To the aqueous solution is added lead acetate in slight excess, the mixture then filtered after standing twenty-four hours, and the filtrate saturated with

hydrogen sulphide and filtered. The hydrogen sulphide is then removed by a current of air and the salt precipitated by the addition of alcohol to the aqueous solution. The pure salt crystallises in pearly flakes, which give no reaction with lead acetate.

Several contradictory statements have been made regarding the solubility of this salt in water. The U.S.P. gave 1 in 6.8, Tyrer 1 in 7.2, B.P. 1 in 8, and various text-books 1 in 6, but it is not clear whether these statements refer to the commercial article or the pure salt. Having in my possession a quantity of the pure salt, I determined its solubility and found it to be 1 in 6.43 parts of water at 20°. Of the commercial specimens examined, one only was soluble in 8 parts of water, and some did not form a clear solution even in 14 parts of water. Experiments of heating at 110° and boiling in pure water similar to those made with the sodium salt having shown that the calcium salt is quite stable under these conditions, the effect of evaporation of an aqueous solution of the pure salt under ordinary conditions was noted. A 10 per cent. solution of pure calcium hypophosphite was evaporated on a water bath to dryness, and the residue on analysis gave 97.73 per cent. of calcium hypophosphite. This may be a cause of the phosphite present in many commercial specimens. The specimen of the pure salt obtained commercially had an appearance which suggests precipitation from aqueous solution by alcohol. Another method of preventing this decomposition would be by evaporation *in vacuo*.

The method of analysis has to be slightly modified for the calcium salt on account of the insoluble calcium phosphate formed. If weighed as $Mg_2P_2O_7$, the best method is to proceed as with the sodium salt, then remove the lead and calcium as sulphate by precipitating with dilute sulphuric acid and adding alcohol. The further operations are the same as with the sodium salt. A better method is to determine volumetrically by uranium acetate, following the usual precaution observed in the presence of calcium and carefully standardising the solution against pure calcium hypophosphite. Good results were obtained by both of these methods on the pure salt.

Found by $Mg_2P_2O_7$ method	100.35 per cent.
Found by Uranium method	99.77 per cent.
Found by U.S.P. ($KMnO_4$) method ..	97.7 per cent.

With this salt the permanganate method gives results lower than the actual value.

COMMERCIAL CALCIUM HYPOPHOSPHITE—

Found by $KMnO_4$, U.S.P. method	95.97 per cent.
Found by $Mg_2P_2O_7$ method	97.49 per cent.
Found by Uranium method	97.56 per cent.
Found by Calomel method	97.3 per cent.

BIARIUM HYPOPHOSPHITE.—This salt can be assayed in the same way as the calcium salt, omitting the alcohol in the removal of the barium. The permanganate method here gives results higher than the actual value, as in the case of the sodium and potassium salts.

In a commercial specimen I found :—

By $KMnO_4$ method	98.6 per cent.
By $Mg_2P_2O_7$ method	97.25 per cent.
By Uranium method	97.29 per cent.

As the last two salts are used for the manufacture of hypophosphorous acid it follows that the acid will contain the same impurities as are present in them, such as phosphorous acid, etc. The acid can be determined by neutralising with sodium hydrate and proceeding as with sodium hypophosphite.

MANGANESE HYPOPHOSPHITE, $Mn(PH_2O_2)_2 \cdot H_2O$.—This salt is easily prepared by dissolving manganese carbonate in the equivalent quantity of hypophosphorous acid and crystallising from the hot aqueous solution. The purity of the salt will depend on the

acid used. It crystallises with one molecule of water, and is somewhat difficult to determine. It cannot be done by the magnesia method, as the manganese cannot be completely removed, but good results were obtained with the uranium method by proceeding as with the calcium salt, but first removing the lead and most of the manganese by ammonium carbonate and ammonia.

In a sample prepared by myself from the commercial acid, I found 98.61 C.c. of manganese hypophosphite.

IRON HYPOPHOSPHITE.—This salt is official only in the U.S.P., and can be prepared by two distinct methods: (1) From ferrous sulphate and calcium hypophosphite by double decomposition, filtration, and evaporation of the filtrate, when a mixture of ferrous and ferric hypophosphites and phosphites with calcium sulphate is obtained; (2) from a soluble ferric salt and a hypophosphite by double decomposition, filtration, washing, and drying of the precipitate obtained. This product is chiefly ferric hypophosphite with a varying amount of impurity dependent on the purity of the materials used and the thoroughness of the washing. The qualitative and quantitative examination of these salts was carried out as follows:—The tests for calcium, sulphate, carbonate, and chloride, were made in the usual way, observing the precautions necessary, and detailed under sodium hypophosphite. Phosphite was detected by shaking up 0.5 gramme of salt with 10 C.c. of a 5 per cent. solution of sodium hydrate in the cold, filtering, acidifying the filtrate with acetic acid, and adding lead acetate. If much sulphate is present, it is necessary to further test the lead precipitate by reduction. Unfortunately I was unable to devise a method of determining the amount of hypophosphite present in this salt without introducing the error due to phosphite, but this can be partly remedied by noting the amount of lead precipitate in the test above detailed. The determination is then carried out on about 0.3 gramme of salt by first oxidising with potassium chlorate and hydrochloric acid in the usual way, then adding 0.5 gramme of sodium citrate and finally excess of pure sodium hydrate. The precipitate is washed thoroughly, the iron contained in it determined iodometrically, and the phosphate contained in the filtrate by the usual analytical methods. A blank experiment performed in this way on a mixture of pure ferrous sulphate and sodium hypophosphite gave—

	Calculated.	Found.
Iron	20.14 per cent.	20.35 per cent.
Ferric Hypophosphite ..	100.00 per cent.	99.92 per cent.

These results prove the accuracy of the method, and it may be noted that the presence of phosphite would affect both the iron and phosphate determinations.

Being thus in the possession of a reliable method of assay, I made some specimens of ferrous and ferric hypophosphites by different methods and examined the resulting product.

I first prepared a salt by mixing solutions of equivalent proportions of ferrous sulphate and calcium hypophosphite, filtering and then evaporating to dryness on a water bath. In this way a greenish-grey powder was obtained which contained ferrous and ferric hypophosphite with some phosphite and calcium sulphate.

On analysis the salt gave :—

Ferric Hypophosphite	71.02 per cent.
By U.S.P.	74.95 per cent.
Iron	22.06 per cent.
Calcium Sulphate	13.8 per cent.

This was obviously a very unsatisfactory product, so the calcium hypophosphite was replaced by the barium salt, and a reddish powder was obtained which on analysis gave :—

Ferric Hypophosphite	91.52 per cent.
By U.S.P.	89.5 "
Iron	28.88 "
Barium Sulphate	nil.

If these results are calculated as ferrous hypophosphite the amount present is 102.26 per cent., so that the product consists of ferrous with a little ferric hypophosphite, and some phosphite. This preparation would appear to be satisfactory but for its indefinite composition; recourse was had, therefore, to the ferric salt. This salt was prepared by double decomposition of ferric sulphate (iron alum) or ferric chloride and sodium hypophosphite. The precipitate was washed, but it is very difficult to wash thoroughly without a very serious loss of the hypophosphite, and the salt therefore generally contains a certain amount of this impurity dependent on the salts used. If calcium chloride is present, the salt will be deliquescent, as stated by Tyrer, but some prepared by myself from iron alum was quite stable in the air. The results of the examination of several commercial specimens showed that both the sulphate and chloride are used in the manufacture of this salt.

A sample prepared from ferric sulphate gave on analysis:—

Ferric Hypophosphite.....	94.25 per cent.
U.S.P. method	88.25 "
Iron	22.27 "
Sodium Sulphate	4.17 "

This sample contained no ferrous iron, and was a white amorphous powder. The above experiments show that the permanganate method of the U.S.P. does not give accurate results, whilst its use is inadmissible with the ferrous salt. It is clear from these experiments that the best salt is the ferric hypophosphite, which should be used, and not the mixture prepared from a ferrous salt.

EXAMINATION OF COMMERCIAL SPECIMENS.—Having worked out a satisfactory and accurate method of assay for these salts, specimens of the sodium, potassium, calcium, and iron salts were obtained from two leading English manufacturers and also from three leading American houses, and examined according to the method previously detailed.

The English manufactured products are designated B1, B2, and those of American manufacture A1, A2, A3. Of these A1 was sold as purified, the others had the name of the salt only on the label.

SODIUM HYPOPHOSPHITE.

Sample.	Na ₂ CO ₃ .	Moisture.	NaPH ₂ O ₂ per cent. of dried salt.	Impurities.
B1	0.16	3.19	91.52	Phosphite, traces Ca, ¹¹ SO ₄ , ¹¹ Cl, ¹¹ CO ₃ . Phosphite, traces Ca, ¹¹ SO ₃ , ¹¹ SO ₄ , ¹¹ Cl, ¹¹ CO ₃ . Traces phosphite, ¹¹ CO ₃ , ¹¹ Cl, ¹¹ SO ₄ Phosphite, traces, Ca, ¹¹ SO ₄ , ¹¹ Cl, ¹¹ CO ₃ ditto
B2	0.08	9.92	96.97	
A1	0.09	14.41	99.78	
A2	0.79	1.32	96.53	
A3	0.36	4.09	98.26	

Of these specimens A1 is pure and represents the hydrated salt the others contain varying amounts of moisture and impurities, the chief being sodium phosphite. The traces of calcium, sulphate, chloride and carbonate present are no doubt derived from the sodium carbonate and calcium salt used in the manufacture.

POTASSIUM HYPOPHOSPHITE.

Sample.	K ₂ CO ₃ .	KPH ₂ O ₂ . Per cent. of dried salt.	Impurities.
B1	2.8	94.62	Phosphite, traces Ca, ¹¹ SO ₄ , ¹¹ Cl Phosphite, traces Ca, ¹¹ Cl, ¹¹ SO ₄ , ¹¹ SO ₃ Phosphite, traces ¹¹ SO ₄ , ¹¹ Cl Phosphite, traces ¹¹ SO ₄ Phosphite, traces Ca, ¹¹ Cl
B2	0.4	98.06	
A1		98.11	
A2	3.72	92.52	
A3	0.68	98.51	

Here the impurities present are similar to those found in the sodium salt, but there is an excessive amount of K₂CO₃ in two samples. No sample is as pure as the A1 sodium salt, which must

be due to the mode of manufacture. I have before noted that this salt is not so easily purified as the sodium salt. Sulphites, about which some contradictory statements have been made, were present in one sample only, viz., B2.

CALCIUM HYPOPHOSPHITE.

Sample.	Per cent. of Ca(PH ₂ O ₂) ₂ .	Impurities.
B1	97.50	Phosphite and sulphate. Traces iron, phosphite, and sulphate. Traces phosphite. Phosphite and sulphate. Nil.
B2	98.18	
A1	99.37	
A2	97.64	
A3	99.61	

Of these A3 was perfectly pure and readily soluble in 8 parts of water; the others were not soluble in this amount, and B1 and A2 did not give a clear solution even with 20 parts of water. B2 contained an appreciable trace of iron, the only metallic impurity met with in the whole series.

IRON HYPOPHOSPHITE.

Sample.	Iron. per cent.	Ferric Hypophosp. per cent.	Impurities.
B1	22.34	84.12 (Ferrous)	12 p.c. CaSO ₄ , phosphite and Cl ¹ Phosphite, traces Ca, Cl ¹ Phosphite, traces Ca and SO ₄ ¹¹ Phosphite, traces Ca and SO ₄ ¹¹ 9 p.c. Na ₂ SO ₄ , phosphite and Cl ¹
B2	21.96	89.84	
A1	22.54	98.84	
A2	23.00	95.02	
A3	20.20	87.58	

B1 was chiefly ferrous hypophosphite, and had evidently been prepared from ferrous sulphate and calcium hypophosphite, and agreed closely with that prepared by myself. The others were true ferric hypophosphite, B2 apparently prepared from ferric chloride, and the others from a ferric sulphate. A3 was very insufficiently washed, and compared very unfavourably with the other salts of this make.

As a result of this work, I would suggest as worthy of the consideration of various Pharmacopœia Revision Committees the necessity of a thorough revision of the tests for these salts and the need of fixing some standard which might be as follows:—For the calcium and barium salts, 98 per cent.; for the sodium and potassium salts, 96 per cent.; for ferric salt, 95 per cent. As a suggestion for the tests, I give below those for sodium hypophosphite, based, it will be seen, on the system of the U.S.P., which I consider preferable, on the whole, to that of the present B.P.

SODIUM HYPOPHOSPHITE, NaPH₂O₂.—5 C.c. of a 5 per cent. solution (to be used of this strength in the following tests) should yield, with 1 drop AmHS, no colour or turbidity (absence of metallic impurities).

5 C.c. with 1 C.c. Am₂C₂O₄ test solution, and 1 C.c. acetic acid, should yield not more than a slight opalescence (limit of calcium).

5 C.c. with 1 C.c. BaCl₂ test solution, and 1 C.c. HCl, and boiled for two minutes, should yield no precipitate (limit of sulphate).

5 C.c., boiled for five minutes with 5 C.c. HNO₃, and then 1 C.c. AgNO₃ test solution added, and again boiled for five minutes, should yield no turbidity (absence of chloride).

5 C.c., with 5 C.c. magnesia mixture, and well shaken, should yield no precipitate (limit of phosphate).

1 gramme of the dried salt, dissolved in water, to which is added 0.5 C.c. of N/10 H₂SO₄, with 1 drop of phenol-phthalein solution, should remain colourless (limit of carbonate=0.2 per cent.).

When analysed as before described, should yield 96 per cent. of sodium hypophosphite.

A simple test which could be used would be the following:—To 1 gramme of the dried salt, dissolved in 10 C.c. of water, add 9 C.c. of a 1 per cent. solution of lead acetate, allow the mixture

to stand for half an hour, and filter. On adding lead acetate to the filtrate the liquid should remain quite clear. This corresponds to about 96 per cent. of pure sodium hypophosphite.

In conclusion, I have added a list of the factors necessary in making analyses by these methods and the corresponding logarithms, these being based on the atomic weights of Meyer and Seubert, in the hope that they may be useful to any who may use these methods of analysis.

TABLE OF FACTORS FOR USE IN ANALYSIS.

Salt.	M. Wt.	Mg ₂ P ₂ O ₇ .		1 C.c. Uran. Sol. = 0.005 P ₂ O ₅ .	
		Factor.	L. Factor.	= grammes.	L. grammes.
Sodium hypophosphite ..	87.88	0.79085	7.89810	0.0062	3.79246
Potass. " ..	103.91	0.9351	7.97087	0.0073	3.86523
Calcium " ..	169.67	0.76346	7.88279	0.006	3.77714
Barium " ..	266.66	1.11999	0.07914	0.0094	3.97350
Manganese (hydrated) " ..	202.52	0.9113	7.95965	0.0071	3.85401
Ferric " ..	501.04	0.7515	7.87593	0.0077	3.77029
Ferrous " ..	135.64	0.8353	7.92185	0.0065	3.81621
Hypophosphorous acid ..	65.88	0.5929	7.77297	0.0046	3.66732
Anhyd. Mn. (PH ₂ O ₂) ₂	184.56	0.83045	7.91932	0.0065	3.81368

The above experiments were carried out in the Wellcome Research Laboratory, London, E.C.

SOME COMMERCIAL VARIETIES OF DILL FRUITS AND THEIR ESSENTIAL OILS.*

BY JOHN C. UMNEY.

Although the dill fruits obtained from different countries do not show such marked difference in appearance as the fennel fruits from various parts of the world, which I have already described (see *P. J.*, March 13, 1897), yet the differences are probably of greater medicinal importance.

I have shown that the varieties of fennel fruits differ considerably in size and also in the size of their vittæ, but that in all probability they are derived from the same species, whether cultivated in England, Germany, Roumania, Russia, Persia, India, or Japan. In the case of dill fruits, however, the evidence points strongly to the fact that the fruits are not derived from the same species, and although they are only used for the preparation in this country of dill water and for the distillation of the essential oil, still, the differences are of considerable importance, and appear to be worth placing on record.

The English and Indian dill fruits are those which have up to the present been used entirely in this country, the latter being very largely imported and employed for the distillation of essential oil. Those cultivated in Germany are also largely distilled for purpose of liqueurs, and a Spanish variety is I believe also distilled in Southern Germany.

The English and German fruits are exactly alike, the two mericarps being usually separated from the pedicel, each of them being oval and about one-sixth of an inch long and one-tenth to one-eighth of an inch broad, a decided brown in colour, the dorsal ridges being inconspicuous, but the lateral much prolonged into the form of wings. Six vittæ are seen in each mericarp in transverse section.

In the case of the Indian variety the same number of vittæ (except in a few cases) are observable, but the lateral ridges are not so prolonged and the colour of the fruits is a paler brown, the mericarps being usually not divided.

In describing the different varieties of dill fruit, Flückiger and Hanbury ('*Pharmacographia*,' p. 292, edition 1874) write "that dill, under the Hindustani name of Suva or Soyah,

is largely grown in various parts of India. On account of the slight peculiarity in the fruit, the Indian plant was regarded by Roxburgh and De Candolle as a distinct species, and called *Anethum sowa*; but it possesses no botanical characters to warrant its separation from *Anethum graveolens*." It is doubtful whether this opinion is a correct one, as the difference between the essential oils appears to be far greater than would be associated in all probability with the oils of the same plants grown even in such widely different districts.

A considerable consignment of Japanese fruits has recently reached this country, I believe, for the first time, and in botanical characters they agree so closely with the Indian variety that an examination of them seemed of some importance.

I have already called attention to the fact (*P. J.*, May 4, 1895) that the oil of the Indian variety, which, until recently at any rate, was that very largely met with in commerce in this country, differs considerably from that distilled from the English variety, the percentage of carvol being considerably less, and the specific gravity of the oil considerably higher, due to a body heavier than water. This body has been subsequently examined by Ciamician and Silber, who state that it has all the characters of apiol separated from the oil of parsley.

The oil distilled from the Japanese variety has a specific gravity of .964, and an optical rotation of +50.5° in a tube of 100 Mm.

The relative proportions of carvol (b.p. 224-226° C.) contained in the oils can be best seen by reference to the table of percentages obtained at varying temperatures of fractionation.

None of the methods hitherto put forward for the estimation of carvol appear to be completely satisfactory, although approximate results may be obtained by the hydroxylamine method (Kremers and Schreiner).

	Sp. gr.	Opt. Rot.	Below 200° C.	200°-210 C.	210-220° C.	220-230° C.	Above 230° C.
English distilled from fruits grown at Market Deeping.	.9143	+72.25°	22	14	12	50	2
English distilled from fruits grown at Canterbury.	.9146	+80.25°	21	19	12	46	2
German.	.9002	+70.25°	53	13	12	17	5
Indian.	.9486	+47.5°	24	17.5	7	10.5	39
Japanese	.9643	+50.5°	21	12	10	8	49

The oil distilled from the German fruits has practically the same characters as that distilled from the English fruits, provided that no separation of carvol has taken place, as in sample No. 3, a practice adopted to some extent on the Continent.

I have not been able to obtain a sample of the Spanish fruit for distillation, but have examined an oil reported to be distilled from Spanish fruit which possesses practically the same characters as the German oil.

It is evident, from the characters of the essential oils, that the Indian and Japanese varieties, although agreeing amongst themselves, differ very considerably from the English and German, and it cannot be supposed that the apiol-like body already referred to is devoid of powerful physiological action. It is imperative, therefore, that the English or German dill fruits should be employed for the distillation of dill water, and that the characters of the essential oil prescribed by the new Pharmacopœia should be rigidly adhered to, thus excluding the Indian and the Japanese varieties.

* Read at the British Pharmaceutical Conference, held at Belfast, August, 189 .

PHARMACISTS AND THE PHARMACOPŒIA.*

BY PETER MAC EWAN, F.C.S.

Why should British pharmacists trouble about the British Pharmacopœia as we are doing now? The State does not recognise us as fit and proper persons to entrust with the publication of the work, and the General Medical Council, which is so honoured, has not been too eager to take counsel with the representatives of pharmacy in regard to its preparation.

There are few greater anomalies in this country than the British Pharmacopœia. It may first be noted that, although the General Medical Council is by the Medical Acts of 1858 and 1862 constituted the publishers of the book, the Legislature has been careful to give instructions in such wide terms that the Council is not compelled to prepare the work, but "shall cause to be altered, amended, and republished such Pharmacopœia as often as they shall deem it necessary." Under this provision the Medical Council has since the first British Pharmacopœia was published excluded any but its own members from final decisions upon what should and what should not be included in the British Pharmacopœia; so that pharmacists, who are best qualified to decide upon pharmaceutical matters, and to whom pharmaceutical standards are of commercial as well as professional interest, have practically no voice in the decisions.

Secondly, we may note that the publishers of the book seem to lack organisation for continuous revision—in fact, until they appointed a pharmacist, Dr. John Attfield, as a reporter, there was no provision by the Council for watching the progress of pharmacy and medical treatment so far as such progress affected the Pharmacopœia.

In the third place, we may take it as a fact that the new British Pharmacopœia is chiefly or essentially the work of pharmacists who were appointed by the Pharmaceutical Society of Great Britain to assist the publishers. They did their work well, but I believe I am right in saying that these workers were in such an unsatisfactory position that they could never be sure that their expert opinions would be accepted as final. Which is the greatest anomaly of the whole matter.

In France, Germany, and the United States the compilation of the national Pharmacopœias is entrusted to representative committees of medical men and pharmacists, with associate helpers. None of these countries, however, strictly compares with our own. In France the Government of the day selects the committee of revision, placing upon it men of all interests—medicine, pharmacy, chemistry, and botany—but the burden of the work and the greater part of the honour of revising the 'Codex' falls upon the pharmaceutical representatives. The conditions are almost similar in Germany, the *Arzneibuch* Commission being appointed by the Emperor; and here, again, medicine, pharmacy, and chemistry are represented, and veterinary surgery is also recognised. In the United States matters are different. The Pharmacopœia of that country is practically a private publication; its authority is like that of our 'Unofficial Formulary'—it is tacitly recognised as an authority, but is not by Statute a compulsory standard, although each State in the Union may so decree in its Legislature.

In spite of its unsatisfactory recognition the United States Pharmacopœia is revised in a manner little short of perfect. Once every ten years all medical and pharmaceutical associations in the Union send delegates to a Convention held in Washington. The Convention appoints a committee to revise the work. The nation is recognised by the appointment of representatives of the Army and Navy medical services. As constituted the committee represents all directly interested, but in practice the work is done

by pharmacists, some of whom, however, hold medical qualifications. With the publication of a new edition the work of the committee does not end. This committee is so largely composed of leaders from our kindred body, the American Pharmaceutical Association, that year by year preparation for revision goes on by research committees, individual work, and reports on special subjects which small committees have been appointed to consider. The details of the scheme are of great interest, but it would be out of place to epitomise them now. Suffice it to say that they embrace consideration of every branch of the current literature of the world connected with a Pharmacopœia, and research on criticisms directly affecting the existing work. Be it noted that all this is done without statutory obligation. The committee are the publishers of the work, and the revenue obtained from it pays the out-of-pocket expenses.

Is it possible for British pharmacists to do something on similar lines? At present, year by year, an immense amount of work is done in our country which bears upon Pharmacopœia revision, and, saving the annual report to the Medical Council, which is a clever piece of literary craftsmanship, there is no adequate means of utilising this work. The Pharmaceutical Societies cannot be expected to look after such things, because their functions are becoming more and more concentrated upon the administrative side of pharmacy, I suggest that the British Pharmaceutical Conference should take the matter up. It represents the British Empire—England and Wales, Ireland, Scotland, Canada, India, and the colonies. Its object is to improve the practice of pharmacy. It is free from the burden of Acts of Parliament, and especially of official red-tape. It has already in the Formulary Committee given evidence of its ability in Pharmacopœia pioneering. We only require to reorganise the committee to make it suit the purpose. It should be representative—

First, of the more important centres is the three kingdoms, preferably through the local pharmaceutical associations.

Second, of the Pharmaceutical Societies of Great Britain and Ireland.

Third, of every pharmaceutical association and society of interest in Canada, India, and the colonies.

This would form a grand committee equivalent to the American Convention. From it would be appointed a smaller working committee, whose suggestions would be submitted to and voted upon by the grand committee before recommendation to the Conference, with reservations in regard to matters requiring expeditious decision.

The working committee's duties can better be imagined than described. It should be so constituted and have such powers that the director of it should be able to freely instruct or correspond with his colleagues regarding any B.P. subject. It should secure the co-operation of the Pharmaceutical Research Laboratory and of any similar institution in the kingdom or abroad. There is much assistance latent in the senior pupils of schools of pharmacy, in the laboratories of wholesale houses, and in our university colleges, apart from which there are many young pharmacists who would be only too thankful to apply to a central authority for work to do, if they knew that their assistance would be welcomed. You will all have noticed that the progress of pharmacy is made by potential examiners, who too frequently retire into their scientific coffins when they receive their appointments.

If a scheme of revision such as that I have outlined were carried out, new life would be infused into this Conference, and we should never lack pabulum for our discussions. Beyond which it might be possible for the Conference to publish a more comprehensive work than the "Formulary"—one rivalling the British Pharma

* Read at the British Pharmaceutical Conference, held at Belfast, August, 1898.

copœia itself; and, should the time ever come when pharmacists obtained statutory recognition as revisers of the Pharmacopœia, the organisation for the work would be ready.

Finally, pharmacists may well consider whether it is of their advantage to give their services under the present law so humbly to the General Medical Council as they do. I understand that the Council claims that it must adhere to the Statute, and that it may not delegate its powers to pharmacists. True, but as the assistance which pharmacists have hitherto given is legal, it would be quite as legal for the Council to give the representatives of pharmacy voting-power in the preparation of the work and remuneration for expenses incurred. Perhaps the Pharmaceutical Societies could not insist upon this, since there is a kind of brotherhood between all official executive bodies, but the Societies could say to the Medical Council, "Gentlemen, like yourselves, we have many executive functions to perform, and these practical pharmaceutical investigations which you suggest to us are not in our direct line of work; but the British Pharmaceutical Conference has had a Pharmacopœia Committee working for some time; we are represented upon it. Better try the B.P.C." The Conference would be able to state its terms, and if these were not agreeable to the Medical Council, then let the Council itself carry out its statutory duties without pharmaceutical assistance.

NOTE ON EXTRACT OF GINGER.*

BY T. H. W. IDRIS, F.C.S.

It is well known that alcoholic extract of ginger, commercially known as "gingerine," does not contain all the aromatic principles of the root, as most of the essential oil is carried over with the recovered alcohol.

In the course of experiments to produce extract of ginger that would contain the whole of the flavouring and odorous principle, it was found that acetone was the most suitable solvent, boiling as it does at 56° C. and being miscible with water in all proportions. The apparatus used consists of a modification of a Soxhlet on a manufacturing scale. If some powdered ginger be exhausted in a Soxhlet with acetone, and afterwards with alcohol, we find that the whole of the aromatic and pungent principles have been removed by the acetone, showing that it compares favourably with alcohol as a solvent. The acetone extract does not appear to have lost any of its volatile oil in the process of recovery, as is so markedly the case when using alcohol, while the last trace of acetone is easily removed by agitation with a little water. This acetone extract is a dark brown substance of a treacly consistency, intensely pungent and at the same time possessing a full ginger aroma, the quality of which largely depends on the variety of ginger used.

It is readily soluble in alcohol, forming a deep brown liquid. If steam be passed through the extract and then condensed it carries over a quantity of the volatile oil with it. This oil floats on the surface of the condensed water, forming a yellow layer, and can be easily removed. The difference in aroma of the various kinds of ginger, though noticeable enough when examining the rhizome, is much more apparent when dealing with the oils themselves, and in this way a method of distinguishing the variety of ginger used is obtained. The various tinctures and essences of ginger may be very conveniently and readily prepared from this extract without the usual loss of alcohol, and syrup may be flavoured with it by proper diffusion at a suitable temperature without the use of any spirit, and a further saving may be thus effected in manufacturing ginger-flavoured beverages.

* Read at the British Pharmaceutical Conference, held at Belfast, August, 1898.

THE GALENICALS OF THE NEW PHARMACOPŒIA.*

BY H. WIPPELL GADD.

The publication of a new Pharmacopœia inevitably provokes much criticism—some sympathetic, some severe, some savage. Fault-finding is proverbially easy, and grumbling the prerogative of Englishmen, whilst no patriotic Irishman is happy without a grievance.

On the other hand, it is manifestly unfair to condemn hastily products or processes which have been put forward by a body of experts after long deliberation and many experiments.

In these notes it is my object not so much to criticise as to bring forward points and apparent difficulties which have been noted in the course of manufacturing work, in the hope of provoking a good discussion rather than of imparting information.

In the first place, it would appear that in spite of the small quantities named in its processes, its lordly indifference to the needless dissipation of spirit, and the undoubted orthodoxy of its compilers, the Pharmacopœia of 1898 is essentially a wholesalers' Pharmacopœia.

That is to say, the stringent nature of its tests, the number of spirits of varying strengths employed in its processes, and its insistence on standardisation will make it more and more difficult for the official galenicals to be made economically and efficiently on the small scale. And, that being so, it is surely not too much to ask that those whose products will be examined, not by an ignorant public, but in the fierce light which comes from the coloured carboys, should know exactly what is required of them, and what body is better able to interpret the official directions than this Conference?

To mention the solvents first, it is satisfactory that, the tests being more stringent, "engine waste" can no longer be described as "aqua distillata." The changes in alcoholic strengths, which at first appeared revolutionary, present no great difficulty in practice, and as the drugs are doubtless better exhausted they may be looked on as advantageous.

Of the new and altered preparations I have made notes concerning the following:—

Effervescing citrate of caffeine.—A satisfactory formula, its only drawback being that the strength (4 per cent.) bears no simple relation to the dose.

Resin plaster.—The directions for melting each ingredient separately are impracticable in the case of the soap.

EXTRACTS.—Liquid extract of belladonna, which is the basis of all the belladonna preparations, with the exception of the green extract.

The pharmacopœial process, with slight practical modifications, appears to be satisfactory, although it has been shown by Bryant not to exhaust the alkaloidal strength of the root.

The latter's process, however, materially alters the appearance of the extract, which difference is particularly noted in making the official ointment.

And here I should like to call your attention to some samples of belladonna extract met with in commerce, all of which are guaranteed to be B.P. 1898, but which show striking variance in physical characters.

The solid extract is made from the liquid by evaporating, adding sugar of milk and then further concentrating, a process not free from difficulties, and which becomes objectionable when the extract is used for making suppositories.

For the latter, I would suggest that, instead of taking 18 grains of the solid extract as the Pharmacopœia directs, 30 minims of the liquid extract be taken.

* Read at the British Pharmaceutical Conference, held at Belfast, August, 1898.

I submit samples made by the two methods. With regard to the ointment, it has already been pointed out by Umney that it would be better to evaporate the liquid extract to a quarter instead of an eighth of its bulk. The standardised liniment is also advantageous, but its logical outcome, the standardised methylated liniment, savours somewhat of a *reductio ad absurdum*.

Liquid extract of ipecacuanha, with its products, the official vinegar and wine, are things to be thankful for, the only drawback being that whilst the Carthagen root is not sanctioned, there is nothing in the estimation process to show the nature of the total alkaloids and consequently the source of the drug employed.

The liquid extract of nux vomica being estimated for strychnine only, and the consequent alteration of the strength of the solid extract and tincture, are very important points. I have found the separation of the strychnine and brucine by means of potassium ferrocyanide difficult.

No amount of washing appears to free the precipitate absolutely from brucine, whilst the bitter taste persists in the filtrate. Prolonged washing, moreover, causes a considerable diminution of weight, with a probable loss of strychnine. Would not a reprecipitation process, as suggested by Dunstan and Short in their original paper, be better? I should much like to hear the experiences of others in this connection.

Extract of strophanthus is curious as being made by successive percolation with ether and alcohol (90 per cent.), whilst percolation with alcohol (70 per cent.) alone suffices for the mixture. Concerning the remaining extracts little need be said, except that it would be well if the directions evaporate "to a soft extract," "to dryness," "to a firm extract," as the case may be, could be replaced by directions to concentrate to a given weight.

Ext. coloc. co. and extract of cascara sagrada would be better in the form of powder.

With regard to extract of Calabar bean, the product will vary in accordance with each manufacturer's idea of what is "a very soft extract."

This is a matter of some importance with so potent a drug, and I would suggest that a similar process to that for extract of strophanthus, in which the final product is directed to be of a definite weight, would be preferable.

Glycerin boric acid, when made by the Pharmacopœial process, turns pink.

Perhaps one of the best features of the new Pharmacopœia is the use of metric equivalents, but compromises are always unsatisfactory, and one's loyalty to the decimal system is somewhat strained by the awkwardness of the concentrated liquors 1 in 10. This is, however, more a point for dispensers than for manufacturers.

The amount of menstruum ordered in making liq. calumb. conc. is quite inadequate, whilst the maceration and pressure method, which has obvious disadvantages for this drug, does not yield a better result than slow percolation alone.

The process by which the concentrated solutions of chiretta, cusparia, krameria, quassia, rhubarb, senega, and serpentary are prepared is elaborate and troublesome, but does not exhaust the drugs.

Liq. hamamelidis not being able to be made on this side of the Atlantic, it would have been better if characters and tests had been given instead of a process of manufacture.

Liq. sarsæ co. conc.—If the mixed infusion and decoction be concentrated to sixteen fluid ounces a pint of filtered product cannot be obtained. It should be concentrated to 18 fluid ounces.

The powders, with the notable exception of aromatic chalk powder (from which the saffron is deleted), are little altered, but it may

be noted that the trade custom of using decorticated liquorice for compound liquorice powder is now officially enjoined.

Of the syrups, syr. ferri phosphatis cum quinina et strychnina is unsatisfactory, the precipitation process giving a much better product.

Syr. cascarae aromat. is not an elegant preparation, as it quickly deposits.

Syrup of lemons, containing as it does a strong tincture of the fresh peel, is a decided improvement.

It seems a pity that specific gravities are not given for the syrups, forming, as they do, useful and ready tests.

The tinctures are the class of galenicals which have been subject to most alterations, on the whole with satisfactory results. It may be doubted, however, if a slight improvement in flavour and a possible reduction in the price of marmalade are worth the trouble caused by the preparation of tincture of orange from the fresh peel. Here again the indirect result is to take the manufacture out of the retailer's hands.

If medicine requires tinctures of uniform strengths and doses, pharmacy can supply them, and has no cause to complain, but the changes in those made from potent drugs should be notified as widely and as fully as possible.

These are briefly:—Tincture of aconite, two-fifths the strength of the 1885 tincture; tincture of belladonna, about double the strength of the 1885 tincture; compound tincture of chloroform and morphine, four times the strength of hydrochloride of morphine, and a totally different preparation; tincture of nux vomica, nearly twice the strength of the 1885 tincture; tincture of podophyllum, nearly double the strength of the 1885 tincture; tincture of strophanthus, only half the quantity of drug is used, but being better exhausted the alkaloidal strength may not be very different. It would be interesting to have results of analyses of the last-named tincture.

With regard to the compound tincture of lavender and also the spirit of lavender, it has been noted that foreign oils are not now excluded from the Pharmacopœia, but as it is difficult to meet with an *ol. lavand. exot.* which conforms to the official tests, the concession does not appear to amount to much.

Tincture of rhubarb without saffron differs so little from the old tincture that this economical change would appear to be an unmixed blessing. Concerning the tinctures as a whole, it seems a pity definite characters such as specific gravities or amount of extractive are not given, when more exact standardisation is not feasible.

The lozenges are hardly galenical preparations, but it may be noted in passing that trochisci acid. carbolicci appear to be excessively strong.

Of the ointments, the process for that of nitrate of mercury is a decided improvement.

Paraffin ointment has been complained of, but the allowance of variance in accordance with temperature meets this objection.

Ung. staphisagriae would be better made from the oil.

In the wines, the test for freedom from salicylic acid is useful, and the great improvement in ipecacuanha wine has already been noted.

Viewing the galenicals as a class, I cannot but consider that the new Pharmacopœia is in advance of the previous ones, the weakest point being the processes, and one wonders if in some future book, when pharmacy approximates more closely to an exact science, and the present tendency towards factory-made preparations has advanced still further, the galenicals may be treated as the chemicals are now, processes being omitted and tests extended.

THE CHEMISTRY OF THE 1898 B.P.*

BY P. KELLY, PH.C.

My object in reading this paper is with a view to inaugurate a discussion on the chemistry of the new B.P., and thereby elicit the opinions of the members of the Conference which may tend to the mutual benefit of all concerned.

It is held by some that the Pharmacopœia is not intended to be a teaching book. To my mind it cannot be separated from that object, and, moreover, that it is not only a teaching book, but one that we all should look to both as a standard in scientific work, as well as a standard in manufacturing operations, and so should be the guide-book alike both of the youthful apprentice, without a thorough knowledge of which he cannot either become a competent assistant or a successful candidate at his examinations, and to the matured pharmacist it should be the chart by which he is expected to steer, the guide-book of his every operation, to produce substances in keeping with the standard of its requirements.

Now, this being so, how necessary it is that its contents should enlighten us as to the best methods for the detection of, or exclusion of, suspected impurities; that the tests used for this purpose should be the most reliable known, and the directions for their application should be explicit, thoroughly practical and free from laxity.

Let me first draw your attention to the atomic weights of the elements, which to me seems the most radical change in the whole volume, as it affects every chemical substance in it, altering the molecular weights of all chemical compounds contained in it, and in this way it is accountable for the most numerous, if not the most important, changes, every one of them being altered, with the exception of that one, to alter which, as it is the standard, would destroy unity, and upset the bases upon which we work; I mean the platform constructed by Dalton, the atomic theory, and I allude to hydrogen.

The cause for such sweeping alterations, I suppose, must be due to the scientific progress in the method of determining them.

But passing on from hydrogen, all the remainder are, like the ladies, growing younger every year.

Now take antimony, before 1885 its atomic weight was 122; in 1885, 120; and in 1898, 119; and so with them all, that one does not know where they will stop, and begins to fear for the stability of the periodic law (as I believe the discovery of argon has even puzzled Mendelejeff himself).

And so one is surprised at the diversity of opinion which exists between the most expert experimenters with regard to the atomic weights of the elements.

Then with regard to the introduction of structural and constitutional formulæ, I would say, from a scientific point of view, it is well to give us an idea of the internal arrangement of the atoms in organic compounds, which enable us for one thing to account for the different physical and chemical properties of isomeric bodies. Yet from a practical point of view I would say the empirical formulæ would be less strain on the memory and more useful for writing an equation.

For instance, take oleic acid. The empirical showing its monobasic character would be $H \cdot C_{18}H_{33}O_2$, whilst its constitutional would be $C \cdot H_3(CH_2)_7C \cdot H : C \cdot H (C \cdot H_2)_7C \cdot O \cdot O \cdot H$.

I consider these complex formulæ, which are wrapped up in so much mystery, or at least theory, should be left to the writers of scientific text-books, and for practical purposes use the empirical formulæ only in the B.P.

I consider the changes in nomenclature are an improvement,

especially the acids being now expressed as salts of hydrogen, as sulphuric acid, now termed hydrogen sulphate, and the hydrates, now termed hydroxides, is a decided step forward.

With regard to inorganic acids, there are a few changes in them, notably acid hydrobromic dilute, which is now prepared, or, as the B.P. says, "may be obtained," by the distillation of potassium bromide with concentrated phosphoric acid, which I consider a great improvement on the '85 process, viz., with bromine and hydrogen sulphide, and also on the Fothergill process; its strength is determined volumetrically by vol. sol. silver nitrate, new, and by vol. sol. of sodium hydroxide. There are three methods by which sulphurous anhydride may be obtained, viz., combustion of sulphur in air or oxygen, boiling sulphuric acid with copper, mercury, or carbon. The first three are new in the B.P.; the sulphuric acid plus carbon is the '85 process, which being faulty might be left out.

Amongst organic acids, citric gets the lion's share of attention, and deservedly so, as it is used so much in medicine and also for domestic purposes. There are several tests to detect impurities and two tests to detect tartaric acid, which you would scarcely expect to find now as an adulteration, the commercial value being so nearly equal. Tartaric acid has also an increase of tests, one a very pretty reaction. I mean where you take a solution of tartaric acid to which you add a drop of solution ferrous sulphate, and a few drops of hydrogen peroxide, and solution of potassium hydroxide in excess, which gives a very pretty purple or violet colour.

The mirror, or reduction test (as there are so many organic bodies which produce similar results), I would be inclined to dispense with. Phenol, commonly called carbolic acid, has also its alterations, especially its boiling and melting points. Salicylic acid is also slightly changed in its mode of preparation, also its melting point, and a new test (uranium nitrate) is introduced to detect or exclude carbolates and sulpho-carbolates.

In a short paper like this it is impossible to deal at any length with the numerous changes in constants, and the increased number of tests which involve an increased number of reagents.

The standardisation of the preparations of potent drugs, such as extracta, nucis vomicæ, belladonnæ, ipecacuanha, as to their alkaloidal strength, is both from a therapeutic and chemical point of view a great improvement.

This should be valuable information to the medical man who prescribes according to the B.P.

That the 1898 B.P. is an improvement upon its predecessors (in many respects) is unquestionable, especially in its chemistry. Yet there is still room for improvement, and though in the preface the onus is thrown a good deal on the one hand on the prescriber, and on the other on those who are supposed to be duly trained, thus ridding the editor of almost all responsibility from the position the book occupies, this cannot be. If you are to be obedient to its dictates it should supply you with the necessary information to carry them out. I do not think this has been done in the part devoted to the preparing of the volumetric solutions.

Comparing it with '85 B.P., there are still six in number, sulphuric acid being substituted for oxalic. All the molecular weights of the substances used are altered on account of the alteration in the atomic weights but potassium bichromate, which is completely altered, its molecular weight being now 292.3, as compared with 295, and 4.87 grammes dissolved in 1000 C.c. instead of 14.75 grammes in 1000 C.c., which was in the '85 B.P.

The change is an improvement, but what I consider cause for complaint is, those changes are not even alluded to in any way, footnote or otherwise. There is no information as to the use of

indicators, except in the case of sodium thiosulphate solution, where you are told to use mucilage of starch and sodium hydroxide litmus.

Now on page 8 of the preface you find written that it is desired that the B.P. should afford to the members of the medical profession and those engaged in the preparation of medicines throughout the British Empire one uniform standard and guide, whereby the nature and composition of substances used in medicine may be ascertained and determined. This is why I say standard strength should be explicitly stated, and so be what an authorised book should be—a guide alike to the youth learning his business as well as to the duly trained chemist. And as it is assumed that the chemistry of the 1898 B.P. is the emanation from (shall I say) the blended brains of practical English and Scotch chemists, should we have any hesitation in expecting it to be a standard in scientific manipulation, and if such is not the case, might I suggest that it was due to the need of the presence of an Irishman in their deliberations?

AMOUNT OF CARBONIC DIOXIDE AVAILABLE IN THE OFFICIAL GRANULAR EFFERVESCENT PREPARATIONS.*

BY C. S. DYER, A.P.S.

Supplementary to the investigation suggested by the title of this paper is the examination and comparison of certain commercial specimens on the same point with a view to obtaining an official standard.

Of course the quality of a non-medicinal granular saline consists solely in the extent of its effervescence, or, in other words, the object aimed at is to get as large an amount of carbonic acid gas as possible with the least quantity of dissolved salt.

The only practical method of determining the amount of gas was to measure the carbon dioxide volumetrically.

The apparatus used was an ordinary Lunge nitrometer with the urea determination arrangement attached. The nitrometer was filled with water, and to avoid absorption of CO₂ a little benzene was floated on the surface in the measuring tube, the resulting presence of the mixed benzene and aqueous vapour caused the amount of gas evolved to exceed the theoretical yield by about 10 per cent., so eventually mercury was employed, this giving in every way satisfactory results.

The different samples were moistened with an equal quantity (2 C.c.) of water. This would at same temperature and pressure absorb the same amount of gas, which would not exceed 2 C.c.

Several specimens of commercial sodium bicarbonate were first tried, and were found to give almost identical results, all showing almost exactly the theoretical amount of CO₂.

Then to ascertain whether the loss of gas on granulating is due to the heating of the bicarbonate, *per se*, the same samples were exposed to a temperature of 100°-105° C. for ten minutes; that is, under the same conditions so far as heat is concerned as in the process of granulation. The resulting loss in weight amounted to about 2 per cent., this is apparently water, the same quantity of gas being evolved.

The ingredients of the P.B. sodii citro-tart. effervescens were then carefully weighed out and well mixed.

1. Part of this mixture was immediately tested for quantity of CO₂.

2. Part was dried below 54° C. without granulating (for comparison with No. 3) to see how much loss the necessary high temperature caused, and

3. The rest was passed through the P.B. process, granulated, and dried.

The two latter parts both lost about 10 per cent. in weight as

the P.B. states, but that portion not heated much showed a higher percentage of gas available.

Now, citric acid loses nearly 9 per cent. of its weight in water of crystallisation, and the amount present of citric acid is only 16 per cent. The other ingredients only lose about 2 per cent. in weight on treating. How is this 10 per cent. to 12 per cent. loss accounted for? The following paragraph will, I think, make this clear.

Sodium bicarbonate on combining with an acid of course produces CO₂ and H₂O, which is lost on drying. This amounts to 62 per cent. of the weight taken, and as the quantity present is about 46 per cent., the total possible loss in this way would be—

$$\frac{46 \times 62}{100} = 28.5 \text{ per cent.}$$

The observed decrease in weight is about one-third of this, roughly indicating that about 30 per cent. of sodium bicarbonate and acid has combined during the process. To see how far this is actually the case, the following figures will show.

Use mercury in the nitrometer; if using water place a little benzene on surface, and remember the results will be 10 per cent. higher.

Substance experimented on.	Quantity used.	No. of C.c. of CO ₂ evolved at N. T. and P.
1. Sodium bicarbonate .....	.15 gramme	41.6 C.c.
	.15 gramme	41.8
2. Ingredients of P.B. eff. citro-tartrate immediately after mixing .....	.3 gramme	39.24 C.c., slight loss
	(46 p.c. NaHCO ₃)	
3. Ditto dried below 54° C., not granulated .....	.3 gramme	33 C.c. = 21 p.c. loss gas
P.B. process carried through .....	.3 gramme	27 C.c. = 32 p.c. loss gas
5. Good commercial sample by well-known maker .....	.3 gramme	26.8 " " "
6. P.B. eff. sodii sulphas .....	.3 gramme	21.8
7. P.B. mag. sulph. eff. ....	.3 gramme	15 C.c.
	(contains only 36 p.c. soda)	
8. Sample of mag. cit., commercial..	.3 gramme	15 C.c.

No. 2 shows a slight loss, the powder being very damp.
 No. 3 shows nearly as much loss as in the final operations.
 No. 4, 32 per cent. loss; this agrees with the loss in weight mentioned before.
 No. 6, a comparatively old sample.
 No. 7, this preparation contains only 36 per cent. of soda, against 50 per cent. of No. 6; the relative yield is therefore the same.
 No. 8 contains about 33 per cent. sodium bicarbonate; result fair.

To summarise the above, it appears that good commercial specimens of the P.B. article and carefully made samples, unless absolutely fresh, exhibit only about 60 to 70 per cent. of their sodium bicarbonate available for effervescing purposes. This, to me, surprising result shows that fully 30 per cent. of the acids and sodium carbonate combines during the process of granulation.

1. Now this 30 per cent. loss of sodium carbonate is nearly sufficient to neutralise the amount of citric acid present.

2. The citric acid causes the mass to flux, because it (the acid) melts at about 100° C.

It is evident, therefore, that at the same time practically the whole of it combines with the carbonate so brought into molecular contact with it, leaving the eventual effervescence entirely to the tartaric acid.

The above method is very useful when desiring to compare many samples of salines at about the same prices as after weighing; only about two minutes is required to complete the operation, so a good many can be tested with a very moderate expenditure of time.

I would throw out the suggestion that the Pharmacopœia ought among the characters and tests of those preparations to state the least amount of CO₂ which each should yield on the above treatment. Any sample which does not show, say, 50 per cent. of its bicarbonate available for producing effervescence should not find its place in modern pharmacy.

* Read at the British Pharmaceutical Conference, held at Belfast, August, 1898.

THE STUDENTS' PAGE.

THE STUDY OF THE B.P.

INTRODUCTORY.

THE British Pharmacopœia is not a text-book, but it is, nevertheless, a book with the contents of which pharmaceutical students should be familiar, from cover to cover. Moreover, it is not sufficient that the statements contained in the book should be committed to memory; the work must be studied with a due sense of the reasons for so doing, and not a single statement should be passed over by the student until he has thoroughly grasped its full import. He will find then that the whole of his work circles round the Pharmacopœia, frequent reference to text-books of physics and chemistry, botany and pharmacography being required in order to secure that thorough grasp of the import of official statements already referred to. Whilst, therefore, the study of the Pharmacopœia cannot be entered upon too early in the pupil's career, he must, sooner or later, take up the study of the sciences mentioned if he desires to master all the details of the national medicine book. Accordingly, it will be assumed in the following notes that the student possesses an elementary knowledge of the general principles of chemistry, botany, and pharmacy.

PLAN OF WORK.

It is proposed in these notes to take the substances in the new Pharmacopœia seriatim and furnish explanations for such statements as seem likely to present difficulties to the student. It will obviously be unnecessary to repeat the information contained in the series of explanatory notes just concluded and relating to the 1885 B.P., edition, since the journals containing them are of recent date, and should be readily available for reference by the student. In what follows, therefore, it will be assumed that the reader will have by his side the "Students' Page" of those back numbers which contain the previous monographs dealing with the substances under discussion. By adopting this plan, unnecessary repetition will be avoided and space saved; at the same time there will arise numerous opportunities for comparison between the 1885 and 1898 editions of the Pharmacopœia. Those comparisons will be particularly profitable during the present transitional period, whilst the old B.P. is being superseded by the new. And although for examination purposes only a knowledge of the new Pharmacopœia will later be demanded from candidates, the student engaged in the practical business of pharmacy will for some time to come find it necessary to possess a general acquaintance with the contents of the superseded work, in order to avoid errors and difficulties likely to be encountered in dispensing prescriptions written before the issue of its successor.

SOME PRELIMINARY CONSIDERATIONS.

Before commencing the study of the details of the Pharmacopœia, it will be well to devote some consideration to the methods which experience suggests as the best to be followed in dealing with a work of such extended range. The articles mentioned in the Pharmacopœia will then be considered in order, care being taken to expand and explain the statements made in each monograph, whilst an endeavour will be made always to use such explanations as illustrations of the principles involved. In this way

it is hoped that the student will acquire the habit of applying his knowledge intelligently and usefully to the elucidation of problems of allied nature. The explanations offered will be as full as is consistent with the above remarks; at the same time the student should not rest content with anything less than the ability to explain every statement made in the Pharmacopœia. It may therefore happen at times—perhaps more particularly in the case of an apprentice who has not had the opportunity of a systematic course of study—that some explanation may be omitted which appears simple but is not self-evident to the beginner. Under such circumstances the student is invited to communicate his difficulty to the Editor, observing the rules for correspondents, and an endeavour will then be made to remove it.

INTELLIGENT STUDY PREFERABLE TO CRAM.

With regard to the chemistry of the Pharmacopœia, there are numerous instances where the knowledge involved extends considerably beyond the chemistry of the Minor syllabus. It is in such cases that information can very profitably be supplied, which is probably not contained in the text books used by the student. It is also quite common to hear students speak of "getting up" the Pharmacopœia, as a colossal task involving an enormous amount of memory work, particularly in connection with the formulæ for galenical preparations. It cannot be too strongly impressed upon students at the beginning of their studies that this is quite wrong. To commit to memory such formulæ is to encumber the mind with information which is not demanded of them by the examiners (*vide* Syllabus of Pharmacy for the Minor Examination); it is also useless for any practical purpose. A knowledge of this sort may be acquired without effort by one engaged in manufacturing the things continually, but sufficiently extended opportunities are seldom available for the average student. To acquire, by mere reading and effort of memory, a store of information which is useless for any practical purpose and rapidly forgotten is obviously more than a waste of time. There is, however, a small amount of memory work required in the Minor Syllabus in Pharmacy, viz., the proportion of active constituent present in the preparations of the more toxic drugs. But it is essential to note carefully that this knowledge is practically useful, because it enables the pharmacist to check accurately the doses of substances contained in prescriptions submitted to his care. For example, knowing that the lozenges of morphine and ipecacuanha contain 1/36th grain of morphine hydrochloride in each, he realises at once that eighteen lozenges contain the maximum dose of the morphine salt. Moreover, knowing the dose of the original drug and the proportion of it contained in its preparations, he is provided with a check upon his memory, with regard to doses, in just those cases where it is absolutely essential that his memory should never be at fault. Beyond this, such extended knowledge should not be attempted by mere reading; it can only be usefully and permanently acquired by practical work in pharmacy. Let the student acquire as much detailed information as he can in this manner—the more the better—but in his reading let him devote his attention to the principles of processes. To give a concrete example, the man who knows why water acidulated with hydrochloric acid is used in making liquid extract of cinchona is in possession of much more valuable information than the one who knows that he must use five fluid drachms of hydrochloric acid in the official formula, but does not know why it is employed. It will be seen therefore that the pharmacy of the Pharmacopœia, approached in this way, no longer possesses the terrors which it often has had for the tiro labouring under a misconception as to the information he is expected to possess.

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THE "OPEN DOOR" FOR UNION.

As this number of the Journal will be sent to every person on the Register of Chemists and Druggists in Great Britain, a convenient opportunity is afforded for repeating the admonitory appeal addressed by the President of the Pharmaceutical Society more especially to the members of that body. Various circumstances connected with the passage of the Pharmacy Acts Amendment Bill through both Houses of Parliament have incidentally given increased significance and importance to the simple measure designed for the purpose of broadening the foundation of the Society and establishing that solidarity of the body it represents which has always been desired. The past history of the Society and of pharmacy legislation, bears indications of a continuous struggle in which the efforts to create a qualification for the practice of pharmacy, as a professional occupation, have been counteracted by influences referable to those parts of the business of chemists and druggists which partake more of trade. That has been a natural consequence of the mixed nature of the business and while the only qualification was that of pharmaceutical chemist, the comparatively limited membership of the Society was not surprising. At a later date, when there was a general demand for incorporation of the entire body, pharmaceutical chemists resisted—without reason, though perhaps without sufficient liberality—the admission of others to membership of the Society. The compromise eventually made was not a happy one for either section, for though incorporation was effected from the point of view of the public interest, there was a lack of harmony within the craft, as to the need for education which left room for manifestations of dissatisfaction, real or affected, on the part of the trade, a somewhat vague entity still assumed to be hostile to the Society. The unfortunate exclusion of persons qualifying by examination under the Act of 1868, has augmented that feeling and it has, no doubt, been one reason why so many have abstained from joining the Society. Hence the attempt, commenced more than twenty years ago, to rectify that mistake as to membership. The successful result now attained ought to remove any objection that has hitherto been made to connection with the Society. It is no longer necessary to take a qualification for the practice of pharmacy which many consider to be beyond their requirements. Membership of the Society is now open to all who possess the qualification "to sell or keep open shop for or retailing, dispensing, or compounding" the articles declared

to be poisons within the meaning of the Pharmacy Act, 1868. The title of pharmaceutical chemist is protected for those who voluntarily take it, but otherwise all the privileges of membership will be equally shared. Full opportunity will therefore be afforded for the exercise of self-government, for protecting individual qualification and for promoting the general interests of registered chemists and druggists.

There ought no longer to be any reticence nor any disposition, such as that mentioned by the PRESIDENT last week, to stand aside inert, until advantages have been gained and then to be ready to share them. If the position of the craft is to be improved, that result will be attained only by hard fighting that must be done by the Society constituted of such a large majority of registered persons as will be practically representative. The unexpected reference to company trading, which is the especial sore point with registered chemists, the favourable expression of opinion that there is need for amendment of the Pharmacy Acts and the similar tendency of the recent discussion in the House of Commons, are all indications that, at the present moment, there is an opportunity which should be vigorously taken advantage of by all who are concerned in defending their position. For that purpose the Society is the only medium through which an effort can be made and therefore, we repeat the appeal of the Society's PRESIDENT to all who are unconnected with the organisation to come forward and do their part in the work to be undertaken.

As pointed out by Mr. BOTTLE, Mr. CARTEIGHE, and several other members of Council, resistance to the invasion of the chemist's business by companies is not to be undertaken rashly or without careful consideration. For our own part we believe that the decision of the House of Lords in the London and Provincial case has been taken as going much further than it really did go. The very important qualification in Lord SELBORNE's judgment, that there would, under certain conditions, have been an extremely strong argument against a corporation being permitted to carry on the business, does not appear to have been sufficiently considered. In any case, the decision does not seem to warrant the conclusion that a company may carry on the business provided a qualified person is engaged as the seller. If that inference were correct, there would be no reason why an unqualified individual should not carry on the business with a qualified assistant. We are more disposed to think it is maintainable that, in regard to the Pharmacy Act, 1868, company trading is altogether unlawful in itself and the support of it by registered persons a disloyal complicity in a breach of the law. No less position can be taken, for as a company is held to be outside the scope of the Act because a company is not a person that can comply with the statutory requirement of being examined, the argument should be equally conclusive that a company cannot lawfully perform the functions of selling or keeping open shop for retailing, dispensing, or compounding poisons, etc., in respect of which individual qualification is declared to be essential for the purposes of the Act. Since that requirement "is expedient for the safety of the public" no exception can be made without sacrificing that object of the Act and at the same time inflicting injustice on the persons who have satisfied the demand of the law. As for any degree of acquiescence in the practice of store trading, there does not appear to be the slightest reason, nor has there been—as Mr. CARTEIGHE reminded the Council last week—any indication that it would be entertained, or regarded as tolerable, by any portion of the registered chemists and druggists of the country.

THE PRESIDENTIAL ADDRESS AT BELFAST.

THE address delivered by Dr. SYMES at Belfast resolved itself on this occasion into a fairly comprehensive survey of the numerous problems, small and great, which have of late years troubled the pharmacists of these islands in a greater or less degree. Education is regarded by Dr. SYMES, who appears thus to overlook the supreme importance of organisation, as being first and foremost amongst the means which have helped in the general advancement of the craft. Examinations he might be thought to honour too much by remarking that they are undoubtedly a stimulus to study, but for the fact that he recognises the danger of men being content to acquire the minimum of knowledge necessary to pass the qualifying examination of the Pharmaceutical Society, and then believing that they have done all that is requisite in the way of study to enable them to do justice to the position in life which they have chosen to aspire to. As a partial remedy for this state of affairs, Dr. SYMES points to the existence of the body of which he has for the last two years been President, but it is greatly to be feared that not even the work of the British Pharmaceutical Conference will prove effective in persuading the "so-called qualified man" of the extent of his ignorance.

The reminder that pharmacists are directly interested in the operation of many Acts of Parliament that do not concern the ordinary individual is a timely one, for every member of the craft should consider it incumbent upon him to possess an acquaintance with certain provisions of all the Statutes mentioned by Dr. SYMES and of one or two others. But, unfortunately, too few have even taken the trouble to acquire a definite knowledge of the Pharmacy Acts, and it is not surprising, therefore, that chemists and druggists are continually finding themselves at a disadvantage because of their ignorance of the exact bearing of some Statute or another upon their business. The Poisonous Substances Bill, recently deceased, naturally came under review in the address, Dr. SYMES being strongly of opinion that it is impracticable for a Government department "to legislate for matters which really belong to pharmacy." That is a pretty common view in pharmaceutical circles, but, in view of the probability of the objectionable measure being resuscitated next session, attention cannot too often be directed to the fact.

The metric system and the difficulties attending its general use were briefly referred to, and pharmacists urged to familiarise themselves with the system, so that they may help to forward its universal adoption. Allusion was also made to the special regulations bearing on the sale of calcium carbide and methylated spirit, the restrictions in connection with the latter being held to be unnecessarily severe and tending to operate in restraint of trade. Synthetic compounds used in medicine and for industrial purposes were then referred to at some length, after which attention was devoted to the new British Pharmacopœia. Dr. SYMES reiterated his oft-repeated objection to the constitution of the British Pharmacopœia Committee of the General Medical Council, protesting against the exclusion of pharmacists from that body when the bulk of the work of revision must of necessity be done by pharmacists. Exception was also taken to the manner in which the book was published, the arrangements adopted in Germany being instanced as much superior. In addition to having a properly constituted Pharmacopœia Committee, our Teuton cousins publish from time to time the suggestions made and

alterations proposed in connection with the national medicine book, so that anyone may criticise the work of the revisers, and further suggestions be embodied. A new German Pharmacopœia, when it is published, is thus as nearly perfect as the state of medical and pharmaceutical knowledge will permit. In conclusion, Dr. SYMES paid the Irish hosts of the Conference and their country some pretty compliments, and gave utterance to a brief but well-merited encomium on the late MICHAEL CONROY, a warm-hearted Irishman, and a highly-esteemed member of the Conference, of which he was at one time Vice-President.

WORK RECORDED AT THE CONFERENCE.

Fielden on Gluten Flour. A sample of so-called gluten flour having been found to contain abundance of starch and but a small amount of gluten, V. G. L. FIELDEN subjected five commercial samples to detailed examination. With one exception all but one proved to contain a large proportion of gluten, ranging from 60 to 76 per cent. The fifth sample—of American origin—contained 8.5 per cent. only. As regards starch and sugar, the four samples rich in gluten yielded from 7.6 to 16.7 per cent., whilst the one containing little gluten consisted of starch and sugar to the extent of 68.8 per cent., so that diabetic patients would gain little by using it instead of good wheaten flour. Since the proportion of gluten in flour is readily determined by simply washing a sample in a muslin bag and drying, the author suggests that all chemists who sell gluten flour should occasionally test their stock (p. 170).

Gordon Sharp on Albumins. As the result of an examination of hard-boiled egg-albumin and dried serum-albumin, Dr. GORDON SHARP arrives at the conclusion that peptone is absent from both. Egg-albumin is said to yield unaltered albumin, alkali albumin, proto-albumose, a little hetero-albumose, and some crystalline matter of an alkaloidal nature; serum-albumin differs in yielding more hetero-albumose, together with a little deuterio-albumose. Papain was found to digest serum-albumin much more readily than egg-albumin, yielding traces of proto and hetero-albumose, abundance of deuterio-albumose, but no peptone. With pepsin, in both cases, the digestive process was carried further, traces of true peptone being found. In the presence of yeast, as in the maturing of koumiss, the albumin is milk is partly changed into the higher proteids, but the peptone stage is never reached (p. 197).

Dyer on Granular Preparations. Having prepared and examined some granular effervescent sodium-citro-tartrate, C. S. DYER concludes that fully 30 per cent. of the acids and sodium bicarbonate used in making the preparation combines during the process of granulation, leaving between 60 and 70 per cent. available for effervescing purposes. He assumes also that the 30 per cent. of sodium bicarbonate so lost combines exclusively with the citric acid during the application of heat in the granulating process. In that case it is evident that the eventual effervescence must be left to the tartaric acid. It is suggested that in official statements of the characters and tests of granular effervescent preparations it should be stipulated that at least 50 per cent. of the bicarbonate present should be available for producing effervescence (p. 181).

Moss on Diatomite. The leading facts of special interest concerning the various infusorial earths—diatomite—in common use have been brought together by J. MOSS, who also indicates particular applications of which those earths are susceptible. As a filtering medium, diatomite freed from organic matter is absolutely indifferent to all but the strongest alkalies at a high temperature, it does not clog up the filtering bag to the same degree as talc or asbestos, and its particles are sufficiently large and irregular in shape to keep apart the particles of albuminoid or starchy deposits, and so allow liquids to pass readily. White diatomite, free from sand and organic matter, makes an excellent basis for dentifrices, and by virtue of its enormous and unequalled absorbent property it is unrivalled as an ingredient of dusting powders. Finally, its use is suggested as a diluent for hygroscopic powders and for binding together drugs that compress with difficulty (p. 168).

MacEwan on the Pharmacopœia. The British Pharmaceutical Conference should, in P. MACEWAN'S opinion, take upon itself the task of revising the Pharmacopœia. He would have the Formulary Committee reorganised so that it should be representative (1) of the more important centres in the three kingdoms, preferably through local pharmaceutical associations; (2) of the Pharmaceutical Societies of Great Britain and Ireland; and (3) of every pharmaceutical association and society of interest in Canada, India, and the Colonies. This Grand Committee should appoint a smaller working committee, which should secure the co-operation of the Pharmaceutical Research Laboratory, and of any similar institution at home and abroad. Pharmacists would thus take the lead in the matter of pharmacopœia revision, and might stipulate for more satisfactory conditions than now prevail when asked by the General Medical Council for assistance (p. 177).

Jowett on Mydriatic Alkaloids. The descriptions and tests of mydriatic alkaloids given in the new Pharmacopœia are considered by Dr. H. A. D. JOWETT to be generally unsatisfactory, and in some cases misleading and inaccurate. In the case of atropine and its salts he thinks the insertion of the colour test with fuming nitric acid and potash is quite unnecessary, and he suggests that to ensure pure products, such as might reasonably be expected from manufacturers, reference should be made to the melting point, formation and melting point of the aurichloride, optical inactivity, and freedom from ash on ignition. It is suggested that the melting point of hyoscyamine should not be lower than 200°, that scopolamine or hyoscyne hydrobromide should have its solubility given as 1 in 4 rather than 1 in 1, and that the melting point given for the dehydrated salt should also be modified (p. 195).

Dowzard on Strophanthin Assay. A quick polarimetric method for approximately determining the amount of strophanthin in the official extract and tincture, described by E. DOWZARD, consists in reducing the preparation to be assayed to a small bulk, then heating with a little basic lead acetate, evaporating the filtrate and washings to a definite volume, and noting the optical rotation of the liquid in a 200 Mm. tube, using an instrument of the Laurent half-shadow type (p. 199).

McWalter on Animal Extracts. In a lengthy paper, J. C. MCWALTER deals with the recent animal materia medica. The tendency of the paper is medical rather than pharmaceutical, on the whole, and no adequate summary could be presented here, in the limited space at disposal for that purpose. Suffice it to say, therefore, that the exhaustive notes on animal extracts of all kinds should prove extremely useful for reference (p. 155).

Jowett on Hypophosphites. An investigation of hypophosphites by Dr. H. A. D. JOWETT has had for its object the discovery of an accurate method for determining the amount of hypophosphite contained in commercial salts. In the method suggested, the impurities are first removed by the addition of lead acetate, the excess of lead is then removed by hydrogen sulphide, and the hypophosphite contained in the filtrate completely oxidised to phosphate, which is then determined either gravimetrically or volumetrically. The author suggests a thorough revision of official tests for hypophosphites and the need of fixing standards of purity for the same—for the calcium and barium salts, 98 per cent.; for the sodium and potassium salts, 96 per cent.; for the ferric salt, 95 per cent. (p. 171).

Umney on Dill Seed and its Oil. The dill fruits obtained from different countries by J. C. UMNEY do not show such marked difference in appearance as the fennel fruits from different parts of the world, but the differences are probably of greater medicinal importance. English, Indian, German, and Japanese dill fruits are described, and analytical data given concerning their oils. The use of English or German fruits is recommended for the preparation of dill water, and preference for pharmaceutical purposes is given to the oils of the same varieties (p. 176).

Umney and Swinton on Lemon Oil. In examining lemon oil, J. C. UMNEY and R. S. SWINTON have separated an ester of geraniol, and they consider that the presence of this compound has an important bearing upon the odour and taste of lemon oil, and that a concentrated lemon oil must contain the ester in normal proportions, in addition to citral and citronellal, before it can be said to represent in a concentrated form the true odour and taste of the natural oil (p. 169).

Naylor and Bryant on Green Extracts. The results embodied in the paper by W. A. H. NAYLOR and J. J. BRYANT are the outcome of an investigation as to the feasibility of devising a simple process of assay for the green extracts of belladonna and henbane, and supply data that may assist in arriving at a satisfactory method of standardising those preparations. It is suggested that the strength of extract of belladonna should be fixed at 1 per cent. of alkaloid and that of extract of henbane at 0.2 per cent. (p. 165)

Idris on Concentrated Lemon Oil. Concentrated oil of lemon is a misnomer, according to T. H. W. IDRIS, as the terpene of the ordinary oil has a flavour and pungency which are peculiar to itself. Some "concentrated soluble essence of lemon" has been found to consist simply of oil of lemon to which alcohol has been added. Other samples contain added lemon-grass oil or citral, or an admixture of

ethers with the oils of lime and orange. Such mixtures are of but little value to mineral water manufacturers, but "terpeneless" oils are of decided utility. Those oils differ considerably, however, and the author of this paper shows how the aldehydes in oil of lemon can be separated without much change and in a state of comparative purity by fractional distillation under reduced pressure. After distilling off about 90 per cent. below 100° C., an oily liquid is left, which deposits a white sediment on cooling. By passing steam through this residue, a pale yellow oil is carried over, which possesses to a very marked degree the pure lemon aroma and is very different from citral (p. 161).

The insoluble compounds formed with **Stanford on** alginic acid and some of the metals **Alginoids and on** are suggested by E. C. C. STANFORD as **Thyroglandin.** a new series of therapeutic agents that would probably give rise to new developments in medicine and add considerably to the physician's weapons in attacking disease. Alginoid iron, prepared by adding sodium alginate to ferric chloride, can be administered when other preparations of iron would not be tolerated, as it is quite tasteless, has no astringent effect on the bowels, and is rather laxative than constipating (p. 199). Thyroglandin is a preparation made from the thyroid gland, and is claimed to represent all the active constituents of the gland (p. 166).

The objects of the paper by F. C. J. **Bird on B.P.** BIRD are to convey a general **Galenicals.** idea of the influence which the galenic pharmacy of the new Pharmacopœia has had upon the work of the manufacturing laboratory, and also to elicit the experience and views of other workers from the retail standpoint. The paper is an extremely useful contribution to the literature of the subject of which it treats, and served as an excellent introduction to the general discussion on the B.P., 1898. It is satisfactory to note that, in the opinion of the author of this paper, the new official formulæ on the whole afford little ground for serious criticisms (p. 162).

With similar objects to BIRD's paper **Gadd on B.P.** that by H. W. GADD shows that opinions **Galenicals.** may differ even when a new Pharmacopœia is regarded by two critical observers from a practically identical point of view. The weakest point of the galenic pharmacy of the new B.P. is stated in this paper to be in the processes, and the question is asked whether in some future pharmacopœial processes may not be omitted and tests extended (p. 178).

The salient features of the Irish flora **Druce** serve as the text of the paper by G. C. **on the** DRUCE, who observes that to the phytogeographer Ireland presents difficulties owing **Irish Flora.** to its insular position, its contiguity to the ocean, and the effects of the Gulf Stream, which surrounds the whole coast. The species of flowering plants are relatively much fewer in number in Ireland than in England, and to a certain extent Ireland is also deficient in large, bright-coloured flowers, such as are found in the Compositæ, Labiatae, and Leguminosæ. There is also a great falling-off of Germanic types in Ireland, and the Scandinavian types are only about one-third as many as in England. But there appears to be much work to be done at the Irish flora before it can be said to be known in the same sense as that of Britain (p. 200).

Parry on
Oil of
Eucalyptus.

Whilst in Western Australia last year, J. PARRY visited most of the eucalyptus districts, and was able to secure a supply of oil distilled from the leaves of *Eucalyptus toxophleba*, the York gum. The oil is described as having a most obnoxious and irritating odour, its specific gravity is 0.8828, and it is faintly dextro-rotatory. It contains about 15 to 20 per cent. of cineol, together with phellandrene, aldehydes, and ketones (p. 198).

Peck on
Ferrum
Redactum.

As the result of a careful examination of fifteen commercial samples of reduced iron, E. S. PECK suggests certain alterations in the B.P. directions for the preparation of the substance, and that the tests should be modified so as to ensure the absence of sulphides, of alkaline carbonates, or of more than 1 per cent. of insoluble residue. He proposes also to limit the amount of arsenic present and to vary the details of the official assay process (p. 159).

Kelly on
B.P.
Chemistry.

In the opinion of P. KELLY, not only should the Pharmacopœia be regarded as a text-book, but it should be a work that can be looked upon as a standard both in scientific work and in manufacturing operations. Changes in atomic and molecular weights, the introduction into the B.P. of structural and constitutional formulæ, alterations in nomenclature, modifications of tests, and the standardisation of preparations of potent drugs, are referred to in this paper, the author of which sums up by remarking that the 1898 B.P. is an improvement on its predecessors, especially as regards its chemistry (p. 180).

The alcoholic extract of ginger, **Idris on Ginger** known in commerce as "gingerine," **Extract.** does not contain the essential oil of the root, but by using acetone as the extracting menstruum, T. H. W. IDRIS has been able to remove the whole of the aromatic and pungent principles of ginger. The acetone extract is dark brown in colour, of a treacly consistence, intensely pungent, and possesses a full ginger aroma, varying according to the variety of ginger used. It dissolves readily in alcohol, and syrup may be flavoured with it by proper diffusion in a suitable temperature without the use of any spirit (p. 178).

This question, suggested for consideration in the Conference Blue List, has **Messrs. Howard** been found by DAVID HOWARD and DAVID **on the Basicity** LLOYD HOWARD somewhat difficult to **of Quinine.** answer. Theoretical consideration points to the conclusion that as each of the nitrogen atoms of the quinine molecule represents a basic nucleus, quinine is bi-basic. The formation of quinine salts, such as the ordinary commercial quinine sulphate, "the soluble sulphate," and the tetra sulphate, is also in favour of that view; but this is not confirmed by the use of indicators in volumetric testing, which show that the quinine sulphate of the British and most other Pharmacopœias is undoubtedly a neutral salt. Whatever may be the theoretical conclusions, there is no doubt of the convenience in regarding the familiar sulphate as neutral and the soluble sulphate as a bisulphate (p. 154).

DORAN on "The Chemistry of the Pharmacopœia," and EVANS'S "Short Note on Lime Water" completes the list of papers.

ANNOTATIONS.

CONSISTENCY IS A VIRTUE that may tend towards viciousness if too rigidly adhered to, but the following irreconcilable quotations from an enterprising contemporary cannot be said to indicate an excess in that direction :—

C. and D., August 10, 1895.

"It is gratifying to find that the evil we have so often complained of has been recognised in such an influential quarter, and we gladly bear testimony to the promptitude and ability with which the grievance was represented to the Committee by the Council of the Pharmaceutical Society."

C. and D., August 6, 1898.

"The judgment of the House of Lords, establishing the contention that the 15th Section of the Pharmacy Act did not apply to companies, was given on July 20, 1880—eighteen years ago. From that day to this the Council of the Pharmaceutical Society have done nothing to remedy the acknowledged evil."

The occasion on which the first statement was published was immediately after the Departmental Committee of the Board of Trade, appointed to inquire what amendments are necessary in the Acts relating to joint-stock companies incorporated with limited liability, had issued its report, three years ago. The cause of the second outburst was, of course, the passing of the Pharmacy Acts Amendment Act, 1898, and the alleged "betrayal" of the trade by the Council of the Pharmaceutical Society, because that body declines to accept, in any shape or form, the legislative recognition of company pharmacy.

ALL CHEMISTS AND DRUGGISTS IN GREAT BRITAIN are now eligible for membership of the Pharmaceutical Society, and, as members, entitled to attend all meetings of the Society and to hold office as Members of the Council or as Auditors. Members also have the use of the Museum and Libraries of the Society in London and Edinburgh, they receive the *Pharmaceutical Journal* regularly as published every week, have votes for the election of the Council and Auditors, and also for the election of Annuitants on the Benevolent Fund. The annual subscription for membership is one guinea, or the payment of ten guineas in a lump sum entitles the member to all the privileges enumerated above for life. Students who have passed the Preliminary examination or its equivalent may be elected Student-Associates of the Society. They pay an annual subscription of half a guinea, and are entitled to attend the Evening Meetings of the Society, to use the Museums and Libraries, and to receive the *Pharmaceutical Journal* every week.

THE 'SYNOPSIS OF THE BRITISH PHARMACOPEIA, 1898,' published at the *Pharmaceutical Journal* Office, 5, Serle Street, W.C., will soon be out of print, and those who have not yet obtained copies of this compact little guide to the changes in the official work should do so at once. In connection with the formulæ and processes, the whole of the alterations, additions, and omissions are clearly shown, and full workings are given, so that the little book serves as a practical laboratory guide. Pharmacists, medical men, and students preparing for examination will find the Synopsis equally useful and, to a great extent, indispensable. Single copies can be supplied by the publishers at fourpence each, or, in cloth covers, at a shilling each.

THE 'PHOTOGRAPHIC TOURISTS' GUIDE' is another useful aid to the business of the chemist and druggist. It includes a concise gazetteer, with a list of dark rooms and dealers in photographic materials, and has been highly commended by the editors of all the important photographic papers published in this country. A calendar, blank pages for memoranda, hints to photographic tourists, notes on exposure and exposure tables are also included,

rendering the Guide a most handy *vade mecum* for amateur photographers. Chemists who sell or give away copies of the Guide will find it an admirable aid to business. Further particulars regarding it will be found in our advertisement pages.

THE 'METRIC CONVERSION TABLES,' also published at the Office of this Journal, constitute the most convenient means of determining the exact equivalents of both Imperial and Metric weights and measures yet issued to the public. They have been especially designed to meet the requirements of chemists and druggists, and deal, therefore, with apothecaries weights as well as avoirdupois weights. All the equivalents given are based on the Board of Trade Standards, which alone are official in the United Kingdom. Extended thermometric tables are also included in the book, one or more copies of which should be found in every pharmacy in the country.

FOREIGN-MADE CACAO BUTTER has again engaged attention in the House of Commons, Mr. Lowles having asked the Chancellor of the Exchequer whether he could state the amount of public revenue obtained by the duty on foreign-made cacao butter from August 7, 1896 (when it was imposed), to July 31, 1898, and what proportion thereof was obtained between August 1, 1897, and July 31, 1898; and whether he had received any legitimate complaints as to the effect of the incidence of the duty from manufacturers or artisans in the United Kingdom. The Chancellor of the Exchequer replied that the revenue obtained by duty on foreign-made cacao butter from August 7, 1896, to July 31, 1898, was £9320, of which £5866 was obtained from August 1, 1897, to July 31, 1898. The answer to the second paragraph of the question was in the negative.

THE BRITISH PHARMACEUTICAL CONFERENCE has met once more, and under the most favourable auspices. A very large number of members attended from England and Scotland, together with many more ladies than usually attend similar meetings nearer home; the voyage across the Irish Channel was, in most cases, uneventful and pleasant; and though rain fell heavily on Monday and the outlook for the week seemed anything but cheerful, the actual opening of the meeting was heralded by glorious sunshine. The library at Queen's College, Belfast, was fairly crowded when the addresses of welcome were given by the Lord Mayor and others, and even after Dr. Symes had delivered the presidential address and had been cordially thanked for the same, there was a not inconsiderable audience. The ladies, of course, did not remain to hear the papers read, but were taken in carriages to visit the premises of Messrs. Robinson and Cleaver and Marcus Ward and Co. Luncheon was served later in the examination hall at Queen's College, and subsequently the reading of papers was resumed, whilst the ladies paid more visits. Then came tea, followed by a pleasant drive and the usual reception and conversazione.

THE PHARMACOPEIA DISCUSSION could not, unfortunately, be taken until Wednesday morning, and the report in this week's Journal is therefore of necessity brief. Since, however, the subject is one of considerable importance, it is proposed to publish a detailed report in our next issue. As will be seen, the number of papers presented was very large, much too large, in fact, for it was physically impossible to consider them satisfactorily in the limited time at disposal, and with so many other inducements to occupy that. A certain lack of consideration was also shown by the authors of some papers in deferring the delivery of

their manuscripts until the last minute, the result being that those papers had to be abstracted and put in type after being read on Tuesday and Wednesday, without the possibility of correction by the authors. The Hon. Secretaries are quite unnecessarily worried about this matter, and they should be authorised to refuse to receive any papers sent to them after the Saturday immediately preceding the meeting. If the subject of a paper is worth discussing at the Conference, the paper should be worth finishing, and should be delivered at a reasonable time in advance; on the other hand, rubbishy papers of a type sometimes submitted are not worthy of consideration at the annual meeting on any terms. We hope that before the Plymouth meeting next year steps may be taken to prevent this delay in delivering papers, which is fast becoming a serious abuse.

THE ULSTER EXECUTIVE COMMITTEE must be warmly congratulated on the success attending their arrangements. The members, on arrival, found that everything practicable had been done for their comfort, and the unavoidable dispersal of the visitors in a number of different hotels was rendered as slight an inconvenience as possible. The Official Programme presented to those attending the meeting was an excellent and useful production. It was in reality a guide to Belfast and the Conference proceedings, arranged on the plan rendered familiar by the similar guides presented to the members on former occasions by the Editor of the *Pharmaceutical Journal*. As regards the *personnel* of the committee which had all the arrangements in hand, it may be permitted, without seeming invidious, to single out for special reference the labours of the indefatigable hon. secretary, Mr. R. W. McKnight, who is credited locally with having spent many sleepless nights whilst endeavouring to secure a maximum of happiness for two or three hundred pharmacists and their lady friends during the best part of a week. Much credit is also due to Mr. J. C. C. Payne, the chairman of the local Executive Committee and president-elect of the Conference, as well as to all other Ulster pharmacists who did what they could to add to the comfort and pleasure of their numerous visitors.

THE CHEMICAL CONGRESS AT VIENNA has been marked by a sensational report respecting an alleged synthesis of albumin. On the closing day of the Congress a paper was read by Dr. Leo Lilienfeld, in which he stated that, by the condensation of phenol and amido-acetic acid with phosphorus oxychloride, he has succeeded in producing peptone and then albumin. It is also reported that in order to dispel any doubt as to the possibility of thus making artificial albumin the lecturer carried out the entire process in the presence of the assembled chemists, and then demonstrated the identity of artificial and natural albumin by means of reactions.

THE STUDY OF BACTERIOLOGY is likely to be encouraged by the London County Council, the Public Health Committee of that body having had under consideration the question whether the Council shall apply to Parliament for power to establish a bacteriological laboratory and appoint an expert in connection therewith, or to otherwise make arrangements whereby medical officers of health and practitioners in London can obtain, at the expense of the county, the examination by a competent bacteriologist of material from suspected cases of infectious disease, with a view to aiding in the diagnosis. A circular letter has been issued on behalf of the Committee to the various local authorities of London, inquiring their views on the question.

THE CHEMISTS' ASSISTANTS' UNION OF GREAT BRITAIN has issued its rules, and we note that rule nineteen runs as follows:— "No qualified member of this Union shall be recommended to sell his services to any company whose directors and shareholders are not duly qualified chemists, or which, in the opinion of the Council, is improperly constructed." But why not make the rule more stringent and insist that no member of the Union shall be permitted to act in the manner referred to? Copies of the rules and particulars regarding the Union may be obtained from the Secretary, Mr. C. E. Pickering, Horse Shoe Hotel, Tottenham Court Road, London.

THE DEATH of a successful "coach," who, it has been said, could easily earn £5000 a year by his efforts, seems to have led the general Press into a species of glorification of the art of "cramming." According to the published statements in a great London daily newspaper, the "crammer" fills a long-felt want, and is now firmly established in London. To those who might be disposed to say "so much the worse for London," the *Daily Telegraph* offers the crammer's own definition of his labours. "What we do," the representative of the educational tipsters is made to say, "is to put into shipshape the work of the teacher who affects to look with contempt on examinations. We keep the student off the mass of burdensome and unnecessary matter, which he learns with difficulty and forgets with promptitude." This sounds very plausible and not unreasonable, but when one examines the process by which the "coach" arrives at what is unnecessary, a rather unsatisfactory condition of affairs is revealed. The fraternity is bound to admit that the knowledge imparted is carefully selected according to the idiosyncrasies of particular examiners. The examiner is studied and his peculiarities discovered, so that his style of question may be diagnosed. In fact, the avowed object is not so much to educate the candidate in the subjects of examination, but rather to show him the weak side of the individual examiners. This may be a paying game to the operator and secure certain candidates a "pass," but it is not education, and is not the sort of thing likely to fit the young men of Great Britain to compete with their better trained contemporaries abroad. Possibly the examination system is at fault, and in this connection it is as well to remember that a serious responsibility devolves on those examining bodies which have hitherto accepted candidates for technical or professional examinations without demanding as a preliminary formality evidence of adequate training in an approved school or university. We should not be sorry to see a newspaper discussion on this topic, for it may have some influence on the coming Teaching University. That much-wanted institution should be a real teaching centre, and should not become the outward and visible sign of the apotheosis of cramming.

THE BRITISH PHARMACEUTICAL CONFERENCE is evidently a "teaser" for the ordinary reporter. In the accounts (generally admirably done, by the way) furnished to the newspapers, the Belfast meeting is variously described as "The 35th Annual Conference of the British Pharmaceutical Association," "The meeting of the Chemists' Congress," and "The annual meeting of the British Pharmaceutical Society." But what's in a name? The Conference by any other name is just as admirable in its aims and in its work, and if the public Press fails to give its right description, there seems to be no failing in recognising the public value of the ministerial statement of its President.

THE PHARMACY ACTS AMENDMENT ACT, 1898.

WITH the enactment of the Pharmacy Acts Amendment Bill, 1898, the possibilities of effective progress in the calling of pharmacy have been immensely widened; it is not therefore unjustifiable or bombastic to claim that the modest measure which has survived a thousand gibes and eluded the enmity of a host of foes, will prove of far more practical value than a mere unthinking perusal of its clauses would convey. Naturally the "true inwardness" of things in general and of Pharmacy Acts in particular, is not apparent to those who, either from indifference or interested wilfulness, do not look for or desire to find it. The journalistic wisdom which brings its blind eye to the task will airily pronounce that the new order of things is of little or no use to "the trade." But that dictum is hoary and custom has staled its efficacy; for, according to the same press oracle, it would appear that nothing outside its own editorial movements, ever has been or ever will be, of benefit to that Harris-like entity, "the trade." As we view it, the new Act places in the hands of registered chemists and druggists the means of making themselves a powerful body, potent for advancement as well as for defence and, from that standpoint, its addition to the Statute Book appears to merit more than passing attention. An additional reason for marking the occasion in a somewhat special manner is found in the fact that nearly thirty years have elapsed since the previous item of pharmaceutical legislation figured in the list of Statutes. We propose, therefore, to place upon record the main features in the history of the Act of the present session and to offer some comment concerning the immediate and prospective effects by which this Act may be made of far greater utility and importance than the Act of 1868.

The Objects of the Act, which is printed in full on page 194 of this issue, are four in number:—

Clause 2 (a).—The conversion of the "Student" class of subscribers into "Student-Associates"—a purely verbal amendment, of little more than infinitesimal import. Perhaps the new name is rather less incorrect than the old one, and there is something in the claim that it is more descriptive of persons in the student stage who are *associated* with the Society; but the double-barrelled dignity will carry no extra privileges or semblance of qualification. It is simply an alteration of name which was inspired by the consciousness that to dub a person who had never been in the Society's School a "Student of the Society," might sometimes be productive of misunderstanding.

Clause 3 (b).—The emancipation of the chemist and druggist from the disabilities which kept him from direct representation on the governing body of the Society. That object was the especial *raison d'être* of the Act, and further reference will be made to it later on.

Clause 4 (c).—The abolition of retirement from the Council by lot and the substitution of the more reasonable, though perhaps less sportive, procedure of regular rotation. In 1899, instead of 14 members of Council retiring, half by rotation and half by the hazard of a species of toss-halfpenny game, *seven* only will retire and they will be the seven members of Council who have been longest in office without re-election—to wit, those gentlemen who in May last remained in office by lot. This may be regarded as a sensible change, for it not only removes an objectionable form of procedure that might, in the hands of unscrupulous officers, be misused, but also does away with the undesirable possibility of any one member

of Council having to face his constituents every year. No difficulty will ensue under the new *régime* in dealing with cases of co-opted members, for they would be deemed to inherit the precise liability to retirement left by the councillors whose places they filled. Thus if A—a member of Council due to retire in May—died, resigned, or was removed in January of the same year, anyone called upon to fill the vacancy would have to retire in May, exactly as though he were the deceased or resigned A. It may be interesting to note that the first batch of Councillors to retire under the new procedure will consist of Messrs. Bottle, Carteighe, Hampson, Harrison, Park, Southall, and Young. Council elections in the future should be rather more interesting than some of them have been in the past; for with the vacancies reduced to one-half, a salutary increase of competition should be engendered, and the law of the "survival of the fittest" will have the fullest scope to operate for the benefit of the Society.

Clause 5 (d).—The extension of the time during which voting papers for the election of Council and Auditors may be received by the Secretary. This is quite a minor reform, but it gives tardy electors an extra day in which to make up their minds. The present Bye-laws prescribe that voting papers, if transmitted, must reach the Secretary one clear day prior to the day of election. The Act removes this time limit, and in future no distinction will be drawn between personally delivered voting papers, and those forwarded by post or messenger. All the fateful documents must be in the hands of the Secretary by the advertised time of assembly of the Annual General Meeting, and no other restriction will be imposed. Members who have been in the habit of putting their voting papers into the ballot box at the close of the annual meeting would be well advised to make a note of the alteration.

History of the Act.—Clause 3, it is clear, is the essential part of the Act—the point around which the chief interest lies. It remedies an injustice and its history carries one back to the remote days when chemists and druggists first obtained a statutory existence. Very soon after 1868 the disabilities of examined chemists and druggists became manifest. Unexamined persons who, fitly or unfitly, were in business in pre-Pharmacy Act days, were admitted to membership of the Society and they might, with certain limitations as to number, attain the dignity of Pharmaceutical Councillors; whereas those unfortunate individuals who had to acquire their qualification painfully through the medium of examination were ineligible for membership and could never aspire to the Council however eminently fitted for the position they might be. Gradually the feeling grew in intensity that this state of affairs, as pointed out by Mr. Bottle, was not only hard on the examined man but bad for the Society. Practically the Society stood in danger of becoming a close borough of pharmaceutical chemists and of sharing the ultimate fate of all institutions run on narrow or too exclusive lines. But though this feeling existed in 1870, it was not until thirteen years later that anything like an attempt was made to devise a remedy. In 1883 the Council, having been asked by the Privy Council to formulate its views as to poison legislation, drafted a very thorough Bill, which dealt with pretty well every pharmaceutical grievance then in existence. It displayed an astounding lack of perception in relation to poisonous proprietaries, it would have settled company pharmacy, created a third schedule of poisonous substances, regulated branch businesses, registered proprietors, established a curriculum and generally put everything right—in intention that is. No measure ever merited more the name of "Omnibus," by which sobriquet posterity will know it. But it had some good points and the following clause,

which is, if we remember rightly, mainly due to Mr. Hampson, was one of them :—

Every person . . . registered as a chemist and druggist by reason of having obtained a certificate of qualification from the Board of Examiners shall be eligible to be elected a member of the Pharmaceutical Society according to the Bye-laws thereof, but no person shall in respect to membership acquired by reason of this clause be placed on the Register of pharmaceutical chemists.

This was the first embodiment of the desire to consolidate the ranks of the Society and to open up the membership to all persons possessing the statutory qualification to practise pharmacy. It differs very little from the clause which has now been enacted, being identical in spirit, though a trifle more diffuse in phraseology. The Bill of 1883, as every student of Bloomsbury history knows, was never launched on parliamentary waters. It was sent to the Privy Council office, but the air of Whitehall did not agree with its overloaded frame and it died in one of the famous departmental pigeon holes. On its ashes rose the Poisons Bill of Lord Carlingford *circa* 1885, which retired into oblivion precisely as its descendant the Duke of Devonshire's Bill did in the present year of grace. Thus history repeats itself.

Consolidation was then dropped until June, 1890, when the idea was revived, probably owing to the continual increase of Minor men and the corresponding relative decrease of pharmaceutical chemists. This time the Council appears to have been somewhat influenced by the pharmaceutical chemists' point of view; for the offer of membership was coupled with a condition that not more than ten chemists and druggists should be on the Council at one time. Even that restriction was not felt to be stringent enough, for the number was subsequently reduced to seven. Nothing came of this draft, there is indeed reason to doubt whether it was seriously intended. What other deduction can one make from parliamentary proposals started in June? In the following March attempt No. 3 was made by the introduction into Parliament, under the pilotage of Sir Henry Roscoe, of a popular modification of the "omnibus" variety of Bill. There was the curriculum idea cheek by jowl with exemption from juries, whilst the restriction to registered men of the dispensing of medical prescriptions was closely associated with provisions for the more regular rotation of the Council. The consolidation clause was also present, but it wore a new dress. Registered persons over twenty-five years of age, or in business for themselves, were to be eligible for membership and for seats on the Council to the extent of ten out of twenty-one, but the younger men who had just passed their examinations and might be supposed to experience some financial tightness, were to be permitted to join the Society as half-guinea associates as heretofore.

Many experts who have thought over the subject hold the opinion even now that the consolidation clause of Mr. Carteighe's 1891 Bill was a wiser remedy than Clause 3 of the Act concerning which we are writing. That, however, is a matter of opinion. The 1891 Bill speedily became a Parliamentary memory, after the manner of its kind, and the claims of "associates in business" remained in abeyance for another three years. In April, 1894, another draft Bill was made public. This time consolidation, pure and simple, was the object and all other considerations were thrown overboard. The age qualification for membership was dropped, as well as the condition relating to being in business, and the essential clause more nearly approached in form the original proposal of 1883. The restriction as to the number of chemists and druggists to be admitted to the Council was, however, still retained and one could not help feeling that the desire to do justice was still tempered by distrust. The Bill was received with indifference by the majority of registered men in spite of official assurances that it was a desirable measure

and one that had a chance of passing into law owing to its innocent character. But the futility of starting the manufacture of enthusiasm towards the end of a parliamentary session is usually apparent to anyone of ordinary judgment and it was practically manifested when the draft of 1894 followed into obscurity the other abortive attempts to amend the Pharmacy Acts. Its disappearance marked the close of the long period of misfortune and unappreciated draftsmanship which had characterised the efforts of the Council. There are some who are inclined to attribute those failures to other causes than the influence of malignant stars, but on the other hand there are others who conceive the fault to be rather the unripeness of the times and are disposed to quote authoritatively—

What fates impose, that man must needs abide,
It boots not to resist both wind and tide.

At any rate, the period of failure is over. Late last autumn the Council, under the presidency of Mr. Walter Hills, resolved to boldly grasp the nettle. The disproportion between those taking the Minor examination and those going on for the Major had become so accentuated that the majority of the persons constituting the Society were those who could have no personal voice in its management; or, to state the same thing another way, two-thirds of the whole calling were unable to have any direct part in shaping the destinies of their craft. Mr. Hills considered that the Council was pledged to remove the anomaly, and that there would be little difficulty in these democratic days in getting Parliament to back up a proposal for making equal representation follow equal subscription. This belief found expression in the Bill, which has now become an Act.

Passage Through Parliament.—The Bill entered the House on February 24, in charge of an escort captained by the Hon. W. F. D. Smith (Strand), and comprising the following gentlemen:—

Mr. Brodie Hoare	Hampstead.
Dr. R. Farquharson	W. Aberdeenshire
Mr. Boulnois	E. Marylebone.
Mr. Thomas Shaw, Q.C.	Hawick Burghs.
Mr. Brookfield	Rye, Sussex.
Mr. Kearley	Devonport.
Mr. Schwann	N. Manchester.

It bore its explanations on its first page in the shape of a concise memorandum of reasons and its promoters determined to deserve success by distributing these reasons, together with an appeal for support, to all the associates in business of the Society, as well as to all local secretaries. Thus it happened that very shortly after the appearance of the Bill in the House members of Parliament had an exceedingly busy time of it with their constituents. And was there no opposition during the initial stages? Mr. S. R. Atkins, speaking at the Council meeting which approved the Bill, said it was almost inconceivable that anyone could oppose so harmless a project, but perhaps he was expressing his hopes rather than his thoughts, for no human proposal, however mild and innocent, is ever likely to escape the adverse criticism of some member of the race. So the Pharmacy Acts Amendment Bill betrayed its human origin by experiencing the usual amount of initial difficulties. Quite logically, certain of the younger pharmaceutical chemists expressed strong dissent, because they conceived that the proposed change might result in a lowering of the educational standard. They fancied they saw the thin edge of the wedge and they feared the eventual disappearance of the Major qualification. They argued that if Minor men were made "members," Major men should be made "fellows." The argument was just, though the basis was false, but it is to the credit of the objectors that when it was pointed out that the relative position of Major and Minor men was not altered by anything in Clause 3, they withdrew their opposition. Doubtless the fact that the Privy Council approved the Bill may have had something to do

with allaying their fears. After some trouble with the hon. member for Mid. Cork (Dr. Tanner) who opposed "on principle" the Bill obtained a second reading on March 7. Then came into the field the most serious opponent, Mr. Alexander Cross (Camlachie), a Glasgow seedsman, who had come into conflict with the Pharmacy Act, 1868 and saw an opportunity for revenge. He placed a series of amendments on the paper and, thus, for weeks, kept the Bill out of the Committee stage. His chief object was to wreck the Bill and he thought the best way of doing so was to raise the cry of monopoly. He claimed that agricultural preparations should be exempt from the operation of the Act regulating the sale of poisons. It was a plausible line to take and it even imposed upon Mr. Long (of muzzle fame) as well as other members interested in agriculture. Personal arguments would not weigh with Mr. Cross. He knew his advantage and determined to maintain it. Glasgow chemists tried their best to move him and failed. Edinburgh exerted its influence without effect, and the whole artillery of Bloomsbury could make no hole in his armour. Things looked still more black for the pharmaceutical bantling, when additional amendments were tabled by Mr. Weir (Inverness) and Mr. Yoxall (Nottingham), but the splendid generalship of Mr. Smith with the active help of friends in Nottingham and Inverness eventually triumphed. One quiet Wednesday in June the Committee stage was taken and the opposition collapsed like a house of cards. The skilful management of Col. Brookfield, during Committee, and the inherent inconsistency of the attempt of Dr. Clark (Caithness) to move the inclusion of Mr. Cross's exemption clause, are fully set out in the *P. J.* for June 11, page 552. It would be worth while perusing that account for the purpose of becoming acquainted with the interesting discussion on the sale of poisons which took place in Committee. The attitude of Mr. John Burns was particularly significant, inasmuch as it indicated that he, at any rate, is quite willing that the sale of dangerous substances should be confined to persons having competent qualification. The third reading was taken, amid cheers, on the same day (June 8) and the whole calling distinctly gained by the publicity which was given to the discussion incidentally invoked.

IN THE HOUSE OF LORDS the Earl of Morley formally introduced the Bill and, after considerable delay due to the promoters' want of acquaintance with the procedure, Lord Hardwicke took charge of the measure. But even to the last, opposition dogged its steps. The second reading was passed on July 8 and Committee on the 11th. Standing Committee promised to be short and uneventful, when the Lord Chancellor and Lord Herschell startled the whole pharmaceutical world by suggesting that what apparently was intended to be a companies' prohibition clause, should be tacked on to the innocent Domestic Reform Bill. For three years the Society had been urging the Lord Chancellor to amend the Companies Acts so that corporate bodies should not evade the Pharmacy Acts and lo, here, after many days, was found the bread on the waters. True it was found to be very bad bread, when closer acquaintance with its nature became possible, but *que voulez vous*, it had been a long time on the voyage. The Council had a difficult choice to make. Either to urge their Lordships not to press the inopportune amendment, or submit to an addition and, thus, run the risk of losing the Bill. The first and as it seems to us, the proper course was chosen. The Bill had passed the Commons and had received the approval of the Privy Council because it dealt solely with the internal matters of a voluntary society. It seemed very much like a betrayal of confidence to acquiesce in the addition of the most highly contentious matter in the whole realm of pharmaceutical politics. Happily the Lord

Chancellor took that view and withdrew his clause, in which defects were more numerous than virtues, leaving the Bill to get its third reading on July 21 and its finishing touch of Royal approval four days later.

The Effects of the Act.—The Society will now comprise only two grades of supporters, viz., "Members" and "Student-Associates." That is to say, persons possessing a statutory qualification and those who are training in the hope of obtaining it. Registration under the Pharmacy Act, 1868, is made the only basis for membership and membership is declared to be the only qualification necessary for a person who desires to offer himself as a candidate for the Council. Thus the fifteen thousand persons whose names appear on the Register have at their disposal the means of perfecting their incorporation and of becoming a great political power. Through the medium of a Society whose policy they can mould into any form deemed to be most expedient or most satisfying, they may now co-operate and there is no reasonable demand they might formulate which could not be had for the asking. Now is the time for combined action to take the place of torpid incoherent grumbling. Let the able men of the calling stand forward and come on the Council; let us have no more outside criticism, which henceforward would indeed be, more than ever, mere self-condemnation. There is no let or hindrance now, the Council can be replaced in due time by twenty-one chemists and druggists if the electors can secure them and they think them the best men. The pharmaceutical chemists have undertaken to risk that contingency: they will have to take care of themselves and their order, and their broad-minded attitude might surely be imitated by all registered men. Possibly we may be open to the captious charge of "touting for guineas." Well, if a battle is to be fought it is desirable to be well provided with powder and if urging chemists to protect themselves with the weapon just fashioned, is "touting," we must plead guilty to the impeachment. What organisation ever wrested privileges from an indifferent public or a hard-hearted Legislature without spending money; what great good has ever been promoted or terrible wrong righted without the power derived from combined effort and associated capital? Imagine a Society of 14,000 chemists each subscribing one guinea a year, and think of the potentiality of the combination before condemning anyone who seeks to bring about such a consummation. That a critical time for the interests of pharmacy and of all registered chemists and druggists is approaching is doubtless patent to many observers. It is, therefore, more incumbent upon those engaged in every branch of the calling to associate themselves with the one organisation by which those interests can be defended or promoted and, thus united, to neglect no means of preparing themselves for the coming struggle. During the past session fortune has seemed to be in a merry mood, ready to give us anything; the temper of the Commons on the question of poison and of the Lords respecting company trading was excellent; but if anything satisfactory is to come out of that position next session, it must be as the result of work done by more than a handful of pharmacists. The continued abuses of the Companies Acts constitute the gravest danger that chemists and druggists have to face. The Lord Chancellor is greatly impressed with the injustice already wrought; apparently he would be prepared to aid in staying its further progress. There is the chance, what we ask is, Will not the rank and file of the craft be willing to make some sacrifice to enable the Society—that is themselves—to shake off chronic inaction, to formulate a remedy and to carry it into execution? Can they not, with that object, rise to the position of being entitled to have leaders and of being able to insist upon definite action on their part?

A BRIEF HISTORY OF POISON LEGISLATION IN THE UNITED KINGDOM.



THE earliest attempt to regulate the sale of poisonous substances in this country would appear to be the introduction into Parliament in 1819 of "a Bill for establishing regulations for the sale of poisonous drugs, and for better preventing the mischief arising from inattention or neglect of persons vending the same." What the provisions of that Bill were is not mentioned by Bell in the "Progress of Pharmacy," but it is there stated that as some of them appeared "likely to embarrass the dispensing of medicines, and not calculated to effect the object intended," the chemists and druggists of that day determined to oppose the measure. A petition was therefore drawn up and presented to the House of Commons, a representative Committee was subsequently favoured with a hearing before the Committee of the House to which the Bill was referred, and shortly afterwards the Bill was withdrawn.

No further step in this direction seems to have been taken until after the formation of the Pharmaceutical Society, but about 1849 the question of the sale of poisons was occupying the attention of the Government, of the medical profession, and of the public generally, and two years later the sale of Arsenic Act was passed without any serious opposition. At that time more than one-third of the deaths by poisoning reported were caused by the use of arsenic, and the Pharmaceutical Society took an active part in collecting evidence on the subject. As there was at that date no legal definition of the terms "chemist and druggist" and "pharmaceutical chemist," it was found impossible to limit the sale of arsenic to a class of men possessing a special knowledge of its properties, but the fact that some such limitation was desirable in the public interest encouraged the Society to introduce a Pharmacy Bill into Parliament, and in 1852 the first Pharmacy Act was passed.

In that Act, however, no allusion is made to poisons, the fact of the matter being that the leaders of the Society were in no degree anxious to deal with the question of the sale of poisons. They took up the position that the qualification of the dispenser was the thing to define, and it was felt that any attempt to interfere with the drug trade by legislation without defining the qualification of dispensers must of necessity be insufficient to effect the desired end and should be consistently opposed. That fact must be borne in mind when it is noted how frequently the Council of the Pharmaceutical Society has been in opposition to the Government in regard to proposed legislation on the poison question. Even now the qualification of the vendor must be held to be of much greater importance than the imposition of regulations as to the storage and sale of poisons.

Three years after the passing of the Pharmacy Act a succession of cases of criminal poisoning occurred, which greatly agitated the public mind and forcibly directed attention to the unguarded manner in which poisons were supplied to those who required them, but the only immediate result of the discussions that took place was that a supplement to the Dublin Pharmacopœia was issued in 1856, in which it was ordered that medicines possessed of dangerous qualities should invariably be kept and sold in bottles or vessels of angular shape. English pharmacists, however, concurred in disapproving of these "Irish poison regulations," as they considered them to be impracticable and useless for the purpose intended.

Early in 1857 a Bill was introduced into Parliament, which

provided that no poison should be sold unless the sale was made to a person of full age and in the presence of a witness of full age, who was known to the seller and to whom the purchaser was known. A record was to be kept of all sales; all colourless poisons were to be coloured with soot, indigo, or archil; and all poisonous substances were to be kept under lock and key in a closet set apart for that purpose. Poisons wrapped in paper were to have an outer wrapper of tin-foil, with the word "Poison" in conspicuous letters; liquid medicines for external use, and all others containing any poison were to be supplied in quadrangular blue glass bottles, labelled in conspicuous capital letters, white on a black ground, "Poison" or "For External Use," and with the same words cast or moulded in raised letters in the glass on the four sides of the bottle. Opposition to this Bill by the Pharmaceutical Society resulted in considerable modification of its provisions, but as it was proposed to create a new qualification—that of "licensed druggist," the examination for which should be conducted by a mixed board of six examiners, only one of whom would represent pharmacy—the opposition was actively continued, and in the end the Bill was withdrawn. Early in 1859 it was re-introduced with its most objectionable provisions omitted, but further opposition by the Pharmaceutical Society was felt to be necessary, more concessions were made by the Government, and the Bill was ultimately so emasculated that it was not thought worth while attempting to carry it. It was, therefore, finally withdrawn.

A Bill to prohibit the sale and use of poisoned grain was introduced in 1863, and as originally drafted would have rendered it penal to sell or use any poison for the destruction of rats, mice, or other vermin, or of any domestic animal which it might be desired to destroy speedily and easily; it would also have interfered with the dressing of seed-wheat with poisonous salts for the preparation of smut. The Council of the Pharmaceutical Society decided, therefore, to petition Parliament against those provisions, and as the result of that and similar representations the Bill was suitably modified before it was passed. A Poisoned Flesh Prohibition Act, passed in 1864, may be regarded as complementary to the Poisoned Grain Prohibition Act. It provides that no one shall expose flesh which has been treated with poison in such a manner as to make it liable to destroy life.

In 1864, a Bill was promoted by the United Society of Chemists and Druggists, in which it was proposed that all chemists and druggists should be registered, and that none but registered persons should be able to recover in courts of law any charges accruing from the sale of certain scheduled active poisons and dangerous drugs; further, it was provided that certain specified regulations should be observed in the sale of active poisons. In the Bill promoted by the Pharmaceutical Society earlier in the same year there was no reference to poisons, the intention being simply to secure the registration of all chemists and druggists, and to restrict to registered persons the compounding of the prescriptions of duly qualified medical practitioners. The two Bills were referred to a Select Committee of the House of Commons, which found itself unable to decide between the conflicting claims of the promoters, and ultimately a report was agreed to which recommended that neither of the Bills should be proceeded with, but that the Government should bring in a Bill embodying restrictions on the sale of poisons. It was thus rendered evident that there must be a union of the pharmaceutical forces before anything satisfactory could be done; after prolonged and careful consideration, therefore, the Pharmaceutical Society made certain concessions to the United Society of Chemists and Druggists, which thereupon agreed to support the Society's amended Bill, the Government

was conciliated by the insertion of poison clauses, and in 1868 the Bill was passed. Henceforth a register was kept of all chemists and druggists, and none but registered persons were permitted to keep open shop in Great Britain for retailing, dispensing, or compounding poisons scheduled under the Act.

Ireland obtained protection in the matter of the sale of certain poisons in 1870, the Sale of Poisons Act then passed being drafted on the same lines as the poison clauses of the British Act of 1868. At first there was no restriction of the trade in scheduled poisons to any special class, but in 1875 the Irish Pharmacy Act was passed, and limited the compounding of medical prescriptions and the sale of scheduled poisons in Ireland to licentiates of the Pharmaceutical Society of Ireland and licensed apothecaries. An amending Act passed in 1890 provided for the registration of "chemists and druggists" and "registered druggists," who, as well as "pharmaceutical chemists" and "licensed apothecaries" are now entitled to sell poisons in Ireland.

A Bill for amending the law relating to the sale of poisons in Great Britain, and to the administration of poisonous drugs to horses and other animals, was introduced into the House of Lords by the Duke of Richmond late in the parliamentary session of 1881. It proposed to add mineral acids, hellebore, butter of antimony, and salts of copper to the list of poisons contained in Part I of Schedule (A) to the Pharmacy Act, 1868, and would have imposed more irksome restrictions on the sale of those substances than any previously in force. The purchaser was to be liable to a fine not exceeding ten pounds for giving a false name or address, or for knowingly and wilfully making to the seller a false statement of the purpose for which the poison was required; the seller would have been equally liable for selling a scheduled poison to any person known or appearing to be under the age of twenty-one years. Further, no servant was to be supplied with poison without a written order from the master, and the seller was to send by post to the master a copy of the entry made in his poison book. Finally, the poison book was to be open to the inspection of any justice, constable, or peace officer, at all reasonable hours in the daytime. The provisions of this Bill were, as might be expected, considered by registered chemists to be extremely objectionable, but nothing more was heard of it after its introduction.

Early in the following year, however, the Home Secretary invited the Pharmaceutical Society to lay before him any suggestions it might have to make for the amendment of the law relating to the sale of poisons. In response, the Council of the Society intimated that further restrictions on the sale of medicine containing poisons dispensed from ordinary prescriptions were neither necessary nor practicable, though it was desirable that the sale by wholesale of poisonous vegetable alkaloids and their salts should be placed under greater restrictions, and that proprietary and so-called "patent" medicines should be subject to the same restrictions as other medicines containing poisons. Subsequently a deputation from the Council waited by invitation upon the Home Secretary, and in accordance with a suggestion then made, the views expressed by the deputation were embodied in a series of propositions, which were forwarded to the Home Office for consideration. About the same time a communication was received from the Privy Council on the same subject, and in response to the invitation of the Lord President of the Council, the views of the Society in regard to the sale of poisons were submitted for consideration in the form of a draft Bill to amend the existing law.

The chief feature of that Bill, published in the *Pharmaceutical Journal* of February 10, 1883, was the proposal to include mineral acids, carbolic acid, and butter of antimony in a "Schedule of

Poisonous Articles." Those substances were to be distinctly labelled with the name of the article, the word "poisonous," and the name and address of the seller, but the seller was not of necessity to be a registered chemist. It was also proposed to regulate the sale by wholesale of poisons in Part I of Schedule (A) to the Pharmacy Act, 1868, and the sale of proprietary medicines containing scheduled poisons. The draft Bill included, in addition, such amendments of the Pharmacy Acts as were considered desirable, and was received with general approval by the members of the Society and the trade at large, but it was not introduced, and in reply to an inquiry the Government intimated in 1884 that it was not proposed to deal with anything more than the sale of poisons, and that a Bill would be introduced shortly.

The Government Bill was actually introduced in the House of Lords in March, 1885, and was then found to propose great alterations in the Pharmacy Act of 1868, and to apply to Ireland as well as to Great Britain. Thus it was provided that the strong mineral acids, carbolic acid, butter of antimony, and chloride of zinc should be included in a third part of the Schedule, but the sale of those substances was to be unrestricted so long as they were labelled with the name of the substance, the word "poison," and with the name and address of the seller. Other scheduled poisons were only to be sold by registered chemists or medical practitioners, as at present, but were not to be sold to any person under the age of seventeen years. Companies were to be permitted to sell any poison through the agency of a legally qualified manager; wholesale dealers were to label all scheduled poisons sold with the name of the substance and the word "Poison"; and medicines containing poisons were to be labelled "To be used with caution" if they were likely to produce poisonous effects when taken otherwise than directed. Last, and worst of all, the power of making regulations as to the keeping, dispensing, and selling of poisons comprised in the first and second parts of the Schedule were to be henceforth vested in the Privy Council so far as registered chemists were concerned. The Bill was duly read a second time in the House of Lords, on the motion of Lord Carlington, but petitions against it having been presented by the Pharmaceutical Societies of Great Britain and Ireland, and by the chemists of various large towns, it was referred to a Select Committee and heard of no more.

For a period of thirteen years since that Bill was lost sight of no further attempt was made by the Government to regulate the sale of poisons. But quite recently a hastily drawn Poisonous Substances Bill was rushed through the House of Lords, the ostensible object of the measure being to protect the public, though there is little doubt that it represented a veiled attack upon the privileges of registered chemists in Great Britain and Ireland. It was proposed in the Bill that strong mineral acids, butter of antimony, carbolic and cresylic acids and their preparations, chloride of zinc, sugar of lead, and substances used for the purpose of poisoning insects or vermin, should not be sold unless distinctly labelled with the name of the substance, the word "poison," and the name and address of the seller. No attempt was made to restrict the sale of the substances, to any special class but if they were supplied for internal use by medical men or chemists they were to be labelled "To be used with caution," and a record of each transaction entered in a book. In addition an attempt was once more made to place registered chemists directly under the control of the Privy Council by empowering that body to prescribe regulations for the keeping, dispensing, and selling of poisons. As on the former occasion, however, the attempt failed; for by the

well-timed action of the Council of the Pharmaceutical Society, backed up by chemists all over the country, such an effect was produced that, though the Bill had passed through all its stages in the House of Lords, it was decided by the Government not to introduce it into the House of Commons. Whether that Bill or a similar one is likely to be brought forward in the next session of Parliament remains to be seen, but in the improbable event of that happening, all registered chemists throughout Great Britain and Ireland should be prepared to repel the attack, and if they will but act together as well as has recently been done there need be little fear of the result. Any further amendment of the pharmacy and poison laws of the country should only be proceeded with by the Government after consulting those who are most deeply interested in the matter, and in any case it should ever be borne in mind that the education and proper qualification of the vendor cannot be improved upon as a means of protection for the public in connection with the sale and dispensing of poisons.

PHARMACY ACTS AMENDMENT ACT, 1898.

61 & 62 VICT., CAP. 25.

An Act to amend the Pharmacy Acts, 1852 and 1868.

[July 25, 1898.]

Be it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

1. INTERPRETATION.—In this Act the term "chemist and druggist" shall have the same meaning as in the Pharmacy Act, 1868, and "the Society" shall mean the Pharmaceutical Society of Great Britain.

2. "APPRENTICES OR STUDENTS" ELIGIBLE TO BE ELECTED "STUDENT-ASSOCIATES." 15 and 16 VICT. c. 56.—Every person who at the time of the passing of this Act shall have been duly registered as an "apprentice or student," and who, under the provisions set forth in section ten of the Pharmacy Act, 1852, has been admitted to and at that time remains in the Society as a "student," shall be registered as a "student-associate" of the Society; and every person who at the time of the passing of this Act shall be duly registered, or who thereafter shall become registered as an "apprentice or student," shall be eligible to be elected a "student-associate" of the Society according to the Bye-laws thereof.

3. REGISTERED CHEMISTS AND DRUGGISTS ELIGIBLE TO BE ELECTED "MEMBERS."—Every person who at the time of the passing of this Act shall have been registered as a chemist and druggist, or who shall hereafter become registered as a chemist and druggist, shall be eligible to be elected a "member" of the Society according to the Bye-laws thereof.

4. RETIREMENT OF MEMBERS OF THE COUNCIL BY ROTATION.—In lieu of the provisions contained in the Royal Charter of Incorporation of the Society, whereby it is provided that two-thirds of the members of the Council shall in every year go out of office, the following provisions shall, after the passing of this Act, have effect:—

1. On the ordinary day of election of members of the Council in every year seven members of the Council shall go out of office, and the vacancies shall be filled by election, the retiring members being eligible for re-election.
2. The seven members who go out shall be the members of the Council who have been longest in office without re-election.

3. If and whenever the number of the members of the Council who have been longest in office without re-election shall exceed seven, the members of the Council to retire shall be determined from these by lot.

5. VOTING PAPERS FOR ELECTION OF OFFICERS.—At all meetings of the Society at which votes shall be given for the election of officers, all or any of the votes may be given either personally or by voting papers, in a form to be defined in the Bye-laws of the said Society, or in a form to the like effect, such voting papers being received by the Secretary, under cover, not later than twelve o'clock noon on the day on which the election takes place.

6. EXTENT OF ACT.—This Act shall not extend to Ireland.

7. SHORT TITLE OF ACT.—This Act may be cited as the Pharmacy Acts Amendments Act, 1898.

8. REPEAL.—The enactments mentioned in the schedule to this Act to the extent specified in the third column of that schedule are hereby repealed.

SCHEDULE.

Enactments Repealed.

Session and Chapter.	Short Title.	Extent of Repeal.
15 and 16 Vict. c. 56	Pharmacy Act, 1852	In Section ten, the words "and every such person duly registered as an Assistant shall be eligible for admission as an Associate of the said Society."
31 and 32 Vict. c. 121	Pharmacy Act, 1868.	Sections eighteen, nineteen, twenty, and twenty-one.

SELECTED FORMULÆ.

APPLICATION FOR SORE NIPPLES.

Vomacka prescribes the following:—Ol. olivar, 12; ichthyol, 2; salol, 3; Peru balsam, 3; gum arabic, 10; orange-flower water, 12; lime water to produce 100. Ft. emuls. Sig. For external use.—*Deutsch. Amer. Apoth. Ztg.*, xviii., 143, after *Rundsch.*

MURREL'S LINIMENT

For rheumatism, lumbago, etc., is stated to be composed of sod. salicylic, 15; ol. cajeputi, 2; ol. eucalypt., 1; liniment sapon. ammon., 15; spirit vini, 200.—*Pharm. Post*, xxxi., 66.

HÆMOGLOBIN AND ITS PREPARATIONS.

Pure hæmoglobin is a light to brick-red crystalline powder, which, exposed to the air, darkens a little, due to formation of methæmoglobin. According to Donet, its solubility is 8 to 10 per cent. in water, 10 to 5 per cent. in alcohol, 4 per cent. in white wine, 3 per cent. in red wine. The addition of glycerin increases its solubility. The author gives the following formulæ for pharmaceutical preparations:—*Vinum Hæmoglobini*: Hæmoglobin, 30; vini albi, 1000. A tablespoonful of this wine contains 0.45 gramme of hæmoglobin. *Syrupus hæmoglobini*: Hæmoglobin, 20, to be suspended in equal parts of cold water. Syrup simpl., 1000. A tablespoonful contains 0.40 gramme of hæmoglobin. *Elixir Hæmoglobini*: Hæmoglobin, 40 grammes; aquæ destil., 500; syrip. cort. aurant., 400; tinct. cocæ, 100. *Pilule Hæmoglobini*: Make a solution of hæmoglobin with the addition of glycerin and water and evaporate to the consistence of an extract. Add excipient and roll out into pills each of which contains 0.1 gramme hæmoglobin.—*Pharm. Centralh.*, xxxviii., 512.

SULPHUR AND ZINC OINTMENT.

Sulphur precipitat., 6; zinci oxid., 4; terr. siliciæ (alb. subtil. pulv.), 2; adip. lanæ, adip. benzoat., āā 14.—*Pharm. Centralh.*, xxxix., 92.

NOTE ON THE MYDRIATIC ALKALOIDS.*

BY H. A. D. JOWETT, D.SC.

That some confusion should have arisen in the past regarding this group of alkaloids is not altogether surprising, considering that there was on the market a variety of products designated daturine, duboisine, heavy and light atropine, etc., and that the literature of the subject was in a most unsatisfactory condition. The work of Schmidt and others has, however, removed these discrepancies, and it is now possible to obtain in commerce products of definite chemical composition of a high degree of purity. A paper read by Dr. G. Sharpe at last year's Conference (*P. J.*, 1897, p. 160) contained several statements and conclusions which are not in accord with our present knowledge of this subject, and in the 1898 B.P. the description and tests of the official members of this group are generally unsatisfactory, and in some cases misleading and inaccurate. I therefore thought that it would not be without interest to the members to contribute a short note on the subject.

As Dr. Sharpe says, the several names which have been used for a mixture of these alkaloids, as daturine, duboisine, light atropine, etc., should be once and for all abandoned, as they only represent a variable product obtained from a particular plant, the composition of the product depending on the process of manufacture, but consisting chiefly of atropine or hyoscyamine. The only alkaloids belonging to this group which can at present be definitely considered as chemical entities are atropine, hyoscyamine, and scopolamine. These are bodies of definite composition, whose chemical and physical properties have been carefully studied. In addition to these bases pseudo-hyoscyamine, from *Duboisia myoporoides*, isomeric with atropine and hyoscyamine, has been described by Merck, but its relation to its isomers has not yet been worked out.

ATROPINE.—Atropine can be prepared either synthetically from tropine and tropic acid by the elimination of water, or by isomeric change from hyoscyamine. The alkaloid contained in belladonna root and other solanaceous plants is primarily hyoscyamine, which, during the processes of extraction, precipitation, etc., becomes converted into atropine by the action of the heat and alkali used. Atropine itself is present in only a very small amount, if at all, in these plants. Dr. Sharpe states that "the relationship of these two bases can hardly be said to be understood," but this statement requires a little modification. Though the nature of the isomerism of these two bases is not at present known, their properties are such as to differentiate them sharply from each other, and it is certainly within the ability of the chemist to detect these differences.

The best and simplest test for determining the freedom of atropine from hyoscyamine or scopolamine is its optical inactivity, both the other bases and their salts being optically active. The presence of a small amount of these likely impurities would thus be at once detected. The new B.P., in the tests for atropine and the sulphate, makes no mention of this fact, but it is stated amongst the characters and tests of aconitine that it is dextro-rotatory, which is perfectly true, but the object of this statement is not apparent, as this property is no test of either its identity or purity. Beyond the melting points the B.P. gives no test for the presence of organic impurities in atropine or its sulphate. That of the base (115.5°) is correct for a pure product, but that given for the sulphate (183°) is open to criticism. Will (*Ber.*, 21, p. 1724) gives it as 196°, the U.S.P. 187°, Hesse (*A.*, 271, p. 102), 180°-181°, Merck 189°-191°, whilst a salt, proved to be optically inactive, prepared by myself from pure atropine melted at 190°. A good commercial

specimen melted at 190°, so that there is no doubt but that the B.P. melting point is too low.

The sulphate can always be obtained quite white, but has generally an amorphous appearance though really crystalline, and here again the pharmacopœial description requires modification. The melting points of the aurichlorides of this group form a very easy way of identifying the alkaloid and also afford some criteria as to its purity. The B.P. recognises these salts and gives the melting point for scopolamine aurichloride, but by a strange inconsistency not those of atropine and hyoscyamine, where it relies on the appearance of the salt, of which again a misleading account is given. They are best prepared by dissolving the base in excess of hydrochloric acid, then adding auric chloride and crystallising from the hot solution. The B.P. gives an impracticable method of preparing it from an aqueous solution of atropine. The appearance of the two salts is very characteristic; the atropine aurichloride separates first as an oily clot, which solidifies to a crystalline mass, the hyoscyamine salt comes down in brilliant golden-yellow crystals. The melting points are very sharp and separated by 23°. Atropine aurichloride melts at 137°, and hyoscyamine aurichloride at 160°. The B.P., therefore, requires in this respect amendment and addition. The insertion of the colour test with fuming nitric acid and potash is quite unnecessary, and as tests for identity and purity of the base and salts I would suggest—

1. Melting point.
2. Formation and melting point of the aurichloride.
3. Optical inactivity.
4. Freedom from ash on ignition.

These tests would ensure a pure product, and one which can reasonably be expected from the manufacturer.

HYOSCYAMINE.—This base is actually found in many solanaceous plants, including belladonna, scopol, etc., and not "possibly" as the B.P. states. It is optically active, and can be converted quantitatively by heat or by treatment with alkali into atropine. It is not, however, only an optical isomer of atropine, as lævo-atropine has been prepared synthetically and is not identical with hyoscyamine. It is distinguished from atropine by its optical activity and by the melting point of its aurichloride (160°). The melting point of the sulphate as it occurs in commerce is about 200°, whilst I have found the pure salt to melt at 204° and not, as stated in the B.P., at 206°. I would suggest a melting point of not lower than 200°.

SCOPOLAMINE (HYOSCINE).—This base is found accompanying hyoscyamine in very small quantity (0.03 per cent.) in many solanaceous plants, its chief source being *Scopola atropoides*. It is distinguished from both atropine and hyoscyamine by several well-marked characteristics, the most important of which are its percentage composition, its products of hydrolysis, and the melting points of its salts, particularly the aurichloride. Lately Schmidt has shown that it exists in stereo-isomeric forms, differing in optical activity and slightly in melting points, but not in their physiological action.

It is identical with the base called hyoscine, prepared from hyoscyamus seed, but this is not the source of the commercial article, which is preferably called scopolamine. This question has, however, been very recently discussed by Schmidt, Hesse, and Merck, and may be considered satisfactorily settled. The characters and tests given for the hydrobromide in the B.P. are very unsatisfactory.

The solubility in water (1 in 1) is incorrect. The U.S.P. gave 1 in 1.9, and Hesse gives 1 in 4, which is more correct. The hydrated salt, when heated (in a capillary tube) to 100°, forms a clear liquid, and no alteration can be observed on further heating

* Read at the British Pharmaceutical Conference, held at Belfast, August, 1898.

to 181° (the melting point of the dehydrated salt). The statement in the B.P., therefore, is somewhat misleading.

The melting point of the dehydrated salt as there given (193°-194°) requires modification. According to Schmidt (*Arch. Ph.*, 236, pp. 47, *et seq.*) the scopolamine hydrobromide of commerce consists of a varying mixture of lævo (or normal) and inactive scopolamine in proportions dependent on the source of the alkaloid and the mode of manufacture. The commercial salt has a specific rotatory power of about -13°, and melts at 181°. The purified lævo salt melts at 193°, and the inactive modification at 180°, but it has been shown that there is no difference in the physiological action of these salts. The tests and characters of the official salt should therefore be given for the pure product as it appears in commerce, which is a mixture of the stereo-isomers, melting at 181°. This is the melting point given by Hesse and confirmed by my own experiments. It would be interesting to know if the compilers of these tests have met with a salt in commerce of the melting point given (193°-194°).

With auric chloride the salt is stated to give a crystalline salt melting at 198°, which is not correct. As I have previously shown (*J. C. S.*, 1897, p. 679), an additive compound is formed under these conditions of the formula $B \cdot HBr \cdot AuCl_3$, which melts at 215°. The aurichloride, when prepared in the usual manner, melts sharply at 198°, thus differentiating it from atropine and hyoscyamine. There does not seem to be any reason why the salt should not be neutral to litmus, as a properly prepared salt will conform to this condition. The statements of Dr. Sharpe regarding hyoscyne and scopolamine show that he has confused these bases, but if the investigations made in recent years be considered, it will be found that our knowledge of this group of alkaloids is quite definite and satisfactory.

A NEW CONSTITUENT OF LEMON OIL.*

BY JOHN C. UMNEY AND R. S. SWINTON.

From the very time that citral was first stated to be the odorous constituent of lemon oil, various theories have been put forward to account for the difference in both taste and odour between a natural lemon oil and a mixture of the terpene of lemon oil with citral in the relative proportion in which they were understood to exist.

It was subsequently found that citronellal was associated with citral, and had some influence upon the taste and odour of the oil, and mixtures of these two aldehydes obtained from their most economical sources were suggested as a still more efficient substitute for natural concentrated lemon oil.

It was found, however, that no blend, no matter in what proportion the citral and citronellal existed, possessed the same peculiarly sweet character as the natural oil.

Several methods of estimation of these aldehydic constituents have been put forward, dependent upon the formation of compounds with phenyl hydrazine, hydroxylamine, and also other characteristic crystalline compounds.

Garnett (*P.J.*, Vol. 56, p. 323) subsequently proposed the estimation of citral by reduction to geraniol, but the accuracy of this method was at once contested by one of us (*P.J.*, Vol. 56, p. 360) as a result of experiments already conducted very much on the same lines as that worker had followed. Messrs. Schimmel and Co. some months later also detailed in their annual report (Oct., 1896) very many experiments to disprove the correctness of Garnett's assertions. These processes, however, for the determination of the odour-value of lemon oil consist solely in estimation of the aldehydic constituents.

We have noted, however, that a simple concentrated lemon oil, in which every care has been taken to free the product from stearoptene and resinified products, has a pleasant odour which is not associated with a concentrated oil separated by chemical means and consisting practically entirely of mixed aldehydic constituents. We have therefore sought to determine to what this difference is due, and, we think, with a result that may be of some importance.

For the purpose of our experiments we concentrated under reduced pressure, 2000 C.c. of lemon oil to 200 C.c. and lest any of the odorous constituents should have been carried over, again concentrated the 1800 C.c. of distillate to 100 C.c., which also was reserved. The aldehyde was removed from these concentrated oils by repeated treatment with solution of acid sulphite of sodium of 30 per cent. strength, when a considerable quantity of uncombined oil was separated which possessed an odour recalling geranyl acetate.

Advantage was now taken of the knowledge that both citral and citronellal when thoroughly acetylated form alkali absorption bodies (citronellal reacting quantitatively, citral only approximately) to get an idea as to the total amount of acetylatable bodies present.

The concentrated oil after acetylation for two hours was found to contain 68 per cent. alkali absorption bodies, which corresponds to about the same percentage of aldehydes. An attempt was made to check this result by estimating the concentrated oil with acid sulphite of sodium in a Hirschsohn flask, and though the reading was almost impossible owing to the separation of the insoluble citronellal bisulphite compound, yet it could be taken near enough to show that bisulphite did not indicate this amount of aldehyde, and that in all probability the difference was due to the presence of an aromatic ester.

This conclusion was confirmed when the aldehydes were completely destroyed by saponification with alcoholic potash solution, the alcohol dissipated and the residue distilled. This distillate was again treated with excess of alcoholic potash solution until no trace of saponifiable bodies was left. The product was then distilled under reduced pressure, and then subsequently carefully fractionated under ordinary pressure, that portion distilling between 230 and 250° C. being reserved for examination.

This was found to possess the characteristic odour of geraniol, and by repeated fractionation the alcohol was separated having characters in the closest agreement with those of pure geraniol.

Considerable difficulty was experienced in determining the nature of the acid combined with this geraniol in the form of ester in the original oil on account of the decomposition products formed in the oil, the evidences of acetic acid which were obtained probably arising from a decomposition of the ester, and pointing strongly to the fact that the ester of that alcohol is the one present.

In order to get an approximate idea of the quantity present, and also to determine whether there was any difference in the proportion present in the normal pure oils of Palermo and Messina variety, large quantities of the oils were operated upon by a slight modification of the process already detailed. Quantities of alcohol corresponding to from 1.2 to 1.4 per cent. of ester were obtained; no constant difference in quantity could be said to exist in the two varieties. It does seem, therefore, that up to the present a constituent which has an important bearing upon the odour and taste of lemon oil has been disregarded, and that it is necessary that a concentrated lemon oil shall contain not only citral and citronellal, but also this ester of geraniol, in normal proportions before it can be said to represent in a concentrated form the true odour and taste of lemon oil.

* Read at the British Pharmaceutical Conference, held at Belfast, August, 1898.

ALBUMINS AND SOME TYPES OF PROTEID DIGESTION.*

BY GORDON SHARP, M.D. (EDIN.).

The following fragment is the result of some work done four years ago. It was my intention at that time to carry out a somewhat more ambitious scheme, which, however, pressure of other duties has prevented me from even attempting. The incomplete character of my experiments renders this explanation necessary.

PROBABLE CONSTITUTION OF THE ALBUMINS.

Although nothing definite is known regarding the constitution of the proteid matter called albumin, it is believed to be in reality an albuminate; that is, the proteid matter of albumin is looked upon as playing the part of an acid, the base being either sodium, potassium, or calcium and ammonium. This point, it must be admitted, has not been accurately determined, but it has been found that however carefully albumin is freed from extraneous matter, a certain proportion of metallic substance is found in the ash. For example, white of egg or egg-albumin, when incinerated, yields calcium, and serum-albumin yields sodium and perhaps some potassium. One then may regard egg-albumin as albuminate of calcium, and serum-albumin as albuminate of sodium. Another point lends some support to this view, and that is the relative solubility and measure of decomposition of the two albumins. Serum-albumin is readily soluble and easy of digestion, being broken up by such a weak ferment as papain. Now, as we have just supposed, serum-albumin is a sodium-albumin, and, as is well known, sodium salts are highly soluble. On the other hand, egg-albumin is not readily soluble, and is almost untouched by a weak ferment, such as papain. Albumin we suppose to be a calcium-albumin, and, generally speaking, calcium salts are much less soluble than sodium salts. We might even carry this comparison further, and reflect for a moment on the possible reason why the powerful ferment pepsin has almost no effect on egg-albumin unless a certain proportion of hydrochloric acid be present. The reason may in great part be because the acid is necessary to unlock the calcium salt from its combination with the albumin, and thereby form a soluble calcium salt. On the other hand, an acid is a less necessary adjunct to pepsin in the digestion of serum-albumin. Further, pancreatin, which is an alkaline ferment, has very little action on egg-albumin, and this may be because it has no action in the way of rendering the calcium base soluble. Contrariwise, pancreatin, the alkaline ferment, acts powerfully on serum-albumin, the sodium-albumin.

PUTREFACTIVE DIGESTION.

When we extend our inquiries into other fields, as, for example, the digestion by putrefaction, we find the comparisons instituted above hold good. Serum-albumin readily yields; egg-albumin is much more difficult of decomposition. This is how Nature safeguards herself, for if the egg were surrounded by a zone of albumin easy of digestion we should find an enormous destruction of eggs by simple putrefactive digestion.

In the experiments I am about to detail I wish to compare the behaviour of egg and serum-albumin in their behaviour towards putrefactive digestion, and more particularly as to the proteoses (albumoses) present. And at the end we can compare these proteoses with those found in papain and pepsin digestions and with the digestion produced by yeast.

METHODS EMPLOYED.

In the present investigation hard boiled egg-albumin was employed on the one hand, and dried serum-albumin, prepared from meat, on the other. They were both exposed in the same manner, and as follows: In both, 5 grammes of albumin were employed. The

egg-albumin was boiled hard and broken up into a pulpy mass, and mixed with 30 C.c. of water. The serum albumin which had been boiled and dried so as to be ready for other experiments was simply placed in 30 C.c. of water. In order to hasten the digestive process a small particle of dried gelatin containing bacteria, causing liquefaction, was added to each bottle. The gelatin used was prepared by exposing a plate of that substance, newly run, to the air, noting when colonies settled on it, causing softening, at which period it was quickly dried and preserved. By merely exposing the specimens of albumins and water to the air in uncorked bottles at a moderate temperature (25° C.), as I did, one might expect putrefaction and softening to go on, still the immediate presence of bacteria could not but hasten the process, hence the reason for adding the gelatin. The bottles were kept at 25° C. for one week, after which they were simply left in a room for several weeks at a temperature of never less than 16° C. At the end of that time both albumins were examined. The serum-albumin was quite digested, but the egg-albumin showed a considerable sediment at the bottom of the bottle. A portion of both fluids was thrown on separate dialysers, and the liquids passing through were in both faintly alkaline, and both gave a precipitate with Thresh's alkaloid reagent. With egg-albumin dialysis continued for thirty-six hours, the fluid passing through gave no precipitate with solution of phospho-tungstic acid nor did it give the biuret reaction, so peptone was absent, and probably also deuterio-albumose. From the fact of serum-albumin being more ready of digestion than egg-albumin a portion of the dialysate from the serum-albumin preparation was examined at the end of one hour, when it was found to give no precipitate with solution of phospho-tungstic acid, nor did it give the biuret test, showing absence of peptone.

To confirm this, a portion of the original serum-albumin solution was taken, filtered, and then treated with great excess of ammonium sulphate, allowed to stand over night and filtered. The filtrate was treated with excess of caustic soda solution and a trace of copper sulphate solution, but no reaction took place. At the end of thirty-six hours the dialysate, however, gave a deep pink with the biuret test, pointing to the probable presence of deuterio-albumose, peptone having been just shown to be absent. It is well known that deuterio-albumose can after many hours pass through an animal membrane, more especially if the fluid is slightly alkaline. A portion of the original egg and serum-albumin preparations after being filtered through paper and boiled became cloudy, pointing to the presence of some unaltered albumin and globulin. Another portion of the same filtrates (slightly alkaline) gave a precipitate on neutralisation, showing some alkali-albumin. With excess of magnesium sulphate the filtrates give cloudy precipitates very small in amount (globulin). On filtering off these precipitates, diluting with distilled water and dividing each into two, one of each with a drop of dilute nitric, gave a precipitate of albumoses. The second portion of each was next treated with dilute acetic acid and excess of sodium chloride, and in both a precipitate resulted (proto- or hetero-albumose or both). Both fluids were largely diluted with distilled water, whereupon both precipitates dissolved. Portions of each were thrown on two dialysers and left for twenty-one days in a very cold place, the water in the outside vessels being changed every day. The egg-albumin preparation only showed the merest trace of precipitate in the inner vessel (hetero-albumose) thus the precipitate produced by acetic acid and sodium chloride as shown above must be mostly composed of proto-albumose. The case, however, is different when we come to look at the serum-albumin, for the inner vessel contains a bulky precipitate, showing

* Read at the British Pharmaceutical Conference, held at Belfast, August, 1898.

that the acetic acid and sodium chloride precipitate is largely composed of hetero-albumose.

To still further confirm the presence or absence of deuterio-albumose the precipitates thrown down by the acetic acid and sodium chloride were filtered off from a portion of both albumins, the filtrates largely diluted with distilled water, and excess of ammonium sulphate added to each. The egg-albumin fluid remained clear (absence of deuterio-albumose), while the serum-albumin one showed a precipitate (deuterio-albumose). Thus the digestive process due to simple putrefaction is more readily effected in the case of serum-albumin than in the case of egg-albumin, and the albumoses formed would appear to be higher in the series in the former than in the latter.

The absolute alcohol extract was next examined in the following manner:—A portion was taken from each bottle, evaporated to dryness at water-bath temperature, treated with freshly prepared absolute alcohol and filtered, the alcohol evaporated off at ordinary temperature, the resultant extract again treated with absolute alcohol, filtered, and allowed to slowly evaporate. The extract from both albumins is a yellow mass, that from the egg preparation being the darker. Both extracts are sparingly soluble in ether and chloroform, and the latter agent bleaches the colour very largely. The egg-extract is perceptibly less soluble in ether and chloroform than the serum one. Alcoholic solutions of both extracts give a turbidity with Thresh's (bismuth, etc.) alkaloid reagent. Microscopically both show a few crystals (leucine and tyrosine most probably) with a yellow substance in great abundance in the form of drops, warty crystals, and pentagonal plates. Both extracts are only sparingly soluble in water. The nature of both extracts is probably in great part alkaloidal. The amount of extract from egg-albumin is relatively much smaller than that from serum-albumin. To sum up:—

Egg-albumin gives— Unaltered albumin. Alkali-albumin, Proto-albumose, Hetero-albumose (little), Alkaloid and crystals.	Serum-albumin gives— Unaltered albumin, Alkali-albumin, Proto-albumose, Hetero-albumose (much), Deuterio-albumose (little), Alkaloid and crystals.
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Peptone is absent from both.

PAPAIN DIGESTION.*

Digestion by papain in either acid or alkaline preparations gives—

Proto-albumose	} traces.
Hetero-albumose	
Deuterio-albumose .....		abundance.

Peptone is absent.

Papain readily digests serum-albumin, but has infinitely less action on egg-albumin.

PEPSIN DIGESTION.

This is perhaps the most complete form of digestion, and we find chiefly the higher albumose, namely deuterio-albumose, and strange though it seems, only traces of true peptone; that is, the digestion has gone beyond the proto- and hetero-albumose stage, and only just reached the peptone stage. This applies to both egg and serum-albumin.

DIGESTION IN PRESENCE OF YEAST.†

In the maturing of koumiss, when the fermentation has been started by the yeast plant, we find the albumin of the milk becomes in part changed into the higher proteids. The digesting agents here are probably the acids which are generated during the alcoholic and acetous fermentations. The peptone stage is never reached, and most probably the bulk of the albumoses produced belongs to the proto and hetero series.

In all these types of digestion we find tyrosin, leucin, urea, etc., none of which interests us at the present time.

In another paper I hope to give the result of some experiments on digestion carried on with sundew (*Drosera rotundifolia*), and also on the behaviour of egg-albumin towards the products of yeast fermentation.

NOTE ON EUCALYPTUS OIL.*

BY E. J. PARRY.

There are some fifty or more species of eucalyptus already identified in Western Australia, many of which are not found in the other parts of Australia. During a visit last year to this colony I went through most of the eucalyptus districts, going some 800 miles into the interior of the Continent. I was struck with the overpowering and not altogether pleasant odour of the bruised leaves of some of these Western Australian eucalypts, and asked Mr. Ednie-Browne, the conservator of forests, if he could get me any oil distilled from any of them. He was able to get about 60 or 70 C.c. from the leaves of *Eucalyptus toxophleba*, which he kindly sent me, an incomplete examination of which is the subject of the present note.

The tree is known locally as the York gum, no doubt on account of its being one of the most common eucalypts found in the neighbourhood of the town of York. It grows chiefly in companionship with *Eucalyptus redunca* (the wandoo), but peculiarly enough, whilst it flourishes on the eastern slopes of the Darling range, there is a thick eucalyptus forest on the western slopes, in which not a single specimen of *toxophleba* is to be seen. I have seen plenty of it, however, all through the forest districts between Albany and Perth, especially in the neighbourhood of York, Beverley, and Pingelly. It forms a fine straight tree, of 70 to 100 feet in height, with a diameter of 18 inches to 3 feet at the base. The bark is rough and dark-coloured, and the leaves, which are tapering, have a peculiar oblique venation. It grows on any soil, and its wood is very hard, almost, indeed, as hard as that of the famous jarrah (*Eucalyptus marginata*), and finds employment for all kinds of wheelwrights' work. The aborigines value it much, as it is the finest wood for making their spears with. Unfortunately the small amount of oil at my disposal only allowed me to make a very incomplete examination, but I hope to be able to obtain a further supply of it, and to go further into the chemistry of the oil.

It has a most obnoxious and uninviting odour, and when inhaled induces violent coughing. Its specific gravity at 15.5° is .8828. It is faintly dextro-rotary, about $.5^{\circ}$ for 100 Mm. On fractionation it yielded the following results. It began to boil at 160° , rising rapidly to 168° . The fractions collected were:—

168° - 171° ..	68 per cent.
171° - 176° ..	14 ,, "
176° - 182° ..	2 ,, "
182° - 187° ..	8 ,, "
Residue ..	8 ,, "

With phosphoric acid the oil simply became syrupy. The first fraction was almost free from cineol, whereas the 8 per cent. distilling between 176° - 182° was almost entirely cineol. A determination of this body in the fractions, which was necessarily only approximate, showed that the oil contains only about 15 per cent., certainly not more than 20 per cent., of cineol. Whilst phellandrene was present, as identified by its nitrite, it did not form anything like the remaining 80 per cent. of the oil; I was unable to search for any other bodies except aldehydes and ketones, the presence of which was indicated by an absorption by sodium bisulphite of about 10 per cent.; and for amyl alcohol, which has been identified in traces in some specimens of oil of *Eucalyptus globulus*. I was unable to find any trace of this body, however.

I hope to be able to examine this oil further.

* For further details see under "Papain Digestion" (*Ph. J.*, February 3, 1894)
† "Koumiss" (*Ph. J.*, December 24, 1892).

* Read at the British Pharmaceutical Conference, held at Belfast, August, 1898.

ALGINOID IRON, AND SOME OTHER ALGINOIDS.*

BY E. C. C. STANFORD.

The property of passing through the stomach unchanged is possessed by few if any medicines, hence where this is desired, it is usually necessary to cover the medicament with such a body as keratin, on which the stomach has no action. A complete series of therapeutic compounds having this general property would be new to medicine, would probably give rise to new developments, and add considerably to the physicians' weapons for attacking disease. Such a series appear to be presented in the alginates. As far as has been ascertained, alginic acid and its insoluble medicinal salts, iron, zinc, mercury, bismuth, lead, silver, antimony, arsenic, etc., are unacted on by the gastric digestion, and pass the stomach unchanged. Hence the action of these metals may be expected to present some differences or variations of the ordinary effects when presented in this form, and for a distinctive and expressive name I call these "Alginoids."

I have represented the chemical formula of alginic acid as $C_{76}H_{80}N_2O_{22}$.† It is a strong acid evolving carbonic acid from the alkaline carbonates in the cold; however it is assimilated and it is known to be a nutritious food. The soluble alginates are those of the alkaline metals and of magnesium. The insoluble salts are of the other alkaline earths and of the heavy metals.

ALGINOID IRON OR FERRIC ALGINATE.—Ferrous salts are not precipitated by sodium alginate, the ferric salt is obtained by decomposing ferric chloride with sodium alginate, both in solution. A gelatinous brown precipitate is obtained. When dry it forms a tasteless insoluble brown powder, having a composition leading to the formula $C_{76}N_{77}Fe_3N_2O_{22}$. It contains 10.97 per cent. of Fe.

It is soluble in ammonia, forming a deep reddish-brown solution, which on evaporation becomes insoluble in water, so that the alginoid iron can be administered in a liquid form.

The dry powder has, however, been mostly administered, and in all cases of anæmia and chlorosis, even where gastric ulceration was present, it has been well borne, and showed a sedative action by arresting vomiting and sickness. It can be employed, therefore, when other preparations of iron would not be tolerated. Being quite tasteless it is readily taken by children. It has no astringent effect on the bowels, and does not produce constipation, on the contrary the effects are slightly laxative. It is given in doses from 2 to 15 grains. Some physicians have found the former dose quite effective.

I shall only now shortly refer to some other alginoids, specimens of which are on the table. The therapeutic trials of these are not yet complete, and this is therefore only a preliminary notice.

ALGINOID BISMUTH OR BISMUTH ALGINATE.—This compound is a yellow powder containing 32 per cent. of Bi. It is prepared by decomposing bismuth nitrate by sodium alginate, both in solution. It is soluble in ammonia, remaining soluble on evaporation, and this gives us another form of liquor bismuthi, miscible with water.

ALGINOID MERCURY OR MERCUROUS ALGINATE is obtained by decomposing mercurous nitrate with sodium alginate both in solution. This compound presents a grey powder containing 33 per cent. of Hg, or about the same as the officinal grey powder and blue pill. It is blackened by ammonia. It is expected that this preparation will not derange the stomach and digestion.

MERCURIC ALGINATE.—Mercuric chloride in solution is not precipitated by sodium alginate, a distinction from albumin. But mercuric nitrate in solution is precipitated, and the mercuric alginate so obtained is a whitish grey powder soluble in ammonia. This solution does not affect steel instruments.

ALGINOID ANTIMONY OR ANTIMONY ALGINATE is a white powder containing 4.5 per cent. of Sb. It is prepared by precipitating antimony chloride with sodium alginate, both in solution. It is soluble in ammonia, giving therefore another solution of antimony, miscible with water. The residue on evaporation remains soluble in water.

ALGINOID ARSENIC is a white powder prepared by precipitating arsenic chloride with sodium alginate. It is soluble in ammonia, affording another liq. arsenici, which may have some advantages. The residue on evaporation remains soluble in water.

ALGINOID ALKALOIDS (morphia, 35 per cent.; strychnine, 50 per cent.).—All the alkaloids combine with alginic acid, and the salts are soluble in water—for instance, we may have another liquor strychninæ alginatis which certainly will not crystallise, all the alginates being gelatinous.

ALGINOID MAGNESIA.—It is remarkable that this is a soluble salt; the two insoluble compounds, alginic acid and magnesia, combine in the presence of water to form a clear solution. If magnesium carbonate be used, carbonic acid is evolved. The formula is $Mg_5(C_{76}H_{77}N_2O_{22})_2$. It contains 4.2 per cent. of Mg. In a 40 per cent. solution it makes a good gum for adhesive purposes.

All the alginoid solutions keep perfectly.

I hope to refer more fully to these and to some other alginoids in a future communication. However, I have sufficiently indicated the character of these preparations to lead to some of those valuable suggestions which are so often obtained from the members of this Conference.

A QUICK POLARIMETRIC METHOD FOR THE DETERMINATION OF STROPHANTHIN IN THE B.P. EXTRACT AND TINCTURE.

BY EDWIN DOWZARD, F.C.S.

The following method will be found useful as a means of approximately determining the amount of strophanthin in the B.P. tincture and extract:—

100 C.c. of tincture is evaporated down to about 20 C.c. on a water bath, 2 C.c. of a solution of basic acetate of lead then added, the mixture heated for a few minutes, and filtered, the precipitate being washed twice with warm water. The filtrate and washings are evaporated to about 10 C.c. and made up to exactly 20 C.c. with water, a portion of which is passed through a dry filter. The optical rotation of the filtrate is then taken in a 200 Mm. tube, using an instrument of the Laurent half-shadow type.

One minute is equivalent to .03 gramme strophanthin per 100 C.c. of the liquid examined.

Example:—

100 C.c. of the 1885 tincture were treated as above; the rotation equalled $+0^{\circ}30'$.

$$\therefore \frac{0.03 \times 30}{5} = 0.18 \text{ gramme strophanthin in 100 C.c. tincture.}$$

It is necessary, of course, to divide the rotation by five, as the liquid is five times stronger than the original tincture.

In the case of the extract, the determination must be made before the reduction with milk sugar.

1 gramme of extract is dissolved in 5 C.c. warm water. 2 C.c. solution of basic acetate of lead are then added, the mixture heated for a few minutes and filtered, the precipitate is washed with warm water until the filtrate and washings measure 20 C.c. The rotation is then observed, and the amount of strophanthin calculated therefrom as in the tincture.

* Read at the British Pharmaceutical Conference, held at Belfast, August, 1898.
† *Journ. Soc. Chem. Ind.*, 1886, p. 218.

* Read at the British Pharmaceutical Conference, held at Belfast, August, 1898.

ON THE SALIENT FEATURES OF THE IRISH FLORA.*

BY G. C. DRUCE, M.A., F.L.S.

Last time I had the privilege to address the members of the Conference, I was permitted to draw their attention away from the more strictly scientific and practical side of our calling to a subject which was once considered to have interest to all pharmacists, at any rate for that short period of their existence which was spent in preparing themselves for the qualifying examination of a pharmacist, but which, alas! is now being pushed more and more out of our pharmaceutical curriculum; I mean the systematic and morphological branches of that huge and unwieldy science known as botany. Such names as Bentley, Daniel Hanbury, Stoddart, Brady, Henry Groves, and Deane we know placed a high value on that portion of pharmaceutical training known as field botany. Therefore I welcome the kind offer to spare me a few minutes while I endeavour to sketch the salient features of the Irish flora. Those who had the misfortune to be present when I traced the special characteristics of the Scottish flora last year may perhaps remember that I pointed out that it was the alpine flora which was especially represented in Northern Britain, and its chief similarities and alliances were to be found in the Scandinavian flora, of which the Scottish appears at one time to have formed a part. I then said that I believed I had been fortunate enough to prove the presence of another Scandinavian sedge on the Breadalbane Mountains. That the plant I gathered then is the true *Carex helvola* I have since demonstrated to the Linnean Society. Moreover, a new species of grass named *Poa cenisia* var. *flexuosa*, and a new variety of *Ranunculus acris*, known previously only from Greenland, were also gathered by me in Perthshire last year.

Politicians have found Ireland a troublesome nut to crack, and to the phytogeographer Ireland also present its difficulties. Owing to its insular position, its contiguity to the melancholy ocean, and to the effect of the Gulf stream, which surrounds the whole coast, the climate of Ireland is, especially in the west, more moist and equable than Britain, or, in fact, any part of Europe in the same latitude. I have not attempted to prepare a table showing the rainfall of Ireland, nor can we trust the statements made by British tourists, since I believe the most accurate of them peril their hopes of salvation by the statements they make regarding the rainfall of Connemara, but it will be safe for me to say that the rainfall on the western side is higher than that of the western side of Britain in the same latitude (I am excluding from this the Lake district of England) and that the rainfall on the western side of Ireland is very nearly three times as much as that on the eastern shores. The mean temperature of the summer months is about two degrees lower than in Britain, and although this sounds only small, yet this trifling variation has very great and far-reaching effects on the vegetation, rendering, indeed, wheat cultivation, which in England is not indeed a more lucrative occupation than our own much suffering business, a most precarious crop, so that over a large portion of Western Ireland it is unknown.

Not only, therefore, have we in Ireland a lower summer temperature, a heavier rainfall, but we have a more humid atmosphere and a smaller amount of sunshine than in England. All these are factors in producing a flora whose elements differ considerably from that of the adjacent island.

From the table, which is only approximately accurate, it will be noticed that the species of flowering plants are relatively much fewer in number than in England, that is, in the proportion of 18 to 10, while England is poorer by nearly three times than Spain. As compared with Spain, and to a certain extent with

England, Ireland is especially deficient in large, bright-coloured flowers such as are to be found in the Compositæ, Labiateæ, and the Leguminosæ, which essentially depend for their fertilisation upon butterflies and other insect visitors, while it will be observed

European Species, roughly 10,000.

	Spanish.	British.	Irish.
Dialypetalæ	2159	690	372
Gamopetalæ	1749	487	264
Apetalæ.....	242	140	84
Angiospermæ	840	438	244
Gymnospermæ	36	5	3
Filices, etc.....	66	71	52
	5092	1833	1019

that the rushes, sedges and grasses which have not conspicuous flowers and are chiefly wind-fertilised plants are, comparatively speaking, represented to a much greater extent.

Types.

	British.	Oxfordshire.	Irish.
Atlantic	70	3	41
Germanic	127	39	18
English British.....	931	737	785
Scottish	117	3	66
Scandinavian or Highland.....	120	—	40

I now direct your attention to a table which shows the distribution of certain types. By this it will be seen that, as might be expected, there is a great falling off in the occurrence of what are called Germanic types, which in England attain their maximum of development in the Eastern counties, and belong to a central European type of distribution. Out of the 130 possessed by England, only about 20 are found in Ireland, and several of these are not native. In the Scandinavian or high alpine species, of which Great Britain has 130, only about 40 are recorded for Ireland; these latter occur chiefly in the north and west of the Island. I remember the first time I ascended Mangerton, in Co. Kerry, I said, having in mind the Cairngorms and Breadalbanes, "Why, here is a mountain without alpine plants, and although it does possess some, they are few, not only in number of species, but also of individuals, either on that mountain or on the higher and more cragged Carran Tual. But it must not be imagined, from the negative qualities I have mentioned, that to the botanist Ireland is a desert. Such is by no means the case. I shall leave the north, whose acquaintance I now make for the first time, but as long ago as 1875, I worked the west coast and walked from Westport to Galway over a country made up to a great extent of dreary moorland and bog, but in which there were oases of great natural beauty in which I gathered many interesting plants, some of which are found nowhere else in the British Isles. I shall now proceed to enumerate the chief of these plants which are peculiar to Ireland, and to glance at the types of distribution to which they belong. We have seen that over 800 species found in Great Britain find the Irish Channel too wide a streak for them to cross. On the contrary about twenty-three species occur in Ireland which are not found in Great Britain. These consist of a rock rose, *Helianthemum guttatum*, growing in Galway and County Cork, which, although common in the Channel Islands* exists only as a variety or sub-species in Anglesey, this variety, being also found in Ireland at Inishbofin. Curiously enough the common yellow rock-rose, so frequent on the English chalky hills

* With which I am assuming the Cork plant to be identical; if not, and it is the same as *H. breweri*, we must delete it from the list as *H. breweri* is found in Anglesey.

* Read at the British Pharmaceutical Conference, held at Belfast, August, 1898.

and limestone pastures, is very rare in Ireland. In Sligo, a Caryophyllaceous plant, the *Arenaria ciliata*, is found near Ben Bulbin, at an elevation of some 1500 feet. This rare and local species is common in some parts of the European Alps, and I have gathered it near the juncture of the Austrian and Italian frontiers, on the Stelvio pass, at nearly 8000 feet. A closely allied species, or possibly a variety, is found in Sutherland and the Shetland Isles, and is known as *Arenaria norvegica*. Two species or varieties of the genus *Rubus* have been described recently from the West of Ireland. The order Saxifragaceæ is well represented in Ireland, both in species and number of individuals; four or five species occur which are not native in Britain. One of these, the common London pride of our gardens, the *Saxifraga umbrosa*, is abundant in the Killarney mountains, and is found from Donegal to Waterford. Two nearly allied species, *S. hirsuta* and *S. Geum*, are more local and rare, being confined to Cork and Kerry. Two cut-leaved species are also found in the south-west, namely, *S. Sternbergii* and *S. hirta*. The great order Compositæ only yields a single species which does not occur in Britain,* namely, the singular *Inula salicina*, which is found on the north-west shore of Lough Dearg, in Galway, and probably two or three varieties of the hawkweed genus may be endemic. The Heath order affords four species, namely, the *Mediterranean heath*, which is local in Galway and Mayo, and *E. Mackaii* occurs in the neighbourhood of Roundstone. The latter is considered to be a hybrid of *E. ciliaris* and *E. Tetrix* by some botanists, but in our more recent books it is given specific rank, and it is certainly not identical with undoubted hybrids of the two plants which I have gathered near Truro. The third species of the Ericaceæ is the St. Dabeoc's heath, now scarcely recognisable under the name *Boretta cantabrica* (the name is not derived from the biretta used in the same district). This St. Dabeoc's heath is one of the most beautiful of our native plants, as it has large bells of a charming purplish-red colour, and leaves whose upper surface is of a dark glossy green, but are silvery white underneath, and when seen growing by some trench where the *Osmunda* luxuriates it forms a sight which will scarcely be effaced from the recollection of the plant-lover. The fourth species is the strawberry tree, *Arbutus Unedo*, whose wood is to the Killarney shops what the olive-wood is to those of the Southern Littoral. The arbutus forms a small but handsome tree, having beautiful effects of foliage, and is especially noticeable in that portion of the drive from Glengarriff to Killarney, after one has passed the summit level, down to the lakes, a drive which, in my opinion, affords the most beautiful combination of lake and mountain scenery, and of exquisite variety of foliage, which is to be found in the British Isles.

In the same district of Cork and Kerry is to be found a Lenticulariaceæ insect-eating plant, the great Irish butterwort—*Pinguicula grandiflora*, whose magnificent blue flowers are a striking sight. This was planted near Penzance, and has now become naturalised there. Two species of the Orchidaceæ are found only in Ireland, one, the *Habenaria intacta*, which was discovered by Miss More, the sister of my late friend, the joint author of 'Cybele Hibernica,' in the limestone pastures of Galway, Clare and Mayo, near Lough Corrib and the other still more interesting species, the Irish lady's traces, *Spiranthes Romanzoffiana*, which was first discovered by Mr. Drummond at Berehaven, near Cork, in 1810, and which has recently been found in the north of Ireland, in Armagh and Derry, but is known for no other European locality. The order Iridiaceæ affords *Sisyrinchium angustifolium*, which grows in meadows near Woodford in Galway,

* *Theracium hibernicum* is said to be extinct.

and also in Kerry, and has blue flowers, and in 1896 my friend the Rev. E. S. Marshall found on the eastern coast of Ireland, in Wexford, the yellow-flowered *Sisyrinchium californicum* in large quantity and completely naturalised, but of whose indigenuity I am not yet convinced. One plant of the Pondweed order also occurs in Ireland only in the United Kingdom, namely, *Potamogeton sparganifolius*, which is found in Galway. One sedge, *Carex rhyncophysa*, has recently been added to the Irish flora from the central part of Armagh, where Mr. Praeger found a single tuft near Mullaghmore Lough. Two horsetails, one a species *Equisetum Moorei*, so named after the well-known botanist of Glasnevin, occurs in Wicklow, and the other one, a variety of *E. variegatum* called *Wilsoni*, has a wider range of distribution. A single hybrid fern, *Asplenium Clermontæ*, has been found, and three species of Characeæ, *C. denudata*, *C. tomentosa*, and *Tolypella nidifica*, complete the list of plants which occur in Ireland only in the United Kingdom. Most of these will be found to belong to the Peninsular group, so called from the fact that these plants have their headquarters in the Spanish Peninsular, and by some authorities are said to suggest a former continuity of land between the two countries. In addition to the special species mentioned there are some other species of the Peninsular group which occur in Ireland, such as *Erica ciliaris*, *Trichomanes radicans*, *Adiantum Capillus-veneris*, *Simethis bicolor* (now almost destroyed at Bournemouth), and *Euphorbia hiberna*.

I said that these Irish plants belonged to different types of distribution; by far the greater number belong to the Peninsular group, but *Arenaria*, *Inula*, and *Carex rhyncophysa* are somewhat anomalous. Three belong to a group we should not expect to be represented in the British Isles, and that is the American group; to this belong the *Spiranthes* I have already alluded to, and this is found chiefly on the western side of North America and in the Rocky Mountains, but not elsewhere in Europe. The second is the blue-flowered *Sisyrinchium angustifolium*, which is only of adventitious occurrence elsewhere in Europe; the third being the yellow-flowered *S. californicum* from the western side of North America, is a doubtful native of Ireland. A fourth member of this American group is abundant on the margins of lakes in Connemara and elsewhere on the west coast of Ireland, but, unlike the first three members of the group, *Eriocaulon septangulare*, extends its range to Skye and the Western Hebrides in Scotland, where it is very local. This plant may have been introduced to Ireland from America by the agency of birds.

I have thus briefly glanced at the salient features of the Irish flora, and can promise any botanist who may have leisure that there is an enormous amount of work to be done at the Irish flora before we can say that it is known in the same sense as that of Britain. To those who have time and energy a pleasant task awaits them in exploring some of the wild and beautiful scenery of the Emerald Isle, which always offers a hearty and cheering welcome to any visitor to its shores.

IODOL IN THE TREATMENT OF ANGINA.—In daily doses of 60 centigrammes, iodol has been given by Maldarescu with good results in angina pectoris. The attacks of pain, which had occurred daily and had not yielded to treatment with any other drug, disappeared entirely after the fourth day of treatment with iodol. Iodol was also found to be of great value in acute paracetritis, causing rapid re-absorption of the local exudation. The remedy may be safely given during pregnancy.—*Bull. Gén. de Thérap.*, cxxxiii., 474, after Vratch.

A NOTE ON THE BOTANICAL NOMENCLATURE OF THE BRITISH PHARMACOPŒIA.*

BY G. CLARIDGE DRUCE, HON. M.A. (OXON), F.L.S., ETC.

The botanical names for the plants yielding the various drugs which are included in the British Pharmacopœia have in some cases undergone alteration from those employed in the last edition, but the changes in almost all cases are made in the right direction, and the compilers are to be heartily congratulated on the result of their labours. The selection of the names is evidently based on the law of priority of publication, and the date 1753 (which I suggested in the *Pharmaceutical Journal*, March 26, 1892, p. 789) appears to be taken for the citation of both genera and species, this has a distinct advantage over the dates of the publication of Linnæus 'Systema' of 1735 and of the first edition of the genera of 1737.

In a few instances it appears to me that the law of priority has not been complied with, and I venture to point them out, rather with a view to elicit the reasons which led to the choice of the names employed than to claim absolute authority for those which are here suggested.

CITRUS AURANTIUM, VAR. BIGARADIA, Hook. fil., is now adopted for the bitter orange. May I suggest that Linnæus, in his first edition of the 'Species Plantarum,' described it as *C. Aurantium*, and gave as a var. *b*, the sweet orange, so that it appears *C. Aurantium*, Linn., would have been sufficient to distinguish the bitter orange. If a name exclusively referring to it were needed, it would seem that *C. vulgaris*, Riss. (published in 'Ann. Mus. Par.,' xx., 1813, p. 190) has precedence over *C. Bigaradia*, which appears to have been first published in Loiseleur's edition of Duhamel's 'Traites des Arbres et Arbustes,' vol. vii., 1819, p. 99.

ARARоба.—According to strict priority the name *Andira* is superseded by Aublet's genus *Vouacapoua*, published in the 'Histoire des plantes de la Guiane Française Suppl.' p. 9, t. 373 (1775), while Lamarck's genus *Andira* only dates from the 'Encyclopédie Méthodique,' vol. i. (1783), p. 171. In the 'Revisio Generum Plantarum,' Otto Kuntze chose Aublet's name, but altered the spelling to *Vuacapua* in order to bring Aublet's vernacular name closer to classical rule. Since other vernacular names are adopted, with the spelling unchanged, in the 'Genera Plantarum' of Bentham and Hooker, it would appear better, assuming that Kuntze is correct in his statement that Aublet's genus is valid, to follow the original spelling and write *Vouacapoua Araroba* (Aguiar).

BALSAMII PERUVIANUM ET TOLUTANUM.—The generic name *Toluiifera* of Linnæus' 'Species Plantarum' of 1753 (which he also used in the 'Materia Medica' of 1749 and his 'Genera' of 1742), has precedence over *Myroxylon*, which appears to have been established in 1781 by the younger Linnæus in his Supplement. I would suggest the name *Toluiifera Pereira*, 'Baillon Hist. Plantes,' vol. ii. (1869), p. 383, and *Toluiifera Balsamum*, 'Linn. Sp. Pl.,' p. 384 (1753), for the plants yielding Peru and Tolu balsam.

GAMBOGE.—The original spelling of the gamboge plant in the *Journal of the Linnean Society* for 1875, vol. xiv., p. 485, was *Garcinia Hanburyi* not *Hanburii*.

CAPSICUM.—Flückiger and Hanbury say that Farr has ascertained that the official plant is identical with *Capsicum frutescens*, Linn., 'Sp. Pl.,' p. 189 (1753). If this be the case, should it not be substituted for the name *C. minimum*, Roxb.? There is also a *C. minimum* of Blanco from the Philippines, which appears to be a different species. The fact that the plant referred to in the 'Hortus Cliffortianus' by Linnæus is not identical with *C. frutescens*

of the 'Species Plantarum' does not appear to be a sufficient reason for rejecting the latter name.

CATECHU.—In this case there is an earlier name which was given to the genus *Catechu* by Aublet in the 'Histoire des Plantes de la Guiane Française' of 1775, p. 177, t. 68. Otto Kuntze, in the 'Revisio Generum Plantarum,' vol. i., p. 201, took up Aublet's genus, but, as in the case of *Vouacapoua*, altered the spelling to *Uruparia*. Schreber's genus *Uncaria* only dates from the 'Genera' of 1789. Assuming that Aublet's publication is valid, our plant should be *Ouroparia Gambier* (Roxburgh) = *O. Gambir*, Baill., 'Hist. Plantes,' vol. vii., p. 350.

CIMICIFUGA RACEMOSA, Elliott.—The date of the publication of 'A Sketch of the Botany of South Carolina and Georgia' where this plant is mentioned by Elliott, is 1824 (see vol. ii., p. 16), but the 'Kew Index' gives an earlier authority, namely, Nuttall's 'Genera of North American Plants,' vol. ii., p. 15 (1818).

COPAIBA.—The name of the genus of plants yielding our drug is given as *Copaifera*, which dates from the second edition of the 'Species Plantarum,' which was published at the end of 1762 or the beginning of 1763. In 1760, however, Jacquin in the 'Enumeratio systematica plantarum, quas in insulis Caribæis vicinaque Americæ Continente detexit novas,' gave the name *Copaiva*. Should this be a valid publication the official plant will have to be called *Copaiva Landsdorffii*, Desf. in 'Mém. Mus. Par,' vol. vii. (1821), p. 377. Among the other species yielding copaiba are *Copaiva officinalis*, Jacq. l.c., p. 21 (1760); *Copaiva coriacea* 'Mart. Reise Brasil,' p. 285; *Copaiva guyanensis*, Desf. in 'Mém. Mus. Par.,' vol. vii. (1821), p. 376; *Copaiva multijuga*, Desf., l.c., rests on rather uncertain identity, since it is said a fragmentary specimen only exists.

CUSO.—In the Pharmacopœia of 1885 the name *Brayera anthelmintica* was displaced by that of *Hagenia abyssinica*; now the former name is restored, but I fail to see the reason. Bruce first described the plant in his 'Travels in Abyssinia,' vol. v., 1790, p. 22-3. In the text it is called *Banksia abyssinica*, but on the plate dated December 1, 1789, it is spelt *Bankesia*. The name, whichever spelling be followed, is invalid, owing to there being an earlier genus, *Banksia* in the Proteaceæ. In the 'Systema' of 1791, p. 613, J. F. Gmelin therefore named the Cusso *Hagenia abyssinica*, and this name was adopted by Willdenow in the 'Species Plantarum,' vol. ii., p. 331, of 1799. The earlier *Hagenia* of Mönch is not a competing name, since it is now sunk in *Saponaria*. The genus *Brayera* was not established by Kunth until 1824, when he published it in Brayer's 'Notice sur une Nouvelle Plante de la Famille des Rosacées.' In passing I may say that Bruce spelt the name of the drug "cusso."

FILIX-MAS.—The name of the male fern is given as *Aspidium Filix-mas*. In most works on English botany *Lastrea* is the name used for the genus, and this was established by Presl in 1836 as distinct from *Aspidium*. The oldest name for the genus appears to be *Dryopteris*, which was used by Adanson in vol. ii., p. 20, of his 'Famille des Plantes' of 1763, and where he diagnoses the genus. Our plant is *Dryopteris Filix-mas*, Schott, 'Gen. Fil.,' sub. t. 9 (1836).

FŒNICULI FRUCTUS.—The name *Fœniculum capillaceum*, Gilibert, 'Flora Lituan,' vol. ii. (1782), p. 40, is retained, but the oldest name is *F. vulgare*, Miller, 'Gardener's Dictionary,' ed. 8 (1768).

MENTHOL.—*Mentha arvensis*, D.C., is stated to be one of the plants yielding it, but the authority for *M. arvensis* is Linnæus in the 'Species Plantarum' of 1753, p. 577, not De Candolle. *M. piperita*, Smith, should be cited as of Hudson, since he described it in the 'Flora Anglica' of 1762, long before Sir J. E. Smith. Linnæus also gives a *Mentha piperita*, but there is some doubt as to the exact

identity, since Sir J. E. Smith says it is represented in the Linnean Herbarium by a form of *Mentha aquatica*.

MYRRHA.—It is a pity that the name *Commiphora* which is adopted by some continental pharmacopœias for the plant yielding myrrh should not have been chosen, since it was established by Jacquin in the 'Plantarum rariorum horti cæsarei Schonbrunnensis descriptiones et icones,' vol. ii. (1797), p. 66, and has considerable priority over the name *Balsamodendron*, which was not founded until 1824 by Kunth in the 'Annales Sciences Naturelles, sér.' i., vol. ii., p. 348. The name of the myrrh plant is *Commiphora Myrrha*, Engler, in D.C. 'Mon. Phan.', vol. iv., p. 10.

OLEUM MENTHÆ VIRIDIS.—In the first edition of the 'Species Plantarum,' the spearmint was described by Linnæus as *Mentha spicata*, var. *viridis*. In the second edition of 1762, he gave it specific rank as *M. viridis*. Meanwhile, Hudson, in his 'Flora Anglica,' had previously described it as a species under the name *M. spicata*. It is a question, therefore, whether the name should not be *M. spicata*, Huds.

OLEUM ROSÆ.—The authority for *Rosa damascena* is not Linnæus but Miller, who first described it under that name in 'Gardener's Dictionary,' of 1768.

PAREIRÆ RADIX.—The name of the plant is given as *Chondrodendron tomentosum*, but it is spelt, against etymological rule, *Chondodendron* by Ruiz and Pavon in the 'Syst. Veg.,' p. 261.

QUILLAIÆ CORTEX.—The specific name should be spelt with a capital, as *Q. Saponaria*, as should *Citrus Medica*.

SINAPIS NIGRÆ SEMINA.—The name of the black mustard is given as *Brassica nigra*, Koch, which was founded in Roehl's 'Deutsch. Flora,' ed. 3, vol. iv., p. 713, of 1833, but Roth, in his 'Manuale' of 1830, vol. ii., p. 957, had previously called it *Brassica sinapioides*, and until British botanists accept the permanence of the specific names as a rule of nomenclature, the latter name should be adopted.

THE CHEMISTRY OF THE PHARMACOPŒIA.*

BY ARTHUR L. DORAN, M.P.S.I.

The request to write an introductory paper on the chemistry of the British Pharmacopœia, for Conference, was received early in July with mixed feelings. For, on the one hand, was it not a pleasant proof that all the leaders of pharmacy in the adjacent island did not endorse the opinion so recently expressed post-prandially and euphemistically by a well-known English professor to the President of the Pharmaceutical Society of Ireland? For which see, *mutatis mutandis*, Nathanael's reply to Philip. And again, on the other hand, it is equally plain that so soon after publication there are only two kinds of critics adequate to the proposed task—the purely professional chemist engaged constantly in devising, testing, and teaching processes, hence fully cognisant of the historical data of any given question; and the technical chemist in the wholesale laboratory, whose science, though not necessarily less pure than that of the former, is often limited by the exigencies of commercial dispatch and by a less ample dower of apparatus.

It is surely to be regretted that the wholesale houses on this side of the water are so neglectful of similar work, of which it may be at once stated that it is not only an ethical duty, but also a business investment of the soundest character. In some of the criticism already published one may be excused for detecting an apparent desire to say something detrimental at an early date rather than the better part of selecting for commendation undoubted advances and improvements on the previous edition. In general,

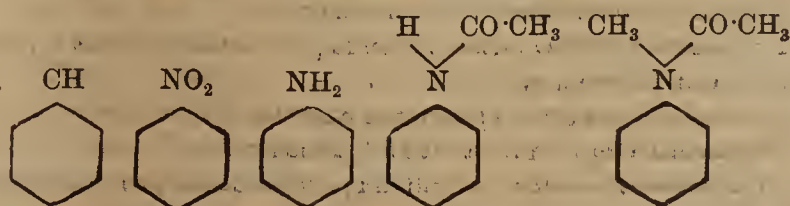
we may say that the chemistry of the new B.P. presents nothing particularly novel, and has been familiar to most of us for a long time, although a good deal of it escaped incorporation in the revision of 1885. Changes in chemical nomenclature and a militant metric system becoming triumphant—indeed, reigning alone in the purely scientific work—were to be expected, while the deletion of technological matter, removal of common reactions to the appendix, and adoption of a principle of limits for purity tests, are natural results of having so illustrious a triad of "referees," one of whom we delight to honour as *homo clarissimus Dublinensis*.

I cannot agree with the strictures that have been passed to the effect that the instructions given for testing are superfluous to the brained analyst and insufficient to the tyro. The chemical instructions of the B.P., I take it, are intended for the average man who may well need a mnemonic, be he an M.D. some time removed from his College course, or a chemist made in the Square or at Mount Street. It should be remembered that in the vast majority of cases it is good negative evidence alone that will be requisite, and that if impurity or adulteration be indicated it will have to be proved by more than one method, and for this long apprenticeship to the science together with considerable aptitude will as a rule be necessary.

The introduction of reasonable standards of purity, conforming to good commercial specimens, is of the greatest importance at a time when the usage of citing the B.P. as a legal standard under the Foods and Drugs Act has become well-established. In so comprehensive a work as the B.P., doubtless after a time some of the standards adopted will be found open to objection and in need of revision, and it is especially here that I think the services of many able and willing pharmacists throughout the United Kingdom might be enlisted to work, either alone or in conjunction with a local association in such a manner that a maximum number of observations and determinations would become available on such questions arising.

As an example may be mentioned a recent experience of my own in the case of a newly-introduced compound—bismuth salicylas. Of a number of specimens examined, not one failed to give more or less violet coloration when test solution of ferric chloride was added to the 90 vol. alcohol washings. One specimen was so grossly impure that salicylic acid was deposited on the funnel on filtration, and I merely mention this to draw attention to the fact that the therapeutical reputation of this chemical would necessarily be ruined by such a mixture.

By the statement in the Preface—that constitutional formulæ are given rather than empirical for organic chemical substances, and that the revisers were only stopped short of graphic representation by the limitations of page area—attention is obliquely drawn to the great importance of these latter, constituting as they do a chemical shorthand that not only informs one of their probable chemical behaviour but in many instances of their physiological action. A single example must suffice of the way in which these formulæ must be applied to working out an answer to such a question as "What is exalgine?" Diagrammatically thus:—



and recollecting that it is a characteristic of amidogen substituted derivations of the aromatic group to exhibit antipyretic properties, we see why the second last of these compounds finds a place

* Read at the British Pharmaceutical Conference, held at Belfast, August, 1898

in medicine. Moreover, the substitution of an alkyl group, particularly methyl, in the amidogen powerfully modifies the properties of the compound in the direction of conferring analgesic power, hence we expect and find that exalgine or methyl acetanilide possesses such power. And every correct instance of this sort is a step nearer to that great object of modern chemistry—the synthesis of bodies possessing properties primarily determined on.

I beg to close this cursory review of impressions and convictions with the hope that in any future Pharmacopœia revision the General Medical Council will pursue still further the wise and dignified policy of delegating detailed work to the hands best suited to properly execute it, being mindful of the Napoleonic dictum, *La carrière ouverte aux talens*, so that we may come to possess at last a work resting firm and unassailable on the triple support of expert, commercial, and officinal knowledge.

A SHORT NOTE ON LIME WATER.*

BY E. J. EVANS.

A few experiments were attempted with the above subject in view of the late prosecutions under the Foods and Drugs Acts.

1. Lime water was made with 2 oz. freshly slaked lime to the gallon, and allowed to stand 24 hours.

100 C.c. of this solution filtered required 49 C.c. N/10 vol. HCl.

2. Lime water made with the same quantity of lime hydrate, but the lime washed with a little water previous to using.

100 C.c. filtered required 49.5 N/10 vol. HCl.

3. Ordinary shop solution.

100 C.c. required 48 C.c. N/10 vol. HCl. This solution had been kept about a month in contact with the slaked lime.

4. No. 1 solution kept in a flask covered with a chip box lid in contact with the excess of lime for a week and then tested.

100 C.c. required 47.5 C.c. N/10 vol. HCl.

5. No. 2 solution was kept in a flask covered with a funnel, in contact with the excess of lime.

100 C.c. required 48 C.c. N/10 vol. HCl.

6. Lime water was made with water to which 16 grains of $MgSO_4$ per gallon had been added.

100 C.c. required 50.7 C.c. vol. N/10 HCl. A week later 100 C.c. required 50.5 C.c. vol. N/10 HCl.

7. Lime water made by water containing 16 grains of alum to the gallon.

100 C.c. required 50.2 C.c. N/10 vol. HCl. A week later 100 C.c. required 50.25 C.c. N/10 vol. HCl.

8. Lime water made and tested fifteen minutes after mixing.

100 C.c. required 51.0 C.c. vol. N/10 HCl.

9. No. 8 solution after fifteen minutes longer.

100 C.c. required 51.7 C.c. N/10 vol. HCl.

B.P. requirement—

100 C.c. require 42.0 N/10 HCl or H_2SO_4 .

10. Lime water made with water contain 1/10 vol. of CO_2 .

100 C.c. required 49.0 C.c. N/10 HCl vol.

11. Lime water made with water contain 1/2 vol. of CO_2 .

100 C.c. required 39.0 C.c. N/10 vol. HCl.

Two ounces of lime hydrate is too large a quantity to use if the lime used is fairly pure.

Theoretically 96 grains or 6.2 grammes would be required.

Experiments with and tested an hour after :—

(a) Solution 72 grains to gallon required 30 C.c. vol. N/10 HCl per 100 C.c.

(b) Solution 96 grains to gallon required 37 C.c. vol. N/10 HCl per 100 C.c.

(c) Solution 120 grains to gallon required 40 C.c. vol. N/10 HCl per 100 C.c.

After twenty-four hours 41.5 C.c. N/10 vol. HCl per 100 C.c.

(d) Solution 144 grains to gallon required 43.0 C.c. vol. N/10 HCl per 100 C.c.

After twenty-four hours, same.

From these experiments it would seem that lime water can be made in a few minutes, if a fairly pure caustic lime be recently slaked before using. Also that when intended to be kept, the lime water should be in contact with the excess of lime used.

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE FOOD AND DRUGS ACT.

At the Abergele Petty Sessions, North Wales, on Saturday, August 6, Superintendent Jones, of the Denbighshire County Police, summoned Mr. Thos. Williams, grocer and baker, Pensarn, Abergele, for selling tincture of rhubarb and sweet spirits of nitre, which were not of the quality and nature demanded.

The defendant was represented by Mr. E. A. Crabbe, solicitor, Abergele. The sale of the articles was admitted.

Superintendent Jones produced the certificate of Mr. Lowe, Chester, county analyst, which showed that the tincture of rhubarb was as follows :—Specific gravity at 60° F., 0.95; alcohol (by weight), 34.56 per cent.; extract, 4.76; water, 60.68. The words added by the analyst to the above were: "Only about three-quarters of amount of alcohol ordered by the British Pharmacopœia." The analysis as to the sweet spirits of nitre was as follows: "Specific gravity at 60° F., 0.85; ethyl nitrite, 0.32 per cent. Only about one-sixth of the amount of active principle, ethyl nitrite, ordered by B.P."

For the defence Mr. Crabbe said that the defendant had acted in ignorance. He kept the tincture of rhubarb for the convenience of the residents of Pensarn, which did not possess a chemist's shop. It was bought from Messrs. Bell and Son, Liverpool, and defendant was assured that it complied with the legal requirements. He produced the bottle in which the tincture of rhubarb was sent to defendant, the label bearing the words: "Tincture of Rhubarb, B.P." The wholesale firm now admitted that it was not up to the British Pharmacopœia strength, and that it was mixed with other ingredients to make it more palatable. Under the circumstances he was bound to plead guilty with regard to the tincture of rhubarb, but he had a defence as to the sweet spirits of nitre.

Dr. Wolstenholme (a magistrate) pointed out that the tincture was kept in a bottle with an ordinary cork. It was clear that the defendant had been deceived. Messrs. Bell and Son should certainly make it good to the defendant, who he was sure would not knowingly commit an offence, but had kept the tincture for the benefit of the public.

Superintendent Jones remarked that defendant had his remedy against Messrs. Bell and Co.

Mr. Crabbe replied that unfortunately that was not so, as it had been invoiced to the defendant as "Compound tincture of rhubarb."

The Chairman of the Bench said it was a hard case, and, unfortunately for defendant, the costs were heavy. Defendant could not be said to be responsible, but the analyst's certificate was conclusive. As the costs in the tincture of rhubarb case came to 18s., defendant would be fined the nominal sum of 6d.

The case of the sweet spirits of nitre was then taken, and Mr. Crabbe argued that defendant was entitled to a dismissal, as he did not know that the spirit would evaporate. He had kept it in a large bottle, and as a customer asked for it he served it out. Defendant should have sold the spirit in small stoppered bottles as he received it. It was really ignorance of the nature of the spirit that had caused the evaporation.

The Chairman pointed out that there was no charge of adulteration.

Superintendent Jones replied that he did not charge defendant with adulteration. He complained that the sweet spirits of nitre were not of the nature and quality demanded. It was robbing the public.

The Chairman said it was hard on defendant, who was fined 6d. and 18s. costs.

* Read at the British Pharmaceutical Conference, held at Belfast, August, 1898.

SESSIONS OF CONFERENCE.

FIRST DAY'S BUSINESS.

The thirty-fifth Annual Meeting of the British Pharmaceutical Conference commenced its sittings on Tuesday, August 9, in the library of the Queen's College, Belfast, under the presidency of Dr. CH. SYMES, of Liverpool. The commodious hall was well filled, a large number of ladies being present.

The proceedings began with an address of welcome by the LORD MAYOR OF BELFAST, who said he was delighted that the Conference had selected Belfast as its place of meeting this year. Since he had had the honour of holding the office he did, he had the pleasure of welcoming many bodies to that city, but in no case had he done so with greater pleasure than on the present occasion. He had noticed in the transactions that some years ago a resolution was proposed by Mr. Payne, who occupied a very important and honourable position in Belfast, that the meetings of the Conference should not in future necessarily take place at the same time and place as the meetings of the British Association. He thought this a very wise resolution, and he was glad that it was carried, otherwise the Conference could not have met in Belfast this year. It was not necessary to say anything about the city itself, as he trusted its visitors would soon make acquaintance with it for themselves, but he could assure them all of a hearty welcome, not only by the Corporation of which he was the head, but by the various public boards and by the people at large.

Rev. Dr. HAMILTON (President of the Queen's College) also welcomed the Conference to Belfast. It afforded him the greatest pleasure to be able to place the College at the service of the Conference. They had had the honour of receiving many learned and important bodies in the College at different times, but to no body could they give a heartier welcome than to the British Pharmaceutical Conference.

Dr. NELSON (President of the Ulster Medical Association) also briefly welcomed the Conference to Belfast.

Professor WHITLA; in adding his welcome on behalf of the medical profession, said he was regarded as a sort of missing link between the scientific pharmacist and the practising physician. There was no city in the British Empire where there was a closer and more friendly relationship existing between the medical faculty and the pharmacist. In the northern capital of Ireland it had long been recognised that the pharmacist prepared, sometimes discovered, and sometimes even, out of nothing, created the weapons with which the doctors had to fight their battle against disease, and they regarded the pharmacist as a co-worker.

The Presidential Address (see page 149) was then delivered.

Sir JAMES HASLETT, M.P., in moving a vote of thanks to the President for his address, commenced by joining on behalf of the citizens of Belfast in the welcome which had already been extended to the Conference. He was glad to find that this visit had helped to remove any little points of difference which might have existed between various phases of the calling in Ireland, and hoped that the leading differences which existed between the Irish and English practice would soon pass away too, and that there might be one general system of examination and qualification for all, so that the trade might be common to all in England, Ireland, and Scotland. He was aware that there were difficulties in the way, but if the members of the Conference helped to remove them he should be glad. He did not like Irishmen to go to England with any badge of inferiority, because they were equal to most men and superior to all. He hoped some of their good friends who had come over would lose their return tickets, as had happened before to some of their Scotch friends. He did not sympathise with a remark he recently heard that these people would come and spy out the land, set up in opposition, and get all the business. He had no fear of that, for it was cut so fine that there would be no living for an Englishman, and even Irishmen sometimes found it difficult to get potatoes and salt. The President had referred in his address to the question of scheduled poisons, and especially to carbolic acid, which was largely used in committing suicide; but the difficulty in putting such an article on the schedule was no doubt the large extent to which it was used in industry. With regard to methylated spirit his own view was that anyone who could drink it ought to be allowed to do so, and he did not think further legislation was required to prevent them. With regard to the metric system, he feared he was too old to

change his mode of calculation, but he felt quite sure that for young men who could master it, it possessed a simplicity far in advance of the present system. With regard to the connection between medicine and pharmacy, it was as close and intimate as that between the organist and the organ blower, and both parties were equally entitled to claim a share in the result produced. With regard to the Pharmacopœia, no doubt it would have been more satisfactory if practical men had had more to do with it; he could only express his own opinion that it was infinitely inferior to Dr. Whitla's edition. That was by no means such dry reading as the present one, in fact he could bear living testimony to the fact that it was actually fire-proof, for when their premises in North Street were burnt down, it was almost the only thing that escaped destruction, and it still remained, burned outside, but intact within, and he could cordially recommend it for the information it contained. He concluded by an eloquent and sympathetic reference to those who had passed away, suggesting the lesson that all should so fulfil their duties through life that, when called away, they would also be mentioned in similar terms of regret.

Mr. J. C. C. PAYNE, J.P., had much pleasure in seconding the vote of thanks so ably proposed by Sir James Haslett, M.P.

Mr. S. R. ATKINS, J.P. (Salisbury), in putting the vote of thanks to the meeting, said Dr. Symes had given them that day an address full of practical importance.

The resolution having been carried,

The PRESIDENT said he had been somewhat overwhelmed by the manner in which the resolution had been proposed and received. He could only thank the meeting for the attention they had given to his address.

The Lord Mayor then retired:

Letters of regret for inability to attend the Conference had been received from Mr. T. B. Groves (Weymouth), Mr. N. H. Martin (Newcastle-on-Tyne), Mr. F. B. Bengier (Manchester), Mr. Charles Umney (London), Mr. R. Wright (Buxton), Mr. Walter Hills (London), Mr. T. Tyrer (London), Mr. R. Reynolds (Leeds), and Dr. Attfield (London). Professor Remington, of Philadelphia, had also telegraphed his congratulations and well-wishes to the Conference.

Amongst the letters of apology the following were read:—

Leeds,

August 4, 1898.

Dear Mr. Naylor,—Although I cannot have the pleasure of being present at the meeting of the British Pharmaceutical Conference at Belfast, I hope that I may be permitted to express my gratification at the period of vigorous existence which our institution is now enjoying. There is reason to think that the too abundant blows that have fallen upon those who practise pharmacy have had the result of welding their social instincts. The latest illustration of this is a very recent episode in attempted legislation affecting both British and Irish pharmacy. Had this danger threatened longer, we know that with a good cause our united parliamentary forces would have been invincible. Wishing you a very successful meeting,

I am, yours faithfully,

RICHARD REYNOLDS.

Ashlands, Watford,

August 6, 1898.

Dear Dr. Symes,—After making all arrangements to be present at Belfast next week, I am much disappointed at being compelled to forego the pleasure. The sudden rupture of a large cyst that has latterly disfigured my head has placed me temporarily in the hands of the surgeon. Now the resources of surgery, medicine, and pharmacy are fit subjects for the brain of an Editor of a British Pharmacopœia; but when they take the tangible shape of an ugly mass of cotton-wool, phenol, and sticking-plaster on his scalp, they unfit him for the platform of a Pharmaceutical Conference. I am the more sorry because nearly every one of the announced papers has great interest for me. Please convey my regrets to my many friends and accept my congratulations on the apparently assured success of the meeting in both its scientific and social aspects.

Yours faithfully,

JOHN ATTFIELD.

The HON. SECRETARY (Mr. Ransom) then read the following list of delegates to the Conference:—

Pharmaceutical Society of Great Britain.—Mr. W. Hills (President), Mr. G. T. W. Newsholme (Vice-President), Messrs. Atkins, Bateson, Carteighe, Grosch, Johnston, Martindale, Park, Symes, Warren, Young, and R. Bromridge (Secretary).

Pharmaceutical Society of Great Britain (North British Branch).—Messrs. J. Laidlaw Ewing (Chairman), W. L. Currie (Vice-Chairman), J. Bowman, G. Coull, A. Davidson, Fisher, Lunan, Kerr, McLaren, Moir, and Nesbit.

Pharmaceutical Society of Ireland.—Messrs. R. J. Downes (President), G. D. Begg (Vice-President), Connor, Conyngham, Kelly, Montgomery, O'Sullivan, Wells, jun., Professor Tichborne, and Dr. J. A. Walsh.

Brighton Association of Pharmacy.—Messrs. Ashton, Costerton, Gibson, Savage, Weston, and Yates.

Bristol Pharmaceutical Association.—Messrs. Keen and Pitman.

Cambridge Pharmaceutical Association.—Mr. E. Saville Peck.

Edinburgh Chemists' Assistants' Association.—Messrs. Lunan and McLaren.

Forfarshire and District Chemists' Association.—Messrs. C. Kerr (President), Anderson, Davidson, Ferrier, and Naysmith.

of Dorpat, has contributed much to the promotion of pharmaceutical research. By the death of Mr. Michael Conroy, F.C.S., who was a Vice-President at the Liverpool Meeting in 1896, the Conference has lost one of its most able and frequent contributors. His ability and practical experience in technical pharmacy were evidenced in the papers which he contributed and in the part he took in the discussions, while his genial nature brought him into equal prominence in the social functions of our meetings. Amongst others who have passed away, reference must be made to Mr. E. Beynon, whose death followed shortly after his resignation already referred to; Mr. Thomas Glaisyer, who acted as honorary local secretary at the meeting of the Conference in Brighton; and Mr. W. Willmott, who has contributed several papers of interest.

"At the moment of completing this report there comes the sad intelligence of the death of J. E. De Vrij, Ph.D., C.I.E., at the advanced age of 85. As a quinologist he had attained a reputation which gave him rank amongst the greatest authorities in this branch of knowledge. He was also early distinguished as a pharmacist, and later as a naturalist. For twenty-seven years he has been an honorary member of the Conference, and in the 'Year-Books of Pharmacy' are to be found references to twenty-five of his many papers on cinchona bark or its alkaloids. Your Committee desires to pay its tribute of grateful acknowledgment to the memory of him who by his invaluable researches has greatly enriched our knowledge of a most important drug.

"The loss which has annually to be recorded of so many of our active members should stimulate all those who remain to increased energy, and your Committee trusts that the disinterested loyalty which so characterised the founders and early supporters of the Conference may continue to inspire those upon whom the duty devolves to maintain the success of the Association.

The adoption of the report passed unanimously."

FINANCIAL STATEMENT.

Mr. F. R. RANSOM then read the financial statement (see page 206)

Mr. DRUCE (Oxford), in moving the adoption of the report, expressed his regret at the retirement of Mr. Moss.

Mr. BRANSON (Leeds) seconded the resolution, which passed unanimously.

REPORT OF THE UNOFFICIAL FORMULARY COMMITTEE.

Mr. W. MARTINDALE read the report of this Committee as follows:

"In presenting their report the Unofficial Formulary Committee have to inform the Conference that as some of their members were engaged in assisting the General Medical Council in the revision of the British Pharmacopœia during the last three years, it was considered advisable that the Formulary work should be in abeyance until the new Pharmacopœia was published. They have much pleasure in reporting that the Official Pharmacopœia has absorbed eighteen formulæ that were devised by the Unofficial Formulary Committee (some with slight modification). The Committee should now resume active work, and would suggest their reappointment."

Mr. COLLYER (London) proposed the adoption of the report.

Mr. E. SAVILLE PECK (Cambridge) seconded the resolution, which passed unanimously.

The first paper read was by Mr. JOHN MOSS, F.I.C., F.C.S., on

Kieselguhr,

which is printed at p. 168.

Mr. Moss was able to submit a specimen of Australian diatomite in the natural condition as it occurs at Talbot, Victoria, and at Cooma, in New South Wales. They are of different degrees of hardness, but not so hard as the Virginian kind. There were also specimens from Llyn cwm Bychan, in Wales, which are softer still and darker in colour, and a most interesting specimen from the Government Geologist of South Australia, who labels it diatomaceous rock from Port Darwin. The piece was very hard and rocky, and can with difficulty be worn by scraping it with a knife, and it illustrates in a marked manner how sharp the line of demarcation may be between the white unsullied rock and the same rock stained by infiltration of some dark impure liquid.

The PRESIDENT, in inviting discussion, said Mr. Moss told them that a diatom was a plant, which was no doubt true, though in his early days it was termed an animal. It was just on the borderland. In those days one had to go through a long and tedious process to obtain any quantity of diatoms for examination, and he remembered boiling many samples of guano with nitric acid, sulphuric acid, and then nitro-hydrochloric acid, and finally in sulphuric

acid with the addition of a little chlorate of potash; and if any diatoms survived that treatment you might assume it was a very hardy skeleton, and would form an inert powder not likely to be easily acted upon.

Mr. STANFORD asked if Mr. Moss had any experience of the use of kieselguhr as a filtering medium for the exclusion of bacteria. He understood that some filters were made with it.

Mr. RANSOM said he had used the kieselguhr as a filtering medium and found it very excellent, the darker kinds, however, being better than the lighter, presumably because the diatoms in the latter were more broken up, or belonged to the smaller species. Examined under the microscope they differed in size as much as from 1/40 to 1/1000 in. There was no doubt now that diatoms belonged to the algæ and had the characteristics of vegetables.

Mr. MARTINDALE thought kieselguhr would be rather harsh as a dusting powder and seemed to have rather a sticky nature. He did not think it would compare for this purpose with kaolin or talc, except for its absorbent properties, which in some cases would be useful.

Mr. Moss in reply said anyone who had to do much filtering of galenical preparations must sometimes require to filter out bacteria which developed in them, as well as in organic preparations, and he had found kieselguhr most useful for that purpose. His experience coincided with Mr. Ransom's as to the efficacy of these powders; the darker ones did filter a little more readily than the purer ones. The Australian powders consisted almost of one variety, as stated in the paper, whilst there were an immense number of forms of larger size to be found in the ground. He should not describe the infusorial earth as harsh or sticky; it was better as a dusting powder for surfaces which were apt to have exudations than where two were rubbed together as instanced by Mr. Martindale. A little of the infusorial earth mixed with talc or Fuller's earth improved its absorbing properties without interfering with the antifrictional properties.

A vote of thanks to Mr. Moss was passed unanimously.

The next paper was read by Mr. E. J. PARRY, B.Sc. F.I.C., on

Oil of Eucalyptus,

printed at p. 198.

A vote of thanks was passed to Mr. Parry for his paper.

The next paper (see p. 170) was by Dr. FIELDEN on

Gluten Flour and its Analysis.

The PRESIDENT said this paper was very valuable at the present time, when so much attention was given by the medical profession to food for diabetic patients. Some years ago Dr. Pavy had a number of samples of diabetic bread and biscuit examined. He thought that they should contain at least 75 per cent. of gluten, and it was very important that such articles should not contain so much starch as 50 or 60 per cent.

Mr. COLLIER said he belonged to the hospital with which Dr. Pavy was many years associated, and was aware that gluten bread always contained a notable quantity of starch. You could not obtain gluten flour free from starch, and he always attributed that to the mode of preparation. The mere washing out of the starch with water was not sufficient, and he should like to know if Dr. Fielden had any experience of a method which had been suggested of treating the flour with a certain amount of extract of malt, which, by its diastasic action, rendered the starch soluble. A short time ago he examined a French specimen of gluten bread which had received high testimonials, and found it contained nearly 40 per cent. of starch. The general impression amongst medical men was that gluten bread was practically free from starch, and it was very desirable that the facts should be generally known.

Dr. B. H. PAUL could confirm what had been said with regard to the almost invariable presence of a large proportion of starch in the so-called diabetic food, gluten biscuits, and such preparations. Two or three years ago he examined a large number of these preparations for a sufferer from diabetes, and there was scarcely one of them which was not found to contain such large proportions of starch as to make them delusive as diabetic food.

Mr. MARTINDALE said he had been informed by a dealer in gluten flour in London that it was impossible to get it free from starch, and also that it was invariably an imported article, being either of Swiss or French manufacture. He considered that as a pleasant change for diabetic patients bran or almond biscuits would be found very suitable.

Mr. ATKINS said the paper was of great practical importance, and the Conference were greatly indebted to the writer. He was amazed at the large percentage of starch present in the gluten bread, especially in sample D. It seemed to him that a very cruel course was unconsciously being pursued in the sale of this bread; patients were compelled to eat this most obnoxious form of bread under medical advice, and surely there ought to be some means by which an honest article could be supplied to them, and he trusted that that would be one of the results which would follow from the reading of the paper.

Mr. NAYLOR said gluten was extremely difficult to manipulate, and he should like to suggest that that was possibly one reason why gluten flour always contained a proportion of starchy matter, though it did not account for the large proportion that had been disclosed.

Dr. FIELDEN thanked the Conference for their reception of the paper. In reply to Mr. Collier, he said this was the first time that he had attempted to examine gluten preparations; he had confined himself solely to the flour, and did not examine any gluten bread. Each of the samples he had examined were obtained from different sources.

The PRESIDENT, in proposing a vote of thanks to Dr. Fielden, said there were differences of opinion about gluten bread, but he thought everybody would agree that it would require a good deal of beating.

The vote of thanks passed unanimously.

Mr. STANFORD next read a paper on

Thyroglandin,

which is printed at p. 166. Specimens of the preparations referred to were exhibited

The PRESIDENT said this was a subject which Mr. Stanford had made his own, having been working at it for some time, and he had evidently, since last year succeeded in meeting some of the difficulties which presented themselves, and producing a very excellent preparation.

Dr. McWALTER said Mr. Stanford was such an authority on this subject that he only ventured with diffidence on any criticisms; but it seemed to him that the preparations of the thyroid gland had long been a reproach to pharmacy, inasmuch as very few at all represented the active principle. The first difficulty was to know what really was the active principle, but as far as he could make out it was generally admitted that there were two, and possibly three—viz., thyroiodin, a metabolic product, some thyro-proteid, and a third, described by Mr. Victor Horsley, which was of the nature of an internal secretion, the approximate chemical character of which had not yet been determined. He did not think sufficient stress was laid on the importance of employing the gland while still warm from the animal, because *post-mortem* changes took place with great rapidity. No doubt Mr. Stanford used them fairly fresh, but he did not think he was sufficiently definite on that point; they ought to be used, if possible, within thirty minutes of removal. With regard to the glycerin process, though Mr. Stanford did not approve of it, he understood that since last year Dr. Murray, of Newcastle on-Tyne, who was then quoted in favour of dried preparations, had expressed himself as a convert to the use of glycerin, and even claimed the new pharmaceutical preparation as his own. Although Mr. Stanford had quoted Dr. McLennan, who was an undoubted authority, in favour of his preparation, he thought further experience was desirable before it could be accepted as being entirely satisfactory. They were all, however, much indebted to Mr. Stanford for his very valuable paper.

Dr. SIEBOLD asked the relative proportion of iodo globulin and iodo-thyroidin in the preparations Mr. Stanford had made, and if there was any difference in the proportion of iodine in the two.

Mr. MARTINDALE asked if it had really been decided that the efficacy of the gland was due to the iodo-compounds found in it. If it were chiefly due to the iodine, no doubt Mr. Stanford could obtain that body much more cheaply from other sources, but he was somewhat doubtful about its efficacy. The use of a preparation of idio thyroiodin had not been carried far in London, where a dried preparation of the gland, and in some cases the glycerin extract, was preferred, though the latter was not much demanded, probably because it did not keep well. The pharmaceutical preparation made by exhausting the gland with petroleum spirit kept reasonably well; but there was the danger that the gland, unless quickly dried and freed from fat, was apt to undergo decomposition. These preparations of Mr. Stanford were not unpleasant in odour, but there was a trace of a pepsine-like smell which a fastidious patient might object to.

Mr. KELLY said if *post-mortem* changes took place in the gland the patient might be swallowing ptomaines instead of the thyroid gland; he thought, therefore that some test for ptomaines should be included in the Pharmacopœia process, so as to provide for cases where decomposition might have commenced.

Mr. BALL asked what was the real difference between the production obtained by Dr. Hutcheson's method and by Dr. McLennan's. He rather gathered the difference was that in Dr. Hutcheson's process the gland was not so completely exhausted.

Mr. STANFORD, in reply, said Mr. Ball was right; Dr. Hutcheson's preparation did not represent the gland, because it was not all exhausted. He could not go into the question of the medical action of the thyroid gland, for anyone who would go into the literature of the subject would find not only that it was very voluminous, but that opinions varied very greatly as to what was the active principle. He only claimed for this process that it was the first attempt to get a good chemical process, giving a product which had no decomposing matter in it. All the others, except the thyroiodin were liable to be contaminated by any disagreeable substances which might be contained in the raw gland. The two tubes he had shown would partly answer Dr. Siebold's question, but he could not give the exact iodine contents then, though he hoped to add this information later. With regard to glycerin preparations he thought that they were the ones which were generally complained of as producing unpleasant symptoms. A vote of thanks was passed to Mr. Stanford.

A paper on

A Quick Polarimetric Method for the Estimation of Strophanthin in the B.P. Tincture and Extract,

by EDWARD DOWZARD, F.C.S., printed on page (199), was then read by Mr. Naylor.

The PRESIDENT, in proposing a vote of thanks, said this was a very interesting paper. He hoped this method would be found to apply to other substances besides strophanthin.

The resolution passed unanimously.

The next paper was by Mr. W. A. H. NAYLOR, and Mr. J. J. BRYANT, on

Green Extracts of the Pharmacopœia,

printed at page (165).

The PRESIDENT said Mr. Naylor, in a very few words, gave the result of a very useful and general work. With his accustomed modesty he always attributed less importance to his work than it deserved, but when they came to study the paper they would see that it had involved very careful work. This paper might be taken to be not only reliable work, but also representative.

Mr. MARTINDALE thought the green extracts were not up to date. They were largely in demand, but the preparation of them entailed a good deal of pressure of work at a limited season that would be very much better done if the extracts were prepared from carefully dried plants. He did not think there was any civilised country that used such a preparation as was used in Great Britain. For his part he should prefer to have the plants carefully dried and alcoholic preparations made from them. The prices would vary with the time of year at which they were collected; if they were collected in a wet season the amount of alkaloid in the juice would vary, and the extracts would also vary.

Mr. J. C. UMNEY asked whether Mr. Naylor had made any experiments as to the proportion of alkaloid got from the same district in the case of belladonna at different seasons. Making experiments on a large scale he noticed that the extracts at the end of July or the beginning of August were better than those made early in the season. He made no experiment on their alkaloidal value.

Mr. FARR said in conjunction with Mr. Wright he had examined a number of green extracts. They had examined them for the mucilaginous as well as the alkaloidal constituents, and found they contained a very large proportion of inert matter. After working on the subject for a month or two they came to the conclusion that if you wished to get a really active preparation it was necessary to work upon the dry material, and make a more or less alcoholic preparation. He was pleased to hear Mr. Naylor advocate the standardising of these preparations, as he thought he was not always in favour of it.

Mr. NAYLOR said they had not considered in the short note the advisability of using dry material. They had simply hoped that what they had there given would be some little contribution on

the question. In reply to Mr. Umney he must say that he and his colleague had not considered the question he referred to, but he did think that they were able, to a very considerable extent, to determine whether they should have an extract which should contain a fair proportion of alkaloids, or one which should contain a much smaller proportion. Of course, they took the green herb, which was very stalky, and especially if it contained a lot of the thick stalk, they would have an extract which would contain more mucilaginous matter, but less alkaloid. If they were careful in the choice of the green herb and took the leafy portion, then, independently of soil and season, they would be able to obtain an extract which would contain not less in the case of belladonna than 1 per cent. It was quite clear that there was a great variation in the percentage yielded by these extracts, and the only sound conclusion they could come to was that, so long as they were retained in the Pharmacopœia, they should be standardised.

The PRESIDENT, in putting the vote of thanks, said there was one particular case in which they had returned to the use of green leaves in obtaining cocaine. When cocaine was very scarce, it was found that in bringing the dry leaves to this country four-fifths of the cocaine was lost, and they owed the fact of the low price of cocaine to it being now obtained from the green leaves on the spot.

The next paper read was by Mr. E. C. C. STANFORD on

Iron and other Alginoids.

It is printed on page 199.

The PRESIDENT said Mr. Stanford had introduced a new class of substances which appeared to possess certain advantages. He would first ask if these solutions kept well; if they did some of them would be very useful; antimony, for instance, as antimony wine was very liable to change. They all knew the difficulty in coating certain drugs in such a manner as to prevent their action until they had passed from the stomach into the intestines, and if this class of preparation could be relied upon for this purpose it would be very useful.

Mr. BIRD asked if the magnesium alginate could be used for emulsifying purposes. Some years ago Mr. Stanford sent him some sodium alginate, which he tried for that purpose, but found it too gelatinous. These compounds were very interesting, and the iron alginoids in particular appeared likely to be very useful.

Mr. MARTINDALE thought these preparations offered a means of administering metallic compounds which would be of great service. He might refer especially to the bismuth compounds, which in many diseases were very valuable, but which were very irritating to the stomach. The same with regard to arsenic, it could hardly be borne by the stomach in large doses, but was chiefly absorbed in the bowels. The ferric alginate might also prove of some service, as the big doses required in some cases of chlorosis were very irritating to the stomach, and could not be borne by some patients. The taste was not disagreeable, and if it could be diluted with wine without precipitations he thought it would be an agreeable medicine for children. The mercurous alginate also might be very useful in certain cases. He should like to know if the alginate compounds were as useful for coating pills as keratin, and also if the antimony alginate would keep stable without the development of fungi. He feared the preparation of bismuth was too weak to act as bismuth, but merely as a sedative.

Mr. STANFORD, in reply, said one of the difficulties about the introduction of the sodium alginate was its extraordinary viscosity, a 2 per cent. solution was an extremely viscous fluid. The alginate of magnesium was the only one which would be at all likely to be used for pill coating, and he did not know that he should recommend even that for that purpose. The bismuth preparation was only brought to show that another solution of that metal could be produced; no doubt it would be too weak to be of much use. The alginate of iron, however, had been thoroughly tried, and the origin of it was rather singular. There was a girl who had been discharged from the Glasgow Royal Infirmary as incurable, suffering from acute anæmia and gastric ulcer. She got the local doctor to give her this preparation, and much to the astonishment of the physician of the Infirmary, who had pronounced her incurable, within about a month she was perfectly cured. He believed they all kept perfectly well, and did not give rise to any growth.

A vote of thanks was passed to Mr. Stanford.

Two papers were next taken—

A New Constituent of Oil of Lemon

(printed on p. 196), by J. C. UMNEY and R. S. SWINTON, and

Notes on Concentrated Oil of Lemon

(printed on p. 161), by T. H. W. IDRIS, F.C.S., the latter paper being read by Mr. J. PARRY.

The PRESIDENT, in moving a vote of thanks to the authors, regretted that Mr. Idris was not present, as his paper was one of great interest.

Mr. E. M. HOLMES said he had listened with considerable interest to both these papers. As the result of experiments he had made with the citral and sugar, he had come to the conclusion that the citral could not be the actual flavouring of the lemon, but that there must be other essences which would add to the flavour. One of the specimens that Mr. Umney had submitted to him he certainly thought represented the exact flavour of lemon peel. He was curious to know what this was due to, and was glad to hear that there was another ingredient present in the lemon which modified its flavour. He was not quite sure that Mr. Umney had got out everything which represented the lemon. Most of their essential oils did not represent in any one ingredient the actual flavour of the drug itself. He hoped Mr. Umney would still further extend his observations, as he was sure there was a great deal more to be learnt as to the other ingredients present.

Mr. PARRY said no progress had been made in the chemistry of oil of lemon for some time. The whole attention of those interested in essential oils had been directed to the aldehyde constituents. In one of Schimmel's reports it was said that the question of lemon oil could not be regarded as being definitely solved until there was a reliable method of estimating the citral and oil of lemons, but Mr. Umney's paper had disproved this. It was so easy to add a little citral to oil of lemons that it was now the common practice.

A vote of thanks was then passed to the readers of the papers.

The next paper was by Mr. JOHN UMNEY on the

Commercial Varieties of Dill and their Essential Oils.

It is printed at page 176. The following discussion took place.

The PRESIDENT asked if the rotatory power of Indian and Japanese oils had been determined, as compared with that of oil from English grown seed.

Mr. HOLMES said botanists and horticulturists somewhat differed in their ideas as to whether two plants should be called distinct species or only varieties. The different varieties of the apple had very different flavours, and the amount of acidity and stringency varied considerably, but botanists classed them all as the same species. The Indian dill and English dill, although very similar in flavour, had been shown by Mr. Umney to differ in their chemical constituents, and as far as he could judge from seeds he had succeeded in growing, the fruit was more convex and narrower than the English, but apparently botanists did not consider these differences sufficient to warrant them as regarding it as a distinct species. It appeared, therefore, that two plants which only differed slightly might contain very different bodies, and might act in a very different way, and that the apiol was practically poisonous. This showed the importance of limiting the drugs used in the Pharmacopœia to particular forms so as to ensure uniformity both in constitution and strength. He should like to know whether the amount of apiol present in the Indian oils had been ascertained.

Mr. DRUCE said there was an instance in the Umbelliferae, *Cicuta virosa*, which in the south of England was considered a dangerous poison, but when grown in the neighbourhood of Edinburgh had no noxious property. At the same time botanists did not consider the plants different.

Mr. BRODIE said he remembered the late Professor Henry Roger, of Glasgow, making a remark to a similar effect, and mentioning the names of certain plants, though he had forgotten what they were. He said it was a well-known fact that many plants grown in England elaborated poisonous properties, which, when grown in Scotland, were harmless.

Mr. J. RUTHERFORD HILL said there was a paragraph some time ago in one of the medical journals stating that *Conium maculatum* grown in England was poisonous, but that when grown in the neighbourhood of Edinburgh was not so, and he had the curiosity to test the truth of the statement. The result was that fruits carefully collected in the neighbourhood of Edinburgh were found to contain a larger percentage of the alkaloid than similar fruits

collected in England. He took it, therefore, that all such statements required careful investigation.

Mr. MARTINDALE said he thought the statements referred to had gained currency on the authority of Professor Christison.

Mr. J. C. UMNEY, in reply, said the oil from Indian seed showed an optical rotation of 47.5° in a tube of 100 millimetres and Japanese 50.5° . The limit allowed by the Pharmacopœia was 70° . He could not say the amount of apiol present in the Indian and Japanese oil, but from 35 to 40 per cent. of crystalline apiol distilled over at 230° .

A vote of thanks was passed to Mr. Umney for his paper.

Mr. G. C. DRUCE read the concluding paper of the afternoon, on

The Salient Features of the Irish Flora

(which is printed at p. 200).

The PRESIDENT said the paper was full of information and would well repay perusal, but hardly called for any discussion, and he would therefore at once propose a vote of thanks to the author.

This was carried, and the Conference adjourned till the following morning.

The Conversazione at the Queen's College in the evening was a great success in every way, the various halls and galleries being artistically decorated for the occasion, and a capital programme of music and recitations provided.

SECOND DAY'S BUSINESS.

On Wednesday morning the Conference resumed its sittings at ten o'clock.

Mr. IDRIS's paper a

Note on Extract of Ginger,

which is printed at page 178, was read by Mr. NAYLOR.

Mr. J. C. UMNEY asked if the author gave figures showing the amount of extractive obtained by acetone and by strong alcohol respectively.

Mr. NAYLOR replied in the negative.

A vote of thanks was passed to Mr. Idris.

Dr. McWALTER's paper on

Materia Medica Animalis,

which is printed at page 155, was read in abstract by the author.

The PRESIDENT said Dr. McWalter had placed before the Conference a great many facts with regard to these animal extracts which were now becoming so very numerous, and which, no doubt, were believed to be useful in some cases. Some thought they were returning to those days when a great many animal substances were given internally in a manner which had been indicated as absurd; but there was no doubt the paper would be perused with great interest.

Mr. STANFORD said they were much indebted to Dr. McWalter for his elaborate paper, and he was quite sure it would be read in the Journal with very great profit. He would only remark that they knew very little about the chemistry of any of these bodies. He had attempted to show something about the thyroid gland, and there could be no doubt that whatever the active principle might be the iodine had something to do with it, and with that view Dr. McWalter seemed to agree. With regard to the paper that he (Mr. Stanford) read on the previous day, he should like to say now that thyroiodin was extracted from the glands after Dr. Hutcheson's colloid had been precipitated from them, which was a positive proof of what he had said on the previous day.

A vote of thanks was passed to the author.

Mr. E. SAVILLE PECK read the next paper entitled

Notes on Ferrum Redactum, B.P., 1898,

which is printed at p. 159.

Mr. MARTINDALE spoke of the difficulty of avoiding the presence of arsenic and sulphur in these preparations, and referred to the imperfection in respect of the new B.P. test.

Dr. SIEBOLD and Mr. J. C. UMNEY having referred in terms of commendation to the iodine test for ferrum redactum, Mr. Howard mentioned Marsh's test.

Mr. PECK having briefly replied, a vote of thanks was passed.

Dr. JOWETT read a paper on

The Characters and Methods of Assay of the Official Hypophosphites,

which is printed at p. 171, a brief but interesting discussion

followed, in which Mr. NAYLOR, Mr. BIRD, and Mr. LUNAN took part.

A short paper by Messrs. DAVID and D. LLOYD HOWARD on the
Basicity of Quinine.

which is printed at p. 154, was then read by Mr. D. LLOYD HOWARD.

Mr. BRODIE suggested that it would be very useful if the scattered information could be codified, and a vote of thanks was passed to the author.

Dr. JOWETT read a paper on

Note on the Mydriatic Alkaloids,

which is printed at p. 195.

Mr. MARTINDALE having made a few remarks on the paper, Mr. SIEBOLD offered some observations dealing chiefly with the paper read last year by Dr. Sharpe, and Dr. Jowett did not find it necessary to reply.

The following papers were read:—

Pharmacists and the Pharmacopœia,

by Mr. P. MACEWAN, which is printed at p. 177.

The Galenical Pharmacy of the 1898 Pharmacopœia, by Mr. F. C. J. BIRD, which is printed at p. 162.

The Galenicals of the New Pharmacopœia, by Mr. H. W. GADD, which is printed at p. 178.

The Chemistry of the 1898 B.P.,

by Mr. P. KELLY, which is printed at p. 180.

The Pharmacopœia Chemically Considered,

by Mr. A. L. DORAN, which is printed at p. 203, after which Mr. G. C. DRUCE read a paper on

The Nomenclature of Certain Drugs of the Pharmacopœia,

which is printed at page 202, the discussion upon them being adjourned until after the adjournment for luncheon. Whilst the members were assembling a short paper on

Lime Water,

by Mr. E. J. EVANS, was read (p. 204).

A vote of thanks was accorded to the author.

A paper on

The Amount of Carbonic Dioxide Available in the Official Granular Effervescent Preparations,

by Mr. C. S. DYER, which is printed at p. 181, was also read.

Mr. MARTINDALE suggested that the proportion of citric to tartaric acid should be varied to suit the various compounds in which it was used.

The PRESIDENT added a few words, and then after passing a vote of thanks, the Conference proceeded to discuss the paper dealing with the new Pharmacopœia.

Mr. ATKINS commenced by expressing the opinion that pharmacists ought to occupy a more important, in fact, a statutory position with regard to the compilation of the Pharmacopœia. He agreed in great part, but not entirely with, Mr. MacEwan, and thought the Pharmaceutical Society rather than the Conference should be the body entrusted with this duty.

A long and interesting discussion on points raised by the various papers ensued, of which a full report will appear next week. Messrs. J. C. Umney, Howard, Wardleworth, Wells, Clague, Farr, Rutherford Hill, Cowley, Martindale, and the President took part in this discussion, and a few words were added in reply by Mr. Bird.

Mr. MACEWAN hoped the Executive Committee would seriously consider the proposals which had been put forward, and that some definite course of action would be put before the Conference next year.

Mr. GORDON SHARPE's paper on

Albumin and Some Types of Proteid Digestion,

which is printed on p. 197, was taken as read.

PRESENTATION FROM THE BELL AND HILLS FUND.

The PRESIDENT, in making the usual presentation of books, said it was the custom to present the books to the local association of the town in which the Conference met, but as there was no such

body at present existing in Belfast, the authorities of the public library had been good enough, through the influence of the Lord Mayor, to accept the books in custody pending the formation of the association, which, it was hoped, would be the outcome of the visit of the Conference.

ELECTION OF THE FORMULARY COMMITTEE.

The PRESIDENT announced that letters had been received from Mr. T. B. Groves and Mr. R. Reynolds, resigning their position as members of the Formulary Committee. Although these gentlemen were resigning, their sympathies would always be with the work of the Committee.

Mr. F. R. BRANSON moved the election of the following gentlemen as the Formulary Committee for the ensuing year:—

Formulary Committee.—W. Martindale, F.C.S. (Chairman); W. A. H. Naylor, F.I.C., F.C.S. (Secretary); A. C. Abraham, F.I.C., F.C.S.; H. G. Greenish, F.I.C.; F. C. J. Bird; T. Maben, Ph.C.; N. H. Martin, F.L.S., F.R.M.S.; F. Ransom, F.C.S.; Harold Wilson; C. Symes, Ph.D.; R. Wright, Ph.C., F.C.S.

Mr. T. MALTBY CLAGUE seconded the motion, which was at once carried.

PLACE OF MEETING IN 1899.

Mr. C. PARK (Plymouth) invited the Conference to visit Plymouth next year. It was over twenty years since the Conference honoured the town. There were plenty of facilities of visiting Plymouth by water for those who cared to avail themselves of them. He wished to thank the Brighton chemists for the way in which they framed their prior invitation.

Mr. J. D. TURNEY, in seconding the motion, said a hearty West Country welcome would await the Conference at Plymouth, a centre where he was sure its visit would produce very good results on the whole district. Plymouth was not a wealthy city like Belfast; but the natural beauties of the neighbourhood were very varied, and he was sure would be appreciated.

Mr. SAVAGE (Brighton) said circumstances had convinced the chemists of Brighton that Plymouth had a prior claim on this occasion, and that a visit should be paid to Brighton on a future occasion. Possibly a day's visit could be arranged in 1900, when he believed the Conference would meet in London. He therefore moved that the Conference meet next year in Plymouth.

Mr. BIRD seconded the motion, which was unanimously agreed to.

ELECTION OF OFFICERS.

The following were unanimously elected:—

President.—J. C. C. Payne, J.P., Belfast.

Vice-Presidents.—Walter Hills, F.C.S., London; R. J. Downes, Dublin; John Moss, F.I.C., F.C.S., London; C. J. Park, Plymouth.

Treasurer.—J. C. Umney, F.C.S., London.

Hon. General Secretaries.—W. A. H. Naylor, F.I.C., F.C.S., London; F. Ransom, F.C.S., Hitchin.

Hon. Local Secretary.—Davy Turney, Plymouth.

Other Members of the Executive Committee.—Leo Atkinson, London; G. Breeze, J.P., Devonport; F. C. J. Bird, London; H. Collier, London; G. C. Druce, M.A., F.L.S., Oxford; Professor Greenish, F.I.C., London; R. W. McKnight, Belfast; Edmund White, B.Sc., London; R. Wright, F.C.S., Buxton.

Auditors.—D. W. Elliot, Belfast; F. Maitland, Stonehouse, Plymouth.

VOTES OF THANKS.

Mr. LAIDLAW EWING moved a hearty vote of thanks to the President of the Queen's College for the use of the building, which was seconded by Mr. WARDLEWORTH, and carried unanimously.

Dr. FIELDEN briefly acknowledged the vote, saying it had given the authorities great pleasure to be of service to the Conference.

Mr. J. C. C. PAYNE, as Chairman of the Ulster Committee, had much pleasure, on behalf of the pharmaceutical chemists and chemists and druggists of the North of Ireland, in accepting the present of books. At present neither body had a home of their own, but through the intervention of Sir Jas. Haslett, M.P., Mr. Elliott (Librarian of the Public Library) had kindly undertaken to take charge of them for the present.

Mr. ELLIOTT confirmed this statement, and mentioned the hours when the books would be accessible.

Mr. MARTINDALE moved a vote of thanks to Mr. Moss for his services as Treasurer to the Conference for the last five years, with an expression of regret at his resignation.

Mr. JOHN C. UMNEY seconded the motion, which was at once carried by acclamation, and briefly responded to by Mr. Moss.

Mr. ATKINS moved "That the cordial thanks of the non-resident members of the Conference be accorded to the local Committee, and especially to Mr. J. C. C. Payne (the Chairman), to Mr. R. W. McKnight and Mr. W. J. Rankin (the Honorary Secretaries), to Dr. Fielden and Mr. Gibson (the Treasurer), for the very success-

ful manner in which the various arrangements connected with the Belfast meeting have been carried out."

Mr. DRUCE seconded the motion in his usual felicitous manner, and it was at once carried unanimously.

Mr. J. C. C. PAYNE briefly acknowledged the vote, and alluded to the honour just done him by his election as President, in which office he would endeavour to emulate the successful efforts of his predecessors.

Mr. MCKNIGHT, in response to loud calls, also responded, and Mr. GIBSON added a few words of thanks. He was especially proud to find that so many ladies had attended the meeting.

Mr. STANFORD then moved a vote of thanks to the President for the able and courteous manner in which he had conducted the business of the meeting. He had presided over two record meetings, one in Scotland and one in Ireland, and had given immense satisfaction in both cases.

Mr. W. F. WELLS had great pleasure in seconding the vote, and thought the words "able and courteous" were hardly strong enough to meet the case.

The motion was put by Mr. ATKINS as senior Vice-President, who added a few words in support, and was carried by acclamation.

The PRESIDENT, in responding, acknowledged the help he had received from the Executive Committee, the Hon. Secretaries, and the members generally, and expressed his great satisfaction at finding the Conference still retaining so much vigour and enthusiasm. He concluded by moving a hearty vote of thanks to Mr. Naylor and Mr. Ransom, the Hon. Secretaries, to whose efforts the success of the meetings was mainly due.

Mr. MARTINDALE seconded the motion, which was carried unanimously, and briefly acknowledged by Mr. NAYLOR and Mr. RANSOM, which concluded the proceedings.

A garden party given by the Lord Mayor of Belfast and the Lady Mayoress, which took place immediately on the conclusion of the business, was eminently successful, the weather being all that could be desired.

The excursion to Garron Tower, Glenariff, and Parkmore took place on Thursday, and Friday was devoted to sight-seeing generally.

PHARMACEUTICAL SOCIETY OF IRELAND.

The monthly meeting of the Council was held on Wednesday, the 3rd inst., at 67, Lower Mount Street, Dublin. The PRESIDENT, Mr. R. J. Downes, occupied the chair, and the other members of the Council present were the Vice-President (Mr. Beggs), and Messrs. Wells, Bernard, Kelly, Professor Tichborne, Porter, Ryan, Hayes, and Dr. Walsh.—The PRESIDENT said that since they last met they had had as providential a deliverance as the British nation had from the Spanish Armada. On the last occasion they had before them the Poisonous Substances Bill, introduced by the Government, and they directed that steps should be taken to have circulars issued to Members of Parliament and to their licentiates and others calling on them to give the strongest opposition to the measure. That was done, and after the circulars had been printed the Government announced that they were not going to proceed with the Bill. He therefore thought that it would be useless to go to any further expense in the matter, because what would be done would be out of date by the time that the new Bill, which he was informed the Government intended to introduce next Session would come on. They also anticipated the action of the Lord Chancellor of England in connection with his proposed amendment of the English Pharmacy Acts Amendment Bill. He (the President) thought there would be considerable difficulty in making the proposed clause applicable to the purpose which the Society required, because he did not see how an amendment of the English Act could be extended to Ireland. He accordingly wrote to the Lord Chancellor of England, pointing out those difficulties, and he had no doubt that that representation weighed with him, for in his address he mentioned that one of the difficulties was the extension of the clause to Ireland. The English Society also objected to having the clause put into their Bill, particularly as it was one that did not suit their purposes. He (the President) was astonished when he saw the draft of the clause. It gave absolute authority to the limited companies to carry on business; and one of the difficulties that the Lord Chancellor saw was that as he had drafted the clause—which was simply an adoption of what had been improperly called the "widows clause"—it did not provide for the placing of the companies upon the Society's register. Altogether it appeared to him that the Lord Chancellor completely misjudged what he

intended to do or thought could be done by the clause which he proposed. It was a clause that would have given the Society completely away, and he suspected that there was an earnest desire on the Lord Chancellor's part to get pharmacy out of the way, treating it as a trade, so that he could deal with the claims of the medical profession afterwards, for if once the pharmacists were tied and bound, they could not interfere with the privileges extended to the medical profession. He felt bound to notice an article contained in the *Chemist and Druggist*, which was the organ of the Society, and to dissociate the Council from the remarks contained in it. He did not approve of the remarks in the article as regarded the English Society or the tone of them. He entirely dissented—and he thought the Council would dissent—from the views of the writer. That article said: "We suspected last week, and it is now admitted, that the most influential objection to the Lord Chancellor's proposal to amend the Pharmacy Act by a clause to provide against its infringement by companies came from the Council of the Pharmaceutical Society." He (the President) was certainly pleased to know that the English Society did use its influence to oppose the clause. Then the writer said, referring to particular Acts: "It means that the Council and their intimate friends were so eager to get their paltry little Bill passed that, rather than risk it, they preferred to reject the assistance which the Lord Chancellor and Lord Herschell spontaneously offered them towards the accomplishment of what has always been professed as the ultimate purpose of the measure." Whatever the Lord Chancellor proposed to do, he did not see that his clause would have compassed what the Society wanted. "But could not the representatives of pharmacy have laid such arguments as this before the Lord Chancellor? He clearly enough withdrew his amendment with reluctance; his warmest support, we gather, came from Ireland." Now he (the President) did not know what was the authority for that statement. Certainly, as far as that Society was concerned, whilst they wanted their own clause they were not supporting the Lord Chancellor in the amendment he was proposing, and of which they had no cognisance.—Mr. BERNARD: In an Act which did not apply to us.—The PRESIDENT said the article went on: "And he was undoubtedly willing to do what reasonably could be done to secure for pharmacy its rightful position. We are afraid it was impossible to ask at this date that companies should not be allowed to own chemists' and druggists' businesses. Twenty years ago that could have been pressed with much more chance of success than now. But it might still have been feasible to exact that no unqualified person should be entitled to be a director of a company formed for the object of carrying on a pharmaceutical business. If for any reason which does not occur to us so much seemed impracticable, it might at least have been required that the managing director of any such company should be qualified. His qualification is of infinitely greater importance to the public than is that of the assistant who merely carries out his commands. Either of these provisions would go a long way towards remedying the grievance of which we complain. It is likely enough that the Lord Chancellor would have adopted one such amendment of his clause, and it is far from certain that the Houses of Parliament would have rejected it. At all events, the opportunity was offered to test the opinion of our legislators, and it has been declined by the Pharmaceutical Society of Great Britain." His (the President's) contention was that that was giving away the whole question. The Society's contention was that the proprietor or proprietors of establishments should be qualified men. That was the law at the present time, and it was at that point that they wanted to keep it. Qualified directors, or even a qualified managing director, would not be sufficient to protect the public; but worse, it would be a giving away of their position altogether. The article then said:—"The pharmaceutical associations of the country gave loyal and invaluable aid to the Pharmaceutical Society in the matter of this amending Bill. But the large majority of the members voted for it on the explicit or implied assurance that it was to pave the way for some legislation that would be of substantial value. If they maintain their enthusiasm in the face of this betrayal—for the conduct of the leaders deserves to be so designated—they are simply impervious as to facts." As President of the Society—or rather as an individual—he (Mr. Downes) protested *in toto* against that article, and he asked the Council to dissociate itself from it; because it appeared in the organ of the Society and the Council would be credited with what was said if it did not do so. The position was that unqualified persons kept open shop, and that when they were meddled with they protected them-

selves by going under the cover of the Companies Acts. The amendment proposed by the Lord Chancellor would have simply amounted to providing that if those persons registered themselves they would have full qualification and a full right to carry on a business for the carrying on of which individually they would have been prosecuted. If that was his intention there was not the least use in meddling in the matter. The Council's contention was based on the fact that the poison laws of the kingdom from first to last had recognised it as obligatory that the proprietors of establishments selling poisons should be qualified persons; and if they departed one inch from that they gave away their whole ground.—Mr. WELLS said he was very pleased indeed that the President had acted as he had. He (Mr. Wells) was very much astonished when he read the article which had been referred to; and he should be very sorry if it were not replied to, for it undoubtedly represented the Council as in favour of what the Lord Chancellor wanted to do. He should like the licentiates to know that they were not in favour of it; they would be traitors if they were. What they wanted to get was a very different thing, and he quite agreed with the President that the object of the Lord Chancellor was to get them provided for so as to satisfy certain Members of Parliament and others, and then to do what he would perhaps have to do, whether he liked it or not, namely, to give the medical profession what they were asking for.—The PRESIDENT: And which we are asking.—Mr. WELLS: And which the President has been the means of starting. It was all due to his action, and when the medical bodies should take the matter up they would perhaps have some weight with Parliament. If a clause should be put in for them it would cover the Society also. At all events it was due to their licentiates that the Council should dissociate itself from any sympathy with such an amendment. If such law should be passed, he, for one, would not bother himself about the carrying out of pharmacy law any longer. It would be a dead letter and a dead letter let it be. But although the matter had dropped for the present, they ought to keep working it up. The Council should induce the licentiates to speak to their Members of Parliament on the subject. The article said that it was not likely they would get the protection they were asking for so late in the nineteenth century. But were not bricklayers and masons from one end of the country to the other getting the protection that they (the Council) were asking? He read in a police report that a workman was thrown out of employment because he would not join a trades union; and they were told by high judges in the land that that was legal, and that people were within their rights in coercing workmen to join unions. If barristers and tradesmen were to be protected, the Society should be protected. It would be more for the benefit of the public that they should receive protection than in the other cases.—VICE-PRESIDENT: Has he not promised to bring in a fresh Bill? The PRESIDENT: He has promised to bring in a Bill to cover the whole ground.—Mr. WELLS: In the meanwhile we ought to work up all our members.—Mr. KELLY said they should give a flat denial to the article in the *Chemist and Druggist*. Honesty in high places seemed now a rare thing. Having regard to the education that was necessary to qualify a man even to sell poisons, it was a very wrong thing on the part of the organ of the Society to put words into their mouths which were certainly the very opposite to what they wished. They were too quiet in this matter, and in every other, and they must make themselves felt if they wanted to get redress. If they were to be made to register men who had never spent an hour at the business so as to enable them to do what, as individuals, they could not do, it would amount to a lack of honesty in high places.—The subject then dropped.—A letter from the Decimal Association enclosed a form of petition to the Government in favour of the adoption of metric weights and measures in this country.—A letter from the Lord Chancellor of England acknowledged the receipt of a letter which had been addressed to him by the President, protesting against his Lordship's lately proposed amendment of the English Pharmacy Bill.—The REGISTRAR read a letter which has already been published.—The VICE-PRESIDENT: I think we ought to approve of the President's letter.—On the motion of the VICE-PRESIDENT, seconded by Mr. PORTER, the letter was approved.—A letter from Dr. A. B. Griffiths, Principal of the Brixton School of Chemistry and Pharmacy, applied that certificates of attendance at the chemistry, botany, and materia medica lectures of that school should be recognised.—Mr. HAYES: Have we not an order on the books that for the present we will not increase the number

of schools whose certificates we recognise? I think we had better adhere to it.—A donation was received from the Pharmacy Board of Victoria and a copy of their report for 1897, and thanks were voted to the donors.—The PRESIDENT moved, "That a special meeting of the licentiates of the Society be called in Belfast during the Conference week to protest against the amendment proposed by the Lord Chancellor in connection with the English Pharmacy Bill, and also to form a Parliamentary Committee to raise a special fund and to co-operate with the Council in promoting the interests of the Society in Parliament." He brought forward this motion in order that its merits might be discussed. It occurred to him that they would be able to obtain a larger and more representative meeting of members of the Society during the Conference week in Belfast than they could possibly get on any other occasion; and that it would be advisable to have such a meeting in order to voice their protest. It would include members from all parts of the country. He had written to Mr. Montgomery as to the time and place for the meeting, but had not yet received a reply from him.—Professor TICHBORNE: Would the meeting be in connection with the Conference?—The PRESIDENT: Certainly not. It would be a meeting of our own Society. I would not mix it up with the Conference at all.—Mr. WELLS remarked that it had been suggested at more than one Conference that a day should be set apart for pharmaceutical politics, but the idea had never been carried out. The difficulty he saw about this proposal was that the time would be so fully occupied with the business of the Conference that gentlemen would not be able to find time for the meeting. No doubt the Society had a fair number of members in Belfast. As to the proposal of a fund, he would prefer not to look for outside help. They would not find it so easy to get up a guarantee fund. If people would not give £1 a year for membership of the Society they would not give it to a guarantee fund.—Mr. BERNARD: It is a case of never venture never win. We must do something. Another advantage will be that you will have a large number of representatives of the English press at Belfast.—Professor TICHBORNE seconded the motion of the President, which was altered so as to read "that a special meeting may be called in Belfast," and by adding words at the end leaving the arrangements for the holding of such a meeting in the hands of the Vice-President.—In that form it was unanimously agreed to.—The election of an Examiner in Pharmaceutical and General Chemistry for the Licence was postponed until the next meeting.—Other business was not disposed of owing to the retirement of members not leaving a quorum.

OBITUARY.

PARKES.—On August 5, at Stoke Newington, John Prior Parkes, Pharmaceutical Chemist and Life Member of the Pharmaceutical Society. Mr. Parkes had been a loyal supporter of the Society's work for more than forty years.

SEELY.—On August 4, Herbert William Seely, Chemist and Druggist, Halifax. Aged 35. Mr. Seely was an Associate of the Pharmaceutical Society, a native of Lincoln, and the Hon. Secretary of the Halifax and District Chemists' Association. He was well known and a general favourite in Halifax, where he had been in business about nine years. His death was totally unexpected, he having been called, after business hours, to his shop to make up a preparation, and was discovered the next morning lying dead behind the dispensing counter, death being due to heart disease. Much sympathy is expressed for his widow and young son.

CANT.—On July 13, John Reymer Cant, Chemist and Druggist, Cardiff. Aged 54.

STEPHENS.—On July 17, John Harris Stephens, Chemist and Druggist, Plymouth. Aged 85.

SNAITH.—On July 31, Fishy Snaithe, Chemist and Druggist, Boston. Aged 78.

HILL.—On August 2, Richard Christopher Hill, Chemist and Druggist, late of Plymouth. Aged 60.

JAMES.—On August 4, Joshua James, Chemist and Druggist, Carmarthen.

TUCKER.—On August 5, Henry Symons Tucker, Chemist and Druggist, Birmingham. Aged 73.

EXTRACTS FROM CONSULAR REPORTS.

THE BORAX INDUSTRY OF PERU appears to be assuming some importance, the export during 1897 exceeding that of 1896 by some 5114 tons, value £22,450, the totals being 7350 tons, value £36,970, in 1896 and 12,464 tons, valued at £62,420, in 1897. The deposits are found some twenty miles in the interior from Arequipa, the supply of borax apparently being inexhaustible.

THE RUTHLESS DESTRUCTION OF VALUABLE TREES, such as the cinchona and gum-trees, and of numberless medicinal plants in Peru, is the subject of a pamphlet published by Mr. Billingham, the first Vice-president of the Republic. He desires that the present system should be checked, but the difficulty of controlling the gatherers, who penetrate into the forests, where supervision is almost impossible, is in itself an insuperable obstacle. Owing to the destruction of the trees on accessible lands, the export of cinchona from Peru and neighbouring Republics, according to Mr. St. John, is now insignificant, but he thinks the cultivation of the bark trees could still be resorted to with every prospect of success in accessible regions.

AN "EXPORT AND COLONIAL ACADEMY" is about to be established in Vienna, which is to be solely devoted to the education of young men destined to enter upon mercantile careers. According to competent authorities, the younger generation of Austrians do not aspire to commercial pursuits, preferring the army or civil service, and in view of this circumstance it is proposed to found the institution referred to. The project has official support as well as that of many prominent merchants and manufacturers. In addition to foreign languages, the curriculum will include a course of lectures on the commercial conditions prevailing at home and abroad, and will embrace every subject likely to be of future use to a business man. It is anticipated that all arrangements will be completed in the autumn of this year, and that studies will then commence.

THE EXPORT OF OTTO OF ROSES from Sofia, Bulgaria, during 1897 amounted to 3192 kilos, value at £71,278. Of this quantity France took 1151 kilos, value £25,683; Great Britain came next with 686 kilos (£15,412), Turkey taking 680 kilos (£15,155), while Germany received 583 kilos, valued at £12,992. Of the remaining 92 kilos no mention is made in the report as to its destination. Otto of roses forms an important product of Bulgarian agricultural industry, the district of Kezanlık being chiefly interested in the trade. The manufacture of wine is increasing in the country, and the cultivation of the vine is carried on in most districts, and promises to become a more important branch of export trade from year to year.

THE AMMONIA-SODA FACTORY at Lukavica (Austria-Hungary), Consul-General Freeman reports, has declared a dividend at the rate of 11 per cent.

THE FIRST AEROLITE which has been found in Bosnia (Austria-Hungary), according to a recent report, fell shortly before noon on August 1, of last year, at Zavid, near Rozanj in the district of Zvornik. Eye-witnesses of the fall of the meteorolite stated that it was accompanied by a noise like thunder lasting several minutes and audible a long way off. It left a fiery streak behind, which, a short way above the horizon divided in two, and above this streak or tail was a thick cloud of smoke. It buried itself a yard deep in the ground. It was broken in several pieces by the fall, but these have been joined together again, and the meteorolite, measuring 55 by 35 by 28 centims, is now in the museum of the town.

A **CHINESE SCHOOL** for the teaching of English has been established at Wuchow, with Chinese teachers from Canton. Boys are taught during the day, and there are evening classes for men.

MOXA SMELLS STRONGLY OF CAMPHOR, and is reported to be frequently described as crude camphor. It is a greyish-white powder, and is not derived from *Cinnamomum camphora*, Fr. Nees, but is distilled from *Blumea balsamifera*, D.C., the centres of export being Nan-ning and Po-sé. It is a valuable product of Kwangsi, costing as much as 200 taels a picul (133½ lbs.), and is used in medicine, perfumery, and in Hong Kong it is stated to be converted into camphor oil.

PARLIAMENTARY NOTES.

THE PETROLEUM BILL OF MR. URE, the high flash-point advocate and member for Linlithgow, is a very short and direct measure. Its sole object is to carry out the recommendations of the majority of the Select Committee in respect to raising the "deadly" 73° to the absolutely innocuous minimum of 100°. The change is proposed to be effected by repealing sections 2 and 6 of the Petroleum Act, 1879, and the second Schedule to that Act. The effect of such repeal, as anyone consulting the Society's Calendar may discover, will be to restore the *statu quo ante* 1879; that is to say, the original Act of 1871 with its 100° test will become re-enacted, though with an important difference. In 1871 the test was the inaccurate, or at any rate scarcely reliable, "open" test, but if Mr. Ure's Bill should pass, the 1879 "close" or Abel test will still apply to the minimum flash-point of 100° specified in the 1871 Act. Thus the word petroleum would receive a wider meaning at Mr. Ure's hands, for it would cover all oils flashing at a lower temperature than 100° Fahrenheit. Apparently, the honourable promoter of the Bill and his backers (all members of the triumphant party of the Select Committee) deem the Petroleum Acts, apart from the flash-point, to be legal perfections, for they do not suggest a single alteration. Yet it is not so long ago that the late Sir V. Majendie revealed to the Committee strong evidence of the inadequacy of the law, and the difficulties in the way of efficiently administering it.

THE PRIVY COUNCIL OFFICE was somewhat fortunate on Monday in escaping the criticism of the economical Mr. Caldwell and the wrathful Mr. Bayley. Supply is the delight of parliamentary wind-bags, for it is possible to drag any subject into the Committee proceedings; in fact a number of legislators who have been unable to deliver their speeches in the House are always eager to seize such an opportunity of unloading their minds as Committee of Supply affords. The natural result is that the proceedings are unduly prolonged over minor items, and eventually the important votes have to be rushed through under pressure of the closure. This is what happened on Monday. After unmeaning growlings about muzzles, Cyprus, swine fever, and vivisection, the debate was compulsorily closed, and such important votes as the Privy Council, Board of Trade, together with the items under the Companies Winding-up Act, 1890, on all of which interesting and possibly useful discussion might have been raised, were carried through in silence.

THE ROYAL SOCIETY was somewhat roughly handled by the economists under Dr. Clark when the vote for scientific investigations came up on Friday, the 5th. It seems that £15,300 is granted to the Royal Society for meteorological purposes, and that the Government having handed over the money do not care two straws how it is spent. Now, Dr. Clark does care, and he says he has discovered that the Committee of the Society commence their meteorological observations by voting £1000 to themselves for services and another £800 to one of their number for acting as Secretary. This seems a grave charge against the Meteorological Council and the Royal Society, but it must be taken with large reservations. Dr. Clark does not mean to say that this public grant or any portion of it is diverted to private uses, but he simply desires to convey that Scotland does not get enough of the grant and cannot carry on its Ben Nevis observatory—a valuable work—owing to lack of support from the Meteorological Council. He achieved his object in the end, for Mr. Hanbury promised to bring pressure to bear on the distributors of the grant, with a view to screwing out more bawbees for Scotch observatories. Mr. Pirie will ask on the 11th inst. (just as we go to press) whether the pressure promised has been exerted, and with what result.

GENERAL LAURIE (Pembroke and Haverfordwest) has given notice that when the University Degrees Bill comes on for second reading (which will not be this year) he will move its rejection on the ground that it discriminates adversely against universities outside the United Kingdom, and is an implied insult to the Universities of British Colonies. Mr. Sidebotham, the introducer of the Bill, evidently overlooked Imperial Federation as a factor in Imperial politics.

LETTERS TO THE EDITOR.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ELEGANT PHARMACY?

Sir,—Having regard to the growing custom of supplying pills of the P. B. and others ornamented with all the colours of the solar spectrum, especially at the cheap and nasty drug stores where they do not make their own pills, is it not possible some watchful analyst may find the presence of some ten per cent. of extraneous and probably hurtful matter an adulteration. The P. B. sanctions no coating whatever.

London, July 27, 1898.

E. WARRELL.

COMPANY PHARMACY.

Sir,—The decision by Judge Shortt at Grimsby County Court, as reported in your issue of the 6th inst., whereby the defendant was fined £5 for assuming the title "manufacturing chemist," is one of considerable importance to chemists, as it indicates legal opinion regarding the unlawful use of titles by wholesale or retail dealers. One would think that one or two more such decisions would tend to clear the country of pseudo-chemists and all the so-called "manufacturing" and "cash chemists," and restrict the use of such titles to those who have earned them. Now the difficulty has hitherto been with "companies;" they shelter themselves under the plural number, and having adopted the motto "Union is strength" they limit their liability by incorporation. By appropriating all that is worth having in the Pharmacy Act, these companies have induced the popular notion that they are bodies of qualified chemists that have broken away from the restraints of traditional policy and by dint of business acuteness have gained for themselves in many cases the cream of the pharmaceutical trade. It is unfortunate, sir, as you have already pointed out, that so many qualified men are ready to sell themselves as slaves to their enemies. "Companyism" prefers to be free from the trammels of pharmaceutical education, directing its concerns from without with a zeal and persistency worthy of a worthier cause. But surely recent events in Parliament and the courts of law are but the harbingers of the dawn of a better day. According to Section 15 of the Pharmacy Act I submit that the Pharmaceutical Society has two causes of complaint against companies who seek to evade the Pharmacy Act, for taking or using in any way the title "chemist." Section 15 reads thus: "Any person who shall . . . take, use, or exhibit the name or title of chemist and druggist or chemist or druggist, not being a duly registered . . . chemist and druggist . . . shall be liable to a penalty of £5 . . . etc. Judges have ever experienced a difficulty in reading "person" into corporation, but the historic decisions of some ten years ago applied to the conducting of a dispensing business by companies, and not to the use of the title "chemist," etc., and the first ground of complaint which the Society has is against each individual of the "company" who is personally interested, and therefore personally responsible, for using a title which Section 15 declares to be a personal one denied to unregistered persons. The second ground of complaint is against "companies" as such. According to former decisions, not being a "person," these companies cannot use a personal title. A limited company may have limitations in monetary matters, but it is responsible for using a title which Section 15 expressly says does not belong to it. Until the Act is satisfactorily amended it is for chemists to protest against the dishonest use of titles indicating qualifications which are not possessed.

Edinburgh, August 8, 1898.

W. S. GLASS.

CHEMISTS AND THE SALE OF FOOD AND DRUGS ACT.

Sir,—The case reported in your issue of 23rd instant about a chemist being fined a penalty of 20s. and 42s. costs for selling lime water deficient in lime is just one of those cases which serve to hold up to contempt the Sale of Food and Drugs Act. That Act was passed expressly to protect the consumer being supplied with food and drugs that in any way injure him. Now, out of the one in ten thousand persons who use lime water, how much

injury would a deficiency of lime injure the partaker? Moreover, I should like to know whether lime water is a drug or a food? Speaking from experience in my own district, the Act for guarding the public against fraud is a dead letter. I have no hesitation in saying that it is next to impossible to buy pure butter or pure lard in this district, to say nothing about fine oatmeal being adulterated with haricot beans, lentils, and pepper with cayenne ("hot dust"), bread with potato parings, flour with bone meal, tea consisting of leaves apparently gathered up from wayside hedges, and a host of other impurities in the way of food-stuffs. Now, all such articles as these are consumed in quantities a thousand times more than lime water, milk of sulphur, or any such articles. If the inspectors under the Act would make frequent and periodical visits to these places and take samples of such articles as those mentioned, I believe Erdington would not only be a healthier place, and thereby require fewer doctors, but the inhabitants would be plumper and not so cadaverous featured, for apparently the majority of them look as if they had no flesh on their bones, due chiefly to the inferior quality of food-stuffs sold in the district. Of course, while the law is satisfied by the public analyst performing a prescribed number of analyses during the year, it would not be human to suppose he would willingly select those subjects for analysis which give him most trouble or are difficult to detect. Consequently the inspector under the Act confines his attentions to only such articles as can be easily and readily analysed, and which a sure conviction can be obtained. I think it a disgrace to modern civilisation that the informer should share the fines obtained from a conviction. Now what is wanted to make this Act effectual is a more frequent inspection of every district or a systematic one fortnightly, weekly, or monthly, and every class of food-stuff should be analysed, not only from one shop but from every one in each district. Then, and then only, would the Act give protection to the consumer, which it does not do now. A 40s. fine even in a twelvemonth for a man who sells 4*l.* margarine as 1*s.* butter is a mere trifle and not likely to cause him to forego such a lucrative sale; while as for lard, flour, and the other articles named above they seem to be left severely alone by the inspector. The Board School inspector performs his perambulations daily, and why should not the inspectors under the Sale of Food and Drugs Act be also a daily visitor to every district? Of course, such a procedure would necessitate a large increase in the inspectorial staff, but better that than that the Act should remain a mere farce, which it is now. Can any reader point out any decrease in the amount of adulterated food since the passing of the Act? If so I should like to know of it.

Erdington, Birmingham,
July 25, 1898.

H. C. STANDAGE.

CAMPHOR IN PILLS

Sir.—With reference to Mr. F. C. Barton's letter, *re* quinine, belladonna and camphor pills (of July 30), I have found the following method answer perfectly. Make into a soft mass the finely powdered camphor and extract belladonna by means of glycerin, mucilage of gum acacia and alcohol, 90 per cent. (equal parts), then add the quinine, also powdered finely, and the result will be a mass easily rolled out and forming satisfactory pills. It is useless attempting to mix powdered camphor and quinine, as on rubbing together it agglomerates at once, rendering it unworkable. I may also remark that the excipient above referred to will be found exceedingly useful for almost any pill mass, or at any rate for a large number. So useful and such excellent results have I obtained with it that I have named it the "universal excipient."

4, St. Stephen's Road, Lewisham, S.E.
August 1, 1898.

GRAHAM BOTT.

Sir,—With regard to Mr. Barton's letter *re* camphor in pills, I should like to mention that I have frequently dispensed similar pills—using glycerin of tragacanth—which turned out a good pill without materially affecting their size.

London, August 3, 1898.

A. A. W. (139/5.)

AQUA SPIRÆA ULMARIÆ.

Sir,—Twenty-four years ago to-day—being Bank Holiday, and having a little more leisure—I picked in the morning a good handful of the flowers of meadow-sweet, and later in the day distilled them in a glass retort. The distillate had a strong smell resembling that of the flowers. From curiosity I have kept this ever since, and to-day it is just as fresh as when first distilled, clear and bright, with the odour unaltered, which, of course, would

not be the case with water distilled from the flowers of elder or rose. Can anyone tell if aqua spiræa ulmarie has ever been put to any use?

High Street, Odiham, August 3, 1898.

G. WOODMAN.

THE ATTACK ON VESTED INTERESTS.

Sir,—In a letter recently addressed to the Editor of the *Daily Mail*, but which did not appear, I referred to some correspondence lately started, under the above heading, and asked, Was ever a cry more groundless? What are the "vested interests" which are assailed? They amount to nothing more than the claim of a right to do, without qualification, what the law says may only be done by those who hold the qualification required by law. To quote the address of Mr. Godden, the President of the Incorporated Law Society, at Sheffield, last year: "When the Crown surrendered its prerogative and Parliament gave up its control over the creation of corporations, individuals were allowed to incorporate themselves at pleasure for any lawful purpose." That is the limit of their freedom; but, unfortunately, no method was provided, nor has any yet been provided, by which persons incorporated for an unlawful purpose can be proceeded against. Every care has been to protect the members and creditors of the company; but it never was intended that it should be competent for seven unqualified persons to do what six unqualified persons or any unqualified individual could not do. The cry of "vested interests" now raised is nothing less than that of the rogue who holds property belonging to others by the simple reason that the rightful owner has lost the title deeds and claims that "possession is nine points of the law." Those "vested interests" exist only by reason of a defect in the law, which leaves aggrieved persons unable to prove against them. This has now been pointed out and Parliament is asked to provide the remedy. Capitalists, through incorporation, have usurped a position which has been left so long unquestioned that now they try to obtain the sympathy of the general public by alarming company shareholders into the idea that they are about to be deprived of a lawful right. The professions—one and all—are equally affected. Parliament has defined their status and rights. Parliament has said, that for the protection of the public and with a view to public safety, certain callings may not be followed except by persons who have proved their competence by education and examination. Persons, expecting that restriction to be respected and maintained, have, at expense of time, labour, and money, gone through all the stages necessary to prove themselves qualified to practise in a particular calling. Have they not a vested interest to be respected? The question is, Which vested interest is to be maintained, that acquired by the law or that seized by a lapse of law?

Dublin, August 5, 1898.

ROBERT J. DOWNES,
President Pharmaceutical Society of Ireland.

LIQUORES CONCENTRATI.

Sir,—It is most amusing to read Mr. J. C. Hyslop's defence of the liquores concentrati, especially when he tells us that Nature abhors uniformity. Alas for his argument, the liquors are uniformly 1 to 9. Where was Nature when the tinctures were being juggled with, "First, to arrange for greater uniformity of dose," as per preface, page xvi.? Surely it is just as easy for the imitation science to produce liquors 1 to 7 as to vary the strength of the tinctures. Nature apparently does not abhor uniformity when it is decimal, but only when it is octaval and convenient, which is equivalent to saying that Nature abhors common sense—a truly ludicrous conclusion. Why not tell the truth, and say that it is an attempt to pave the way for the metric system—a system we have but one objection to, that it is not the system by which we dispense at present. As it is we have liquors made in decimal concentration, which we use by octaval measurements, and so crown all so-called centesimal liquors which are prescribed and measured by a centi-vigintal scale. And when—the pride of the B.P.—the centesimal scale turns out to be so accurately inaccurate that it is centi-decimal, science should hide its diminished head. What we object to is the false standard set up, which false standard is due to the straining after the metric system. The compilers of the B.P. having harnessed their Arabian colt in dray-horse harness, in the name of scientific accuracy, Mr. J. C. Hyslop blames Nature's abhorrence of uniformity for the misfit. That it is a misfit, witness the doses of the liquors of the alkaloidal salts. Is not the dose of morph. hydrochlor. from $\frac{1}{8}$ to $\frac{1}{2}$ gr. equivalent to 13.75 μ to 55 μ of the liquor whose dose is given as from 10 to 60 μ ; and is not the

dose of strychnin. hydrochlor. from 1/60th to 1/15th gr. equivalent to 1.83 m to 7.3 m of the liquor whose dose is from 2 to 8 m? And this is science! Is it not highly ridiculous to strain after accuracy with the one hand—misnamed science—and yet be content with the despised “*numero redondo*,” the “nearly and about,” which is all that the other hand (be it art or commerce) can attain to. If we are to dispense by the metric system, good and well, but while we have to dispense by fluid drachms, ounces, and grains, let us make our preparations accordingly, and not have to work the two incompatible systems together, making an entirely new system which is neither flesh, fowl, nor good red herring. Perhaps, however, Mr. J. C. Hyslop has over-taxed his inventive genius, and has mixed up his argument for *liquores consecrati* with those intended to defend the prolixity of spirituous media. If that is so, and whether or not, in the name of common sense let us have no more “nonsense” about science and Nature’s abhorrence.

August 6, 1898.

FLUID DRACHM (139/13).

ANSWERS TO QUERIES.

Special Notice.—Scientific, technical, legal, and general information required by readers of the ‘Pharmaceutical Journal’ will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed “Editor, 17, Bloomsbury Square, London, W.C.,” and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender’s initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms, and the registered number added in each instance should be quoted in any subsequent communication on the same subject.

BOOK ON GOVT.—It is published at the *Lancet* office, 423, Strand, London, W.C. [Reply to GOVT.—14/21.]

BOTANICAL.—1. *Cornus sanguinea*; 2. *Circaea lutetiana*; 3. *Hypericum hirsutum*. [Reply to J. L. J.—13/20.]

SYR. EASTONII.—If it be taken for too long a period, it is quite possible that effects may be produced resembling those it is desired to remedy. [Reply to APPRENTICE.—14/19.]

QUALIFICATION AS DISPENSER.—To obtain a “qualification” as a dispenser in Great Britain you must pass the Minor Examination of the Pharmaceutical Society. [Reply to G. T.—14/24.]

PERCENTAGE OF PASSES.—We are not in possession of the figures you ask for, but understand that the percentage of passes at the first attempt is very high. [Reply to S. P. S.—14/22.]

BOOKS FOR ADVANCED STUDY.—There is no single book which deals at all exhaustively with organic chemistry as limited to materia medica. ‘Pharmacographia’ is the text-book on the subject, but the chemistry of this work is considerably out of date. Probably Maisch’s ‘Materia Medica’ will be a useful book to you. Another book, if you read French, will be Collins’ ‘Guide Pratique pour la Determination des Poudres Officinales.’ This will give you help in microscopic work. For general reading you will get a good idea of the latest work from the pages of the *P.J.* If you bind these you will find the volumes most useful for reference. The ‘Year Book of Pharmacy’ also gives a good current digest of work in the domain of pharmacy. [Reply to SYRUPUS.—14/17.]

DETERMINATION OF THE ALKALOIDS IN QUININE WINE, COCA WINE, AND IN LIKE PREPARATIONS.—The alkaloids are best obtained by treating, say, 100 C.c. of the wine with ether and ammonia separating the ether, taking special precaution that none of the alkaline liquor is run off with the ethereal solution; then evaporating the ether to dryness and weighing the residue. Kola-coca wine presumably containing caffeine, theobromine and cocaine should be treated with chloroform instead of with ether. The identification of the alkaloids requires much experience in alkaloidal work and can only be done satisfactorily by an expert. Allen’s ‘Commercial Organic Analysis,’ Vol. III., Part II., may be consulted with the latter object; also Vol. I., for the determination of carbolic acid in samples of carbolic disinfectants and soaps. [Reply to BROCKLEY.—14/27.]

EGYTRACUM.—This is an old name for linimentum æruginis. [Reply to J. J.—14/33.]

SOFT HEARTH-STONES.—Hearth-stones are scarcely within our province. Ask a wholesale drysalter for the name of the maker. [Reply to J. J.—14/33.]

TO DECOLORISE ESSENCE OF RENNET.—Filtration through animal charcoal is the best means both to decolorise and to brighten essence of rennet; but if properly prepared it should be almost colourless. [Reply to D. M.—14/26.]

DECORTICATED CRUSHED LINSEED.—No, there is no great advantage in having husks of the linseed removed for the purpose of poultice making. [Reply to D. M.—14/6.]

GOVERNMENT LABORATORY APPOINTMENTS.—To obtain an appointment in the “Somerset House” Laboratory, you must first enter the Excise in the ordinary way, and then apply for entrance to the laboratory; as vacancies occur they are filled from applicants in the Inland Revenue service. You will obtain full particulars of these appointments by application to the Civil Service Commissioners, Cannon Row, Westminster, S.W. [Reply to CHEMICAL DERBY.—14/28.]

WATERPROOFING FABRIC.—You do not now tell us what the “inside fabric” is. Probably a sort of canvas. Probably a wash over first with weak copper sulphate solution, and then with soap solution, will have the desired effect; but the surface ought to be thoroughly dry before the article is put away. This will be somewhat difficult to effect in this instance. [Reply to G. W. M.—14/13.]

ASSOCIATES.—The grade of “Associate” is abolished by the new Act, but all registered chemists desiring to be connected with the Society are eligible as “Members.” They will possess exactly the same privileges in connection with the Society as existing members—whether “Major” men or not—and should not therefore deem it a hardship to be expected to pay the same subscription. [Reply to F. W. C.—139/2.]

ACTION OF SUNLIGHT ON SYRUP FERRI IODID.—No, the syrup does not become weaker if kept in bright sunlight. On the contrary, it maintains its full strength in ferrous iodide better than if kept in the dark. The actinic rays act as a reducing agent, for, if some syrup which is discoloured be so exposed, it will be restored to its normal colour after a time, provided it has not gone too far. The same applies to the strong *Liquor ferri iodii pro syrupo* and its congener the solution of ferrous bromide. Both these solutions keep excellently if exposed to bright sunlight. [Reply to IRON SYRUPS.—14/16.]

LEGAL QUERIES.—I. It is unlawful under the Pharmacy Act, 1868, for any unregistered person to take, use, or exhibit the title “druggist.” II. Duly qualified apothecaries and duly qualified medical practitioners who, in order to obtain their diplomas, have passed an examination in pharmacy, are not amenable to the first fifteen sections of the Pharmacy Act, 1868. The answer to your query depends upon certain particulars with which you have not furnished us. Write to the Registrar, 17, Bloomsbury Square, giving particulars. [Reply to B. G.—14/29.]

PRESERVING VEGETABLES.—Obviously it is impossible to tell from a mere description what has been used to preserve the vegetables you speak of. Examine some of the liquor; it may contain boric acid, or salicylic acid, or formaldehyde. You should be able to detect either of these. On the other hand, it is very likely nothing but what you say it seems to be—water. Such vegetables are often preserved in water thus: they are immersed in cold water in previously sterilised bottles, which are stood, with the mouths plugged with cotton wool, in a capacious water bath filled with cold water. This is gradually heated to boiling, and maintained at that temperature for some time. The wool is then removed, and the bottles corked before withdrawal from the bath. This method requires care, but is often successfully carried out by an intelligent cook in the kitchen; in fact, it was practised long before the “germ” theory was promulgated. On the manufacturing scale, a steam steriliser is substituted for the water-bath. [Reply to PRESERVATIVE.—15/1.]

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Distribution of Manganese. P. Pichard finds that the presence of manganese is almost universal in the ash of organised matter, whether of animal or of vegetable origin. The seeds of phanerogams and the tissues of rapidly growing cryptogams are specially rich in this metal. It is also found in various marine animals, such as molluscs and crustacea, in the bones, eggs, flesh, and hair of vertebrates, also in cow and horse dung. The accumulation of the metal in the seeds and actively vital parts of plants, as well as its occurrence in the two last-named manures, is confirmatory of the theory lately advanced as to its vital importance in the vegetable and animal economy.—*Comptes rendus*, cxxvi., 1882.

Acids of Geranium Oil. Flatau and Labbé contradict the statement of Messrs. Schimmel, that the chief acid constituents of Indian geranium oil are equal parts of acetic and caproic acids. They find that the chief ester is a compound of geraniol with an isomer of myristic acid, from which the acid differs only in having a lower melting point, $28^{\circ}2$ C., instead of $53^{\circ}8$ C. The analytical numbers obtained from silver, barium, and calcium salts are all in accordance with the formula $C_{14}H_{28}O_2$. Besides this, acetic acid and traces of valerianic acid were isolated. Bourbon geranium oil did not give this new body, but about one per cent. of another acid having the formula $C_{10}H_{18}O_2$, half of which exists in the free state, and the rest as a geranyl ester.—*Comptes rendus*, cxxvi., 1876.

Calcium Hydride. By passing pure hydrogen over pure crystalline calcium heated to dull redness under pressure, H. Moissan has obtained calcium hydride CaH_2 . At ordinary temperatures calcium is unaffected by hydrogen, but as soon as a dull red heat is attained, it combines with that gas, with incandescence. The hydride thus obtained is a white melted mass which has a crystalline fracture, and a micro-crystalline structure. Heated to bright redness, freely exposed to the air, it does not alter, but if the temperature be increased by the blow pipe it burns with a bright flame, leaving a residue of fused lime. It burns in oxygen below red heat. When it comes in contact with water, violent decomposition takes place, both bodies giving up hydrogen thus, $CaH_2 + 2H_2O = Ca(OH)_2 + H_4$ —*Comptes rendus*, cxxvii., 29.

Compound Carbonic Esters. P. Cazencuve and A. Moul have succeeded in producing many hitherto unobtained double carbonic esters of the aromatic and fatty series by heating certain neutral phenolic carbonates in various alcoholic media, with certain organic bases. Thus, when phenyl carbonate is treated with urea in the various alcohols of the fatty series, a double carbonic ester of the phenol and the respective alcoholic radicles has been obtained. In this manner phenyl-methyl and phenyl-ethyl carbonates, and those of the higher members of the fatty series, have been isolated; by substituting other phenolic carbonates, such as those of guaiacol, thymol, and cresol, corresponding double carbonates resulted. Many of these bodies have not previously been isolated. The presence of the base is necessary for the reaction; probably this first combines with the alcohol radicle to form an alcoholate, which is subsequently decomposed; thus acting in the same way as sodium ethylate, which, when brought into a cooled alcohol-ether solution of phenyl carbonate gives double ethyl-phenyl carbonate. *Comptes rendus*, cxxvi., 1871, and cxxvii., 111.

[VOL. LXI, (FOURTH SERIES, VOL. VII.) No. 1469.

Influence of Borates upon Nutrition.

According to Chittenden and Gies (*Amer. Journ. Phys.*), moderate doses of borax and boric acid up to 5 grammes per diem, even when continued for some time, are without effect on the general nutrition. Large doses of borax, from 5 to 10 grammes per diem, lead to an increased excretion of urea. Boric acid is practically inert. Both the acid and the salt are so quickly eliminated through the kidneys that they are unable to exercise any cumulative toxic action. *Therap. Gaz.* [3], xiv., 393.

Hæmatozoon of Goitre.

E. Grasset has observed the presence of a parasite in the blood of eight persons recently developing goitre; in form this closely resembles the hæmatozoon of paludism described by Laveran, but differs from it in containing granules of brick red pigment. The symptoms observed in the first stages of goitre are similar to those in paludal diseases, where such bodies are found in the blood. Figures of the various stages of development of the organism are given.—*Comptes rendus*, cxxvii., 75.

Pectin in Gentian.

Bourquelot and Herissey find that the pectin of gentian root, similar to that of beetroot examined by Wohl and Nissen, when treated with warm nitric acid, gives crystals of mucic acid. When hydrolised with sulphuric acid it gives arabinose.—*Journ. de Pharm.* [6], ix., 49.

Dioscorine.

Plugge and Schütte have lately investigated (*Archiv. Intern. de Pharmacodyn.*) the crystalline alkaloid first isolated by Boorsma from *Dioscorea hirsuta*, one of the most poisonous of the Yam tribe, growing in Java. The pure alkaloid melts at $43^{\circ}5$, and is mono basic. The formula attributed to it is $C_{13}H_{19}NO_2$. Pharmacologically it belongs to the picrotoxin group of poisons.—*Pract.*, lxi., 73.

Anemonin in Anemone Pulsatilla.

Noel and Lambert (*Arch. Internat. de Pharmacodyn*) conclude that anemonin is not the sole active principle of *Anemone pulsatilla*, and that it does not pre-exist in the plant; by distillation, an acrid oil, anemonol, comes over, which probably by subsequent oxidation produces anemonin. The observed pharmacological results obtained with anemonin and with the tincture of the plant are quite different. It is concluded that anemonin does not represent the whole therapeutic value of the plant.—*Pract.*, lxi., 74.

Determination of the Ash of Fats.

Dr. A. Delecœuillerie suggests the following simple plan for burning off fats, previous to incineration, in the analytical determination of the ash. The weighed quantity of the sample is melted in the platinum dish, and then a small ash free filter paper folded in four is stood in the melted fat and lighted; this then serves as a wick, and the fat is quickly and completely burnt off.—*Rev. Pharm. de Flandres*, v., 65.

Toxic Ptomaines of Preserved Meat.

Van Ermenglin states that the toxic ptomaines sometimes found in preserved meats, hams, game pies, etc., are due to the presence of a specific organism *Bacillus botulinus*. The soluble toxine it secretes, called botuline by the author, is stated to be so intensely toxic that one thousandth part of a milligramme killed a rabbit in twenty-four hours. Fortunately this ptomaine is destroyed at a temperature of 60° — 70° C., and the bacillus which produces it at 85° C., so that thorough cooking will remove all dangers in the case of salted or smoked meats.—*Journ. de Pharm* [6], ix., 88.

PHOTO-MICROGRAPHY.—V.

BY EDMUND J. SPITTA, L.R.C.P. LOND., M.R.C.S. ENG., F.R.A.S.

On the Condenser and Substage Diaphragm.

The primary object of the substage condenser is to collect light from the illuminant and concentrate it upon the object. It consists of a system of lenses which form a cone of light, the apex impinging on the specimen, and when thus used, without any stop, the object is said to be illuminated by a "large solid cone of light." But if an iris or other diaphragm contract the aperture of the condenser, the base of the cone is reduced in diameter, and the object is declared to be illuminated by a "narrow solid cone." If a stop—say of a piece of cardboard, or preferably a piece of metal—be placed in the base of the cone so as to prevent all rays passing through its centre, the object has then a hollow cone of light impinging upon it, and is said to be illuminated by "annular light."

Condensers, like objectives, are capable of being made of different foci as well as of different numerical apertures, and also of being constructed chromatically, achromatically, or after the style of the apochromatic objective, when they are called chromatic, achromatic or apochromatic respectively. The ordinary so-called Abbe condenser is a chromatic one, and of no use in photo-micrography. It is a poor form of condenser at the best of times, and from a scientific point of view I have often wondered how its use has ever been adopted in this and other countries in the manner it has, but possibly the words of Dr. Dallinger sufficiently explain it when he says "The fact is that a large part of the admiration that has been expressed for this condenser has resulted, not from a comparison of its results with those of other high-class achromatic condensers, but of images obtained without any substage optical arrangements at all, placed in contrast with the results obtained by using this condenser against the same objective when used without its aid."

A microscope without a condenser is not a microscope at all in these days of perfection, and those who declare that with medium power photo-micrography no condenser at all is required are mistaken, that is, if they desire to obtain perfection of result.

Condensers theoretically should be of the same N. A. as the objective, even to 1.40, but practically it is not of so much service if they are, as no objective—excepting when employed on bacilli—that I am acquainted with will stand a solid cone of light from the condenser the same size as its own N. A.

If one should be so constructed we should look for much greater perfection of the final image, but at present even the Zeiss and Powell and Lealand apochromatic objectives will not bear more than about two-thirds of the illumination of the back lens, as seen down the tube of the microscope on removing the eyepiece, when employed on objects in general, such as diatoms. It will be thus understood if we could obtain a really perfect condenser of about 1.0 N. A., it would practically illuminate at its full solid cone aperture the amount required to about fill a 1.40 N. A. objective so far as necessary; and observers who have tried a condenser of higher N. A. than this, without prejudice have expressed their belief that inasmuch as the higher N. A. has to be cut down to fill only two-thirds of the objective, the advantage gained by the high angle condenser must be lost. And although some who read this may doubt the truth of these remarks, they seem to me to be based on careful observation, and after all are only rational deductions. Let two photographs of subjects other than bacilli, for example, be tried, as I have known, one with a 1.35 N. A. condenser cut down to the necessary

aperture, and the other when using a 1.0 N. A. condenser with its full aperture; the difference between the results, if using direct light and solid cones, have appeared to be indistinguishable.

But when employing the microscope on bacilli—by which is meant when photographing them at high magnification—a full cone of light must be employed, and here it may be found of service to employ a high N. A. condenser, because it shortens exposure and, in some cases, may sharpen the general aspect of the bacilli. If a small solid conc be employed, by closing the iris a white diffraction ring will be photographed around each little object, which will quite spoil the final result. Then again, when using what is called "oblique light"—that is to say, when a diaphragm is placed eccentrically in the base of the condenser, so as to limit the light entering it to one small edge of the back lens, thus passing obliquely on to the object—then, too, is the higher aperture of the condenser to which I have referred of definite use. It is obvious here why the extra aperture should be of service, as it necessarily permits a greater degree of obliquity of the rays passing to the object than would be permitted by one of smaller N. A. The application of oblique light as applied to photo-micrography will be given in a future place when dealing with objects which require its especial use, but mention is merely made to it here as connected with what we think is the real value of these condensers of high N. A.; that is, until objectives are made which will stand their use.

With respect to the hollow cones of light and their utility, much difference of opinion also exists. For testing and showing the inferiority of the outer zone of all objectives, even the very best of apochromatics, this annular light may be most advantageously employed by the optician, but I confess to agree with many who are more qualified to give an opinion than myself, that as to its increasing definition—except, perhaps, on the vexed question of how many lines can be resolved to the inch with a given aperture—is altogether a very doubtful and debatable matter. It is true those who are its advocates reply that it is only oblique light in all azimuths, and that is so; but to the use, except in special circumstances, of oblique light at all I must beg to demur, for it is not difficult to show that it is a most dangerous experiment, filling the image with optical phenomena perhaps in no way connected with the real details of the object itself. It is, moreover, evident from the studies of Professor Abbe in recent years that the final image of even the best of extremely high power objectives that are made is not to be regarded as an absolutely faithful representation of the minutest details of the object in their final form, unless indeed the objective has a N. A. of about 2.00, and is used in conjunction with an immersion fluid of sufficiently high a refractive index, both of which at present seem to be absolutely unattainable. Therefore, it is of very doubtful advantage I think to imperil the close approximation to the truth we already do possess in the performance of our highest power objectives by adding to the final image produced by them a series of the minutest details, which in all cases may, and in many positively are, due to optical phenomena of the highest order of complexity—false images rightly called, indeed, and which are only of interest to the optical student, and which can be varied at pleasure. If extreme oblique light be employed false images can actually be shown outside a diatom, and what can be more disturbing to the scientific mind than to see a photograph of an object with a well-marked additional image of one of its own edges—perhaps covered with dots—lying actually outside the real image of the object itself. There are several who have given as much attention and more to the use of both annular and oblique light than myself, and have abandoned the use of both

unless they can make themselves absolutely confident that what they see with its use is nothing more than an emphasised and better defined expression of what less perfectly can be seen without it.

If anyone is desirous of studying the effects of the use of annular light, whether visually or photographically, he may find the following method of much service to enable him to ascertain the diameter of the central stop to be placed in his condenser for each objective. Having centred the light, look down the tube after removing the eye-piece, and close the iris until it just equals the aperture of the objective, which is known by seeing the iris commencing to narrow the aperture of the posterior lens. Measure this aperture of the iris directly with compasses and make the stop for the lens under consideration $7/10$ of that diameter. If this little stop be suitably supported on thin arms and placed just above, or resting on the edge of the iris itself, it will be found to leave an outside ring of annular light about enough to fill the outer zone of the objective.

For convenience, I may mention an arrangement has been made at my suggestion by Mr. Mason, of Clapham, an optician of much constructive skill. It consists of a ring, as the ordinary stops are made, but where the three arms unite in the centre stop all the brass is filed away, save a sufficient amount to support a little projecting pin. Upon this pin any of the accompanying discs of brass can be dropped—and several sizes are supplied. This is shown in Fig. 1.



FIG. 1.

When condensers were first introduced, and before theoretical considerations were complete, they were racked up or down—that is to say, within or without the focus—so that the image of the edge of the flame was avoided. An even illumination was then thought to be of far more consequence. The Carpenter school used to say the better effect was always produced by racking without the focus, whilst the Quekett disciple stoutly maintained it was just the reverse. Now-a-days we know that for critical definition Sir David Brewster was correct when he pointed out that “the source of light should be focussed by the condenser on the object.” Great authorities like Mr. Nelson and others in the present day have proved this assertion beyond all possibility of doubt.

The Critical Image.

To obtain a “critical image” we must have “critical light,” and this is obtained easily enough with a very limited amount of practice. Having focussed the object with the objective in the ordinary manner the condenser is racked up or down until the image of the edge of the lamp-flame is seen lying across the field; as now the condenser and the objective are both focussed on the object, critical light is said to be obtained. There are those who strongly object to this critical “flame-image,” as it is sometimes called, and will lower their condenser just enough to avoid it, but if this be done with high powers the resulting gain in even illumination must only be obtained at the expense of critical definition. When searching for objects with low powers, say, with an inch or half inch, it may be at times more convenient to sacrifice the ideal image to obtain an evenly illuminated field; for when the correct position of the object is found, it is simple enough to obtain the critical image for purposes of study. If equal critical illumination, however, is required absolutely over the whole field when visually employing the microscope, it can be obtained, if the condenser is really aplanatic, by turning the wick broadways after it has been focussed on the object; but if the condenser be not so aplanatic as could be desired, or when taking a photograph, a second quasi-

aplanatic condenser (the best I know being called a Nelson’s “Bull’s-Eye”) can be interposed between the light and the mirror of the microscope, which, when properly placed, will have the desired effect.

The best position for the auxiliary condenser is such that it will throw parallel rays on the mirror, or if the mirror has been removed, on to the substage condenser. This is obtained by pushing it quite near the illuminant—the round side towards the light—so that the rays issuing from it are practically the same width at a distance of a few feet. A puff of smoke will make their path very apparent and show them up admirably. If they widen, the condenser is too near the illuminant; if they come to a focus, too far away.

In some cases of high magnification I have found definition suffer decidedly from the use of this second condenser, whilst with other objects it was exactly the reverse. There are those better versed in mathematical optics than myself who declare that the final definition must suffer unless this condenser is corrected as well as any other part of the optical apparatus, and that the occasions in which we have found benefit were in reality due to the fact that the parallelism of the rays falling on the substage condenser suited the specimen better than convergent ones.

I shall describe the arrangement I have designed in due course, but there are several points about a condenser to be stated and explained first before passing any further. Tabulated they are:—

1. The focus.
2. The numerical aperture.
3. The size of the aplanatic cone.
4. The definition.

1. With respect to the length of focus, this is usually given by the makers, but may be roughly obtained by allowing parallel rays, say from the sun, to fall upon the back lens of the combination, and having focussed the sun’s image on a piece of paper, by ascertaining the distance this point of focus is from a plane midway between the front and back lens. The method is rough but accurate enough for the purpose.

2. To ascertain the N. A. it is only necessary to employ the Abbe apertometer in the manner already described.

3. To gather the amount or rather the size of the aplanatic cone is quite another matter. First, what is meant by an aplanatic cone? It is a term often used but rarely explained on account of

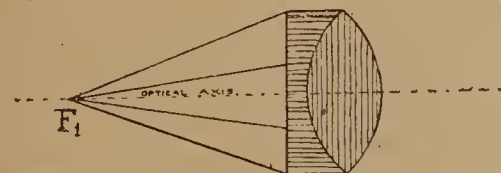


FIG. 2.—APLANATIC.

the somewhat involved nature of the reply. The word itself derived from the Greek means, in point of fact, “free from wandering,” by which the optician understands (as he uses the

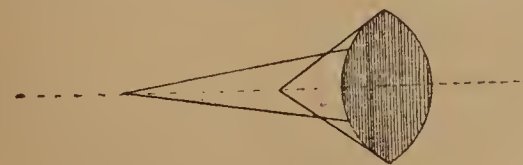


FIG. 3.—UNCORRECTED LENS.

word) that all rays, whether from the periphery of the lens or nearer its axis, shall meet in one point in a given plane, as shown in Fig. 2. This is the ideal perfection of the optician’s art. An ordinary uncorrected lens will always suffer from what is called spherical aberration, by which is meant the marginal rays come to a focus in a point on the axis closer to the lens than those situated

nearer to its axis or centre, as seen exaggerated in Fig. 3. The art referred to of the optician is to try and unite these planes of

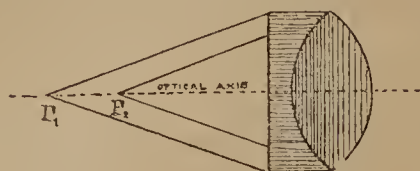


FIG. 4.—OVER CORRECTED.

focus by combining glasses having different properties. If he overdoes it, producing what is technically called



FIG. 5.—UNDER CORRECTED.

“over-correction,” he brings the peripheral rays too far along the axis, as shown in Fig. 4, and if he does not correct enough—“under correction” as it is termed—he leaves the combination with the same error outstanding, although to a less degree, as that possessed by an uncorrected lens, as shown (greatly exaggerated) in Fig. 5.

Now in a condenser it is evident spherical aberration should be as perfectly corrected as possible, and the ideal form should transmit a cone of rays of uniform light equal to its full aperture. In other words, its spherical aberration should be *nil*. Few condensers indeed will approximately do this. Even those by Zeiss are greatly faulty in this respect, but the last dry apochromatic by Powell and Lealand is a decided advance. The best series I have ever seen, I feel bound to admit, are those recently introduced by Mr. Conrady, to whom I have already referred. Whether this be due to the same thought in their construction, which he holds to so strongly in the manufacture of his lenses already mentioned, it is difficult to say; but anyhow they transmit a solid aplanatic cone of great purity, nearly—if not exactly—of the same diameter as their aperture, and how this can best be ascertained and proved must be the next subject.

Let us consider the following. It is desired to ascertain the size of the largest aplanatic cone of a given condenser, whose N. A., we will say, is stated to be 1.0. Fix it in the usual position on the substage, and place on the nose-piece of the microscope first an objective of N. A. .6, and on the stage a diatom. Focus it with the objective, using as an illuminant the edge of the flame, and rack the condenser up and down until this image of the flame is seen across the field with the diatom lying in its centre. This is obtaining critical light. Shift the diatom just out of the field of view, still leaving a portion of the slip and its cover-glass *in situ*. Remove now the eye-piece, and look down the tube of the microscope. One ought to see the back lens of the objective full of light, because the aplanatic cone of the condenser should be greater than that of an objective 0.6, such as we are using. Return now the eye-piece and remove the objective, substituting one of 0.95 N. A.; again focus the diatom, and again obtain critical light by focussing the condenser on the diatom until the edge of the flame is seen across the field. Once more shift the diatom out of the field, and look down the tube as before. The back lens should be quite evenly filled if the aplanatic cone equals the numerical aperture. Then close the iris diaphragm until its edge is just seen, and carefully note the exact size of the opening with a pair of compasses. Now remove the 0.95 and place in its stead an objective of 1.40 N. A. Treat as before with respect to focussing and obtaining critical

light and look down the tube. Only the centre two-thirds of the back lens is now seen full of light, and the slightest touch of the condenser upwards so as to try and fill the lens to a greater amount will cause two dots of black to appear on each side of the lamp flame, which then becomes immediately recognisable. The last point before the appearance of these black dots (really due to spherical aberration) indicates the largest aplanatic cone of the condenser. Slowly and cautiously close the iris diaphragm until it is just visible and measure the size of the aperture with compasses as before. If the diameter is slightly greater than the previous measure for 0.95, the aplanatic cone is just above 0.95. A little experience will soon render these operations quite easy, and the microscopist will be able to readily compare the largest aplanatic cone of the condenser he is testing with its advertised N. A., and the performance of one condenser with another.

The difference which so often exists in these two measures is very striking, and is said to be mostly due to errors in spherical aberration, most condensers being more or less under-corrected, and consequently focus their central rays at a greater distance than their peripheral ones. If a condenser be well corrected the lamp-flame image, as seen on looking down the microscope with the eye-piece *in situ*, should be, when accurately focussed, intensely bright, whilst the field is commensurately dark; but very frequently this darkness is conspicuous by its absence.

It may be here asked what does it matter even if the condenser should be badly corrected and possess a small aplanatic cone? It is this. The object of a condenser is to bring as much of the light of the illuminant as possible to a focus on the object. If now all the rays do not come to the same focus all of those which come to another are so much lost, and only serve to scatter light into the field, and besides this, when using a broad illuminant (such as is produced after obtaining critical light with the edge of the flame, by turning the lamp flame broad side on), not only is there an unequal illumination of the field which is immediately apparent, but no critical light is obtainable at the margins of the field without losing it at the centre, and *vice versa*. As the best of definition will only lie over the area where critical light exists, so a critical image cannot be obtained over the whole field at one and the same time, and appearances may thus be produced in that part where it is absent which do not in reality exist. Again in using oblique light the loss at the margins of field is a serious matter. Two pictures I hope will be shown, one giving the effect of the condenser out of focus over the whole field, and the other with true critical light. When we come to the photography of bacilli and diatoms and other minute objects it will be seen that neglecting to obtain this actual critical light over the whole field may be a source of positive evil.

The definition given by a condenser is important so far as it goes in one respect only. If a good sound image of the flame edge is not well shown, it is very obvious it is more difficult to obtain critical light with the same ease as if it was good, but condensers never give fine images like objectives, it would make them too costly. To test for definition the condenser may be placed on the microscope, and its performance compared with that of an objective of the same N. A., always remembering that the slide should be turned round the opposite way, *i.e.*, with the cover-glass towards the mirror and the plane glass of the slip towards the condenser when fixed on the nose-piece. This, of course, is necessary because the correction has been made, or should have been made, by the optician with respect to the thickness of the slip just as he makes the correction for objective with respect to the thickness of the cover-glass. Another point here comes before our notice. Slips, unfortunately, are of great difference in thick-

ness, some being much thinner than others, just as cover-glass vary, and it is with pleasure I note that Mr. Conrady has allowed for this variation within a certain limit in his new condenser of 0.95 by giving the mount what may be called a corrective collar, just after the fashion that dry objectives of high power are made.

Condensers are manufactured, as before stated, of different N. A., and that of 1.0 is the highest that can be made dry, and all condensers of higher N. A. have to be oiled to the slip with cedar oil, just as the immersion objectives are oiled to the cover glass. The reason of this is the same as that given in the previous article upon dry and immersion lenses, viz., to make one homogeneous system to lose no rays, at least, not more than possible.

Lastly, in using all condensers the distance of the lamp from the mirror, plus the distance of the mirror from the substage condenser, is important, and it would be well if makers marked this conspicuously on the mount. With some opticians it is greater than others, and can mostly only be found by direct experiment. Mr. Conrady has fixed a total distance of six inches, which I regard as a subject of regret, as it seems too small.

All condensers should be mounted so that they can be centred with the optical axis of the microscope to enable them to perform at their best. This is very important, especially with those which are badly corrected for spherical aberration, thus forming another objection to the use of those with small aplanatic cones—they are so extremely sensitive to slight differences in centring.

THE MANUFACTURE OF TOBACCO IN IRELAND.

Not the least interesting incident during the Belfast Conference last week was the visit of inspection by a large party of members of the Conference and their friends to the tobacco factory of Messrs. Gallaher and Co. The new buildings of this factory cover a space of four acres, and form an immense structure. The bonded store occupies a considerable portion of the building, although kept quite unconnected with it so far as entrance is concerned, the door being so locked that it can only be opened if the manager and the Customs official are present at the same time.

In the bonded warehouse or store the tobacco is kept in large cylindrical casks containing about 2 cwt. of the dried leaf. The casks are opened and their contents weighed and the duty paid upon them before they are taken to the factory, the duty varying according to the dryness of the tobacco or the moisture that it may have attracted in the warehouse; the drier it is the less duty being payable. To give some idea of the extent of the business it may be mentioned that the duty paid sometimes exceeds £12,000 a month, and that in the room alone where the tobacco roll is pressed there is as much as £80,000 worth of tobacco at one time. The first operation when the tobacco enters the factory is to moisten the leaf so as to render it pliable. The excess of moisture is removed by passing the leaves between two rollers. The leaves are then flattened out by hand as much as possible, and are then placed in a machine, where a revolving fan drives them up through a wide tube, like a stove chimney, to the top of the warehouse.

In the top room the midrib of the leaf is removed from top to bottom by folding the leaf and catching the midrib against a small iron point like the point of a packing needle, placed in a block in front of each worker. (For all the light operations throughout the factory, women and girls are employed.) The movement is so dexterously performed that it is hardly possible for the eye to follow it. The midribs are placed in a heap at the side of each worker, and are subsequently used for grinding into snuff. The leaves are then conveyed to the floors below, where various machines are at work. The finely cut tobacco, such as shag or

birdseye, is cut up by a machine, something like that used for cutting paper, but the blades are like wide chisels, and are removable for grinding when necessary. The appearance of the birdseye is due to the presence of the smaller or upper portion of the midrib of the leaf, this not being present in the more uniform tobaccos, such as shag. The flake tobacco is made in a similar machine, but hand pressure is exerted against the tobacco as it issues in the cut form, by a flat piece of iron, which is pressed against it. It is then cut into pieces to fit the boxes of various sizes in which it is packed, this operation being performed by the deft fingers of women, who weigh the tobacco for each box, so that the contents may be uniform.

On a lower floor the twist or roll tobacco is made by a machine which twists the tobacco into a roll of a definite size, whence it passes to another machine that makes it into a coil. As it passes from the one machine to the other, a large and a small leaf of tobacco are placed under the roll, the smaller forming an inner, and the larger an outer coat to the roll, the leaves overlapping each other as they are placed under the roll, and thus forming a continuous covering. To render the roll black it has to be submitted to hydraulic pressure in a hot room, being previously treated with olive oil and supported by a coil of rope so as to prevent its being pressed flat in the hydraulic press. On being removed to a cold room it turns black. The coil of rope is placed around it in a machine by the operator who makes the roll of tobacco into a coil. The above comprise the principal forms of tobacco manufactured, but there are several varieties of each form, differing chiefly in size and colour. The leaves used are imported from North Carolina, Kentucky, Turkey, China, and Japan. The Carolina and China leaf is pale coloured, the Kentucky darker. The Carolina is used for fine tobacco and cigarettes, the Kentucky for Irish roll and shag, the Japanese for mixing with other tobacco, the Chinese for colouring smoking tobaccos, the Turkey for making smoking mixture mellow. The Latakia (which consists chiefly of flowering tops) is used for flavouring smoking tobacco, and the Havana seed leaf for cigars. For the above information we are indebted to the kindness of Mr. Gallaher, who has kindly presented to the Museum of the Pharmaceutical Society specimens of the different commercial leaves used in tobacco manufacture.

OPIUM SMOKING IN INDIA.

In the return of recent correspondence between the Government of India and the Secretary of State in Council (including the reports of the Local Governments in India) as to the measures adopted to give effect to the recommendation of the Royal Commission on the subject of the evils connected with opium smoking in India, and the use of rooms as opium smoking saloons, the Government states that steps have been, or are being taken, in all those provinces in India proper in which shops had formerly been licensed for the sale of opium smoking preparations, for the discontinuance of this practice, it being left to the smokers to manufacture their own preparations, subject to strict limits as to the amount of such preparations they may possess at any one time.

In Burma alone, where opium smoking, and not eating, is the common habit, the sale of these preparations to non-Burmans and registered Burmans under prescribed regulations and restrictions will not be interfered with.

With regard to the question of suppressing opium smoking saloons, the majority of the Local Governments agree in the opinion that it is undesirable at present to undertake penal legislation against opium smoking in saloons and clubs. It is hoped, however, that the recent measures taken by the Government of India

against the sale of preparations of opium used for smoking, supplementary as these were to the previous prohibition of smoking on shop premises, will cause so much inconvenience to be attached to the practice of opium smoking that it will gradually fall off.

REVIEWS AND NOTICES OF BOOKS.

ALKALOIDAL ESTIMATION: A Bibliographical Index of Chemical Research Prepared from Original Literature for the Committee of Revision and Publication of the Pharmacopœia of the United States, 1890-1900. By PAUL I. MURRILL, under the direction of ALBERT B. PRESCOTT. Pp. 58.

The object of this book is to furnish a descriptive index of the work that has been done on this subject, that is to say, it contains the names of the authors and the titles of the papers dealing with some of the alkaloids. It cannot be said that the book has much value; it is a collection of a few names and papers without any discrimination as to the value of the papers written on the subject, and of what use such a list of ancient memoirs can be to the Committee of Revision it would be difficult to say. It commences with papers written in 1861, and purports to include work done to 1898. It has, however, no reference to pilocarpine, except that of Poel in 1881, to Maclagan's test for the purity of cocaine, or to the latest work on ipecacuanha in 1894 and since. It contains a list of thirty-seven papers on caffeine from 1876 downwards, some of them very ancient history and now obsolete. A bibliographical index of approved methods of alkaloidal determination would no doubt be useful to compilers of pharmacopœias, but it cannot be said that this index answers such a purpose. Objection may be taken, by the way, to the use of the word "estimation" in the title of the book. "Assay" or "determination" would much better express the idea it is intended to convey.

THE DIAGNOSIS OF DISEASE. By J. PORTER PARKINSON, M.D., M.R.C.P., F.R.C.S. Eng. Crown 8vo. Pp. 178. Twenty-one illustrations. Price 4s. London: Baillière, Tindall and Cox.

In the author's preface it is stated that this small work is meant to meet the requirements of students preparing for examination and junior practitioners of medicine. The first chapter deals with certain general observations to be made; *e.g.*, a survey of the patient's general appearance, posture in bed, etc. The acute specific fevers are then dealt with clearly, if tersely. The third chapter deals with the diseases of the respiratory organs; the succeeding chapters with the circulatory, digestive, urinary and nervous systems. Finally, short sections are devoted to the bones and joints, the blood and the skin. The illustrations are good, but a disproportionate number of them deal with intestinal parasites. Only two anatomical diagrams are given. In a work of this kind such diagrams are usually abundant and most helpful to the student. Works of this class have a certain sphere of utility, but that sphere is a limited one: they are only to be used as companions to clinical work. If that clinical work is thorough the data for diagnosis must be fully investigated. From this point of view it is perhaps to be regretted that the author in the section that deals with the examination of the blood has not found room for illustrations of the microscopic appearance of the blood in leucæmia, pernicious anæmia, malaria, etc. In other purely clinical matters of observation the work would bear amplification. For instance with regard to rheumatic nodules, the student would, in a work on diagnosis, expect more help than is given in the sentence: "Rheumatic nodules, or small masses of fibrous tissue over subcutaneous bones or tendons, are often seen in young patients."

JOHN RADCLIFFE, M.D.

FOUNDER OF THE RADCLIFFE LIBRARY, OXFORD.

Among the famous English physicians of the closing decades of the seventeenth century and of those with which the eighteenth opened, there is no more striking figure than John Radcliffe. He owes this distinction partly to his character, which was original, and indeed in some respects unique, partly to a professional success, unrivalled before or since, and not a little to the splendid munificence of which his founding the Radcliffe Library at Oxford is only one, though the most conspicuous illustration. He was a rough, blunt, independent man, and nevertheless achieved superlative success in a profession in which qualities exactly the opposite of those are generally supposed to lead, with or without conspicuous medical skill, to popularity and reputation in the worlds of rank and fashion. His independence never showed itself more laudably than when he domineered over patients of the highest rank, and told them the truth with disagreeable, and sometimes unnecessary, bluntness, while denouncing as incompetent all of his brethren who had been consulted before recourse was had to himself. It is to his credit that in an age of time-serving he adhered to his principles in Church and State through thick and thin, and when consistency seemed most damaging to his professional prospects. He did not write satires in prose like Arbuthnot or in verse like Garth, but he was a humourist and a wit, and of few physicians of any age and country have so many racy sayings been recorded. As regards his professional skill, it may be said of Radcliffe that he was a born physician who owed little or nothing to books or to the precepts and example either of his predecessors or of his contemporary professional brethren, who often reproached him with an ignorance of medical theory and a divergence from established medical practice. It was to a sort of intuition that he seemed to owe what according to every one but his professional rivals was the almost magical skill with which he discovered the nature of a disease and decided on the proper remedies to be applied to it. At the last extremity, when all other physicians and their remedies had failed, to "call in Radcliffe" was the final resource of patients and their friends, however much they might dislike his plain-speaking and rough manner or view with repugnance his frankly-expressed political opinion. How good a use he made of the large fortune which his medical reputation brought him will be told hereafter.

He was born in 1650, the year after the execution of Charles I. His father was Governor of the Wakefield House of Correction, and a staunch Commonwealth's man, a political creed which the son either did not inherit, or in course of time exchanged for one very different. The youngster received most of his early education from the Wakefield Grammar School, and at fifteen was sent to University College, Oxford. He became senior scholar of his college, "gaining much honour in the Logic school," took in due course his B.A. and M.A. degrees, and was made a fellow of Lincoln, there being no fellowship vacant at University. Such an academic career disposes sufficiently of the charge of ignorance, and even of illiteracy, which was sometimes brought against him in after-life. He turned his attention to medicine, and after taking his M.B. degree, resigned his fellowship at Lincoln, rather than enter holy orders, but retained rooms there while practising medicine in the university, city and county. His unconventional style of treatment procured him the enmity of the local practitioners and the leading apothecaries, but Radcliffe's proved skill, aided perhaps by a little good fortune, overbore all opposition. A hit which he made by curing a lady of "quality" who was suffering from small-pox crowned his success, and the apothecaries were glad to rally to him. In university circles, his racy talk made his company be sought by dons. To one of them, no less a person than the Master of Trinity, we owe an anecdote which throws light on Radcliffe's medical procedure then and afterwards. The Master on one of his visits to Radcliffe's rooms, fancying that such skill as he had displayed must be the result of study, but seeing no books about, asked where his library was. Pointing to a few phials, the inevitable herbal and a skeleton, "There is my library," was the reply.

The chief other anecdote of Radcliffe at Oxford is a little broad, but we do not write for that young lady of fifteen whom Mr. W. S. Gilbert laments he has to keep in view when inditing his librettos. It is too characteristic of Radcliffe to be omitted. Among the quasi-medical knaves at Oxford who practised on the ignorant and credulous were the so-called urine-casters—they seem to have belonged to the lower grade of apothecaries—who pretended that

they could diagnose any and every disease by a simple inspection of the sufferer's urine. They found many dupes, and drove a thriving trade, especially among the rustic population. An old woman who was more ambitious than her neighbours, and was attracted by Radcliffe's fame, came to him with a fee in one hand and a urinal in the other. She made so bold, she said, as to consult him about her sick husband. "Where is he?" said the doctor. "Sick in bed four miles off," was the reply. "And that's his water, no doubt," rejoined Radcliffe. "Yes, an' it please your worship," said the applicant. "What's his trade?" "A shoemaker." Thereupon Radcliffe, taking the urinal from the woman's hand, empties it into his own chamber-utensil, fills hers with his own urine, hands it to her and dismisses her, saying: "Very well, Mistress, take this with you home to your husband, and if he will undertake to fit me with a pair of boots by the sight of my water, I'll make no question of prescribing for his distemper by a sight of his!"

A squabble with the rector of his college, who was much given to antiquarianism, and whom on that account Radcliffe ridiculed in his rough and ready way, led him to give up his rooms at Lincoln—and having taken rather tardily in 1682 his M.D. degree at Oxford—to turn his face Londonwards. The squabble was an unfortunate one for the college, since it alienated Radcliffe from Lincoln; and when he was both able and willing to be a benefactor to his alma mater, it was his first college, University, which profited by his munificence. His stay at Oxford was one of great importance to him in several ways. It strengthened his inborn confidence in himself and in his methods of cure, which his local brethren of the faculty denounced as eccentric and unprofessional. It might be so, but his patients recovered whilst theirs languished or died; and he learned that skill, or a reputation for skill, could easily triumph over the opposition of rivals if its possessor, instead of allowing himself to be browbeaten, repaid his enemies in their own coin, and treated them with a contempt quite equal to that which they professed for him, and with a vigorous insolence in the display of which none of them could approach Radcliffe. In another way his fortunes were powerfully served by an influence, quite unconnected with his profession, which life at Oxford and the society of its dons doubtless exerted on him. His father, it has been seen, was a staunch republican; but the Commonwealth had fallen, never to rise again. Oxford was the headquarters of Toryism, and Radcliffe left it a high-flying Tory, ripe for Jacobitism when the time for Jacobitism should arrive.

Radcliffe came to London in 1684, and his first known domicile was in Bow Street, then a somewhat fashionable locality, in which stood Wills's Coffee House, a favourite resort of wits and beaux. The witty Earl of Dorset, Wycherly, and Sir Godfrey Kneller were among Radcliffe's neighbours. The year after Radcliffe arrived in London James I. became King, and the political creed which Radcliffe had learnt at Oxford was more than ever in the ascendant at Court and in society. Physicians have not ceased, since Radcliffe's day, to hold opinions of their own on politics and religion, but these are seldom paraded, and neither mar nor promote their professional prospects. No one in any class in our day prefers to call in Dr. A rather than Dr. B because Dr. A is a Liberal and Dr. B a Conservative, or Dr. B rather than Dr. C because Dr. B is a High Churchman and Dr. C a Broad Churchman. It would puzzle nine out of every ten patients to say what were the views of their medical advisers on Home Rule or Ritualism, or on the comparative merits of the late Mr. Gladstone and Lord Salisbury as statesmen. It was different in the days in which Radcliffe's lot was cast. There was Dr. Robert Lower, for instance, who, for a considerable period before Radcliffe's arrival in London, was at the head of the profession, and much favoured at the court of Charles II. But with the excitement produced by Titus Oates' huge imposture of a Popish plot, Lower fancied that there was about to be a triumphant Whig reaction, and he trimmed his sails accordingly to profit by the coming gale. The consequence was that he lost favour at Court and with the Tory nobility and gentry, while his general practice fell off considerably. It had been partly snapped up, especially when a Roman Catholic king came to the throne, by Dr. Thomas Short, who was of the same communion as James. As it happened, both Lower and Short died soon after Radcliffe came to London, and the Tory physician from Oxford inherited a large share in the practice of both. Radcliffe's first and best biographer, Pittis, assures his readers that he had frequently heard Radcliffe's apothecary represent him as not having been a year in practice in London when he was making twenty guineas a day, equivalent to three or four times the sum in our time. Such a

success, such gains for a London physician in the first year of his practice, are without a parallel in these or any other days.

What was the secret of this both sudden and splendid success? Several causes contributed to it. First and foremost, undoubtedly, was a belief in the accuracy of his diagnosis and also of his prognosis. His admiring biographer, Pittis, who was, like himself, an Oxford man, and who knew him personally, gives some marvellous illustrations of what seems to have been his intuitive skill in both these respects. When physicians, his rivals, with Hippocrates and Galen, Sydenham and Willis on their lips, pronounced the patient to be suffering from this, that, and the other malady, Radcliffe pronounced it to be something quite different, and turned out to be in the right. Sometimes it happened that the patient's malady was aggravated by the application of remedies little suited to his complaint. Then Radcliffe protested that he had been called in too late, and declared that the case was hopeless, proceeding to ban in the plainest and strongest language the physicians who had treated it as ignorant pretenders to medicine. If the patient in these circumstances did die, great was the general faith in Radcliffe's prognosis. Even in the depreciatory criticism heaped upon him by his enemies it is admitted that he had made lucky hits both in diagnosis and prognosis, and in those days, when the art of medicine was in its infancy, a few hits would make a great noise and create a reputation or wonderfully strengthen one already made. It has been said that Radcliffe was distinguished from his rivals by the simplicity of his treatment; which lay more in monitions respecting regimen than in giving doses of medicine. Doubtless he avoided the administration of such remedies as found favour with his predecessor, the once celebrated Dr. Willis, who though actually credited with a simplification and improvement of the materia medica of his time, recommended in certain cases the "exhibition" of salt of vipers, water of snails, and even the dung of a foal! But that Radcliffe did not leave everything to nature and regimen is proved by the fact that his apothecary died worth £50,000. However, of the solitary record which has reached us of his detailed treatment, and of one specific known to us to have been of his invention, more hereafter. Sometimes he had recourse to daringly eccentric and even ludicrous expedients, of which one instance gravely given by his biographers may be cited with the preliminary caution that a good deal possessing a legendary look seems to have crept into the chronicle of his medical doings. Here is a ludicrous story told by the serious and dignified Dr. Munk himself in his agreeable little volume "The Gold-Headed Cane," which in a fanciful autobiography is made to tell the story of Radcliffe as its owner.

"He was once sent for into the country to visit a gentleman ill of a quinsy. Finding that no external nor internal application would be of service, he desired the lady of the house to order a hasty pudding to be made. When it was done, his own servants were to bring it up, and while the pudding was preparing, he gave them his private instructions. In a short time it was set on the table in full view of the patient. 'Come, Jack and Dick,' said Radcliffe, 'Eat as quickly as possibly, you have had no breakfast this morning.' Both began with their spoons, but on Jack's dipping once only for Dick's twice, a quarrel arose. Spoonfuls of hot pudding were discharged on both sides, and at last handfuls were pelted at each other. The patient was seized with a hearty fit of laughter, the quinsy burst and discharged its contents, and my master soon completed the cure."

The authority of Dr. Munk is needed to make this story believable.

What also contributed to Radcliffe's success—though without a reputation for professional skill it might have availed him little—was the delight taken by both sexes in his conversation. It was witty, racy, and if on occasion coarse, that may have rather enhanced its attraction in those free and easy days. Even at a later time, when Addison endeavoured to refine both the language and manners of "the town," there were passages in the *Spectator* which could not and would not now be read aloud in any family-circle with average notions of decency. No printed prose of Radcliffe, apart from his profession, survives, with the exception of a few familiar letters. But there does survive a copy of verses by him in reply to a singularly indelicate query addressed to him by a married lady. They were not only printed by Pittis, but were reprinted in the memoir of Radcliffe in the dry and solemn pages of the 'Biographia Britannica,' and form a startling illustration of the extraordinary licence of the age. They are quite unfit for republication in our own by no means prudish pages. It is to be hoped that it was not by conversation in a similar strain that

Radcliffe gained the favour of the fair sex, which it would be more benevolent to ascribe to his more innocent wit and handsome person. That he was a great favourite with the ladies and that many of them among his patients tried hard to allure him to the altar is sufficiently vouched for. We are even asked to believe that some of them feigned illness in order to receive professional visits from him and enjoy his society and conversation. Of his adventures, when years later he did think of matrimony, more hereafter.

It is interesting to contrast Radcliffe's legitimate success on starting as a London physician with the shifts and devices to gain a practice to which one of his brethren stooped under similar circumstances. The story would be worth telling were it only for the light which it throws on the procedure of the London physician of those days, and also a little for its connection with one of Radcliffe's best known witticisms. Among the Oxford physicians who were attracted to London, perhaps by hearing of Radcliffe's success, was a certain Edward Hannes, who became in time Sir Edward, and a Court physician, though partly at least by methods which Radcliffe never needed to use, and which, even if he had needed them, he would have disdained to use. Hannes, on coming to town, set up a very spruce equipage to attract attention, and so far succeeded, but he was not satisfied with this. The rest of the story is thus told in his lively way by Mr. J. C. Jeafferson in his 'Book About Doctors,' a work to which we are occasionally indebted.

"To make his name known Hannes used to send his liveried footmen running about the streets, with directions to put their heads into every coach they met and inquire, with accents of alarm, if Dr. Hannes was in it, as if he were pressingly required by a patient. Acting on these orders, one of his fellows, after looking in every carriage between Whitehall and the Royal Exchange, of course without finding his employer, ran up Exchange Alley into Garraway's Coffee House, which was one of the great places of meeting for the members of the medical profession." (Apothecaries used regularly to come to it and consult the physicians, while the latter were over their wine, paying only half-fees for the advice so given, without the patients being personally examined.) "'Gentlemen, can your honours tell me if Dr. Hannes is here?' 'Who wants Dr. Hannes, fellow?' said Radcliffe, for he, according to Pittis, 'was usually there about Exchange time and planted at a table with several apothecaries and surgeons that flocked about him.' 'Lord A and Lord B, your honour,' answered the man. 'No, no, friend,' responded the doctor slowly, and with pleasant (?) irony, 'you are mistaken; these lords don't want your master, 'tis he who wants them.'"

So signal and so rapid was the growth of Radcliffe's reputation that only two years after his arrival in London the Princess (afterwards Queen) Anne chose him for her principal physician; of the rupture of their connection more hereafter. In the following year (1687) he was elected a Fellow of the Royal College of Physicians. To the same year, with his increasing wealth, belongs the first of a series of munificent gifts to his alma mater, an east window in the chapel of University College. James I. thought it worth while to take steps for bringing over to his own communion a physician of Radcliffe's professional eminence and social popularity. One of the royal chaplains was commissioned to make the attempt, and when it failed, seemingly another more promising was made by the head of Radcliffe's earliest Oxford College, which his generosity had already adorned. The Master of University was that Obadiah Walker who figures in Macaulay's 'History' as a renegade from Protestantism to Romanism soon after the accession of James, and as labouring during his short reign to Romanise his college. He failed completely in his strenuous efforts to convert Radcliffe, who may not have been a very religious man, but was far too honest and self-reliant to apostatise in order to secure the favour of the king and what it might bring with it. Some of the letters which passed between Walker and Radcliffe on this matter have been preserved. "As I never flattered a man myself," Radcliffe writes to Walker, "so it is my firm resolution never to be wheedled out of my real sentiments, which are that since it has been my good fortune to be educated according to the usage of the Church of England, established by law, I shall never make myself so unhappy as to shame my teachers and instructors by departing from what I have imbibed from them." But he bore Walker no ill-will. On the contrary, Radcliffe showed him practical sympathy when, fallen from his high academic estate and deprived of his mastership, he was impoverished and sent to prison. Radcliffe stepped forward, gave Walker a handsome

allowance during life, and when he died contributed largely to his funeral expenses.

This was not the way to court the favour of William the Deliverer. But Radcliffe was a man of thorough independence, political and personal, and so far his character, however faulty in some directions, commands respect. And it seems to have commanded the respect of those whose respect was best worth having. When the Revolution of 1688 seated William III. pretty firmly on the throne, Radcliffe adhered to the fallen cause, declared himself a Jacobite and remained one to the end of his days. Yet this "professed Jacobite," as the Whig Bishop Burnet reproachfully called him, was the physician whom William and William's favourites trusted most, and both William and Mary were very liberal in their dealings with him. William wished to make him one of his physicians, and though Radcliffe declined the honour, for eleven years he pocketed more than six hundred guineas annually by attending medically on the King. For medical services rendered to two of William's favourites, Portland and Rochford, the King made him a gift of five hundred guineas from the Privy Purse, and having sent for him to attend Albemarle when in camp on the Continent, 1200 guineas was the sum which he presented to Radcliffe, for having come so far and cured his especial favourite. Another 1000 guineas was given him by Queen Mary for his successful treatment on one occasion of her nephew, the boy Duke of Gloucester, the Princess Anne's one surviving son and heir-presumptive to the crown. When Queen Mary herself was seized by the malady which ended in her death, to the unutterable grief of her husband and amid general lamentation, the Privy Council itself called in the "professed Jacobite," but too late. "Sir Thomas Millington," says Lord Macaulay, "who was physician-in-ordinary to the King, thought that she had the measles. But Radcliffe, who with coarse manners and little book-learning had raised himself to the first practice in London, chiefly by his rare skill in diagnosis, uttered the more alarming words, small-pox." Further on Macaulay adds in a suggestive passage well worth quoting.

"During two or three days there were many alternations of hope and fear. The physicians contradicted each other and themselves in a way which sufficiently indicated the state of medical science in that age. The disease was measles, it was scarlet fever, it was spotted fever; it was erysipelas. At one moment some symptoms, which in truth showed that the case was almost hopeless, were hailed as indications of returning health. At length all doubt was over; Radcliffe's opinion proved to be right. It was plain that the Queen was sinking under small-pox of the most malignant type."

(To be continued.)

TRIFLES IN PHOTOGRAPHY.

When one is away from home enjoying a well-earned holiday, one is apt to overlook some one or more of those little trifles which just make all the difference between a "might-have-been" and a success. For example, to quote a personal experience, some time ago, when starting from home with a new camera, we loaded up the slides the day before starting, and did not make any exposures until the day after arriving at our destination. The plates were carefully dusted before inserting in the holders, but a long and shaky railway journey had somehow raised a dust, and those plates were almost spoiled by dust spots. The moral obviously is, dust the plates just before exposure, after a journey. Another dust trouble may be mentioned. The camera and slides are sometimes carried along a dusty road for a mile or two, and, although all are shut up in the usual waterproof canvas case, yet experience shows that this by no means prevents dust finding its way into slides and camera. The camera can easily be dusted out by extending to its full length, removing the lens and focussing screen, and blowing through it a few times.

The lens and shutter are both worthy of attention in the matter of protecting from dust. How many splendid pictures have been spoiled by a grain of sand getting into the working parts of the shutter, and making it stick just at the critical moment? It is a good plan to wipe out the camera bellows with a bit of rag, with just a suspicion (no more) of glycerin, or, failing that, olive oil.

The lens should be kept in a soft, clean, chamois leather bag, large enough to pull tight with a string and slot, and then tied round the neck. The shutter may also, if detachable from the camera, be packed in a similar bag. The feathery end of a good stiff quill pen is a capital thing for clearing dust away from the working parts of a shutter. The focussing cloth wrapped round

the camera and slides is generally sufficient to keep out dust. The plates should be dusted after they are in the holders, and again just before development. Should, by chance, the plate dusting brush be forgotten, a very fair substitute may be made out of a bit of wide velvet ribbon. Take half-a-dozen pieces of stout paper, say the size of a postcard, and bend (not fold) over so as to bring their narrow edges together. Then over this fasten by a few stitches the bit of velvet, and there is at once a springy pad which will serve fairly well as a substitute for the ordinary camel-hair brush. Whatever plate duster is used, the user should be careful to see that it is dry, clean, and free from grit, otherwise a trifle of this kind may add another to the list of "might-have-beens."

Another group of trifles which at times are just enough to turn a possible success into a "might-have-been" are those immediately connected with the actual manipulation of the camera at the moment of taking the negative. For instance, carelessness in lifting off the cap and giving the whole apparatus just enough of a shake to spoil the picture. Or, again, a want of due care in seeing that the camera is level, and the swing-back vertical. These two points are, perhaps, most frequently brought home to us in dealing with architecture, but the effect of their neglect is by no means limited to that class of work.

The hand camera man will be wise to employ a level at any rate until he has acquired the instinct of holding the camera level without this aid. This point leads one to think of the failures due to faulty judgment of distance, and the consequent result of getting the important parts of the picture markedly out of focus. Quickly and correctly judging distance with sufficient accuracy to see the focus right is almost an instinct with some, but it is one of those things that anyone with a little practice may learn.

It is, however, when one finds one's self at the seaside, and in lightness of heart begins snapping away at the water craft, and estimating the distance of some boat to be ten feet, when, perhaps, twenty yards would be nearer the mark, that attention to such trifles becomes a serious matter. Everyone knows by experience or hearsay that objects on the water are apt to look nearer than they are, but few are careful to bear this in mind when the distances are small. Yet one may easily convince oneself of this by picking up a couple of similar sized pebbles from the shingle, and throwing one along the shore and the other out to sea. One is generally surprised to find what a short distance the latter stone seems to go.

Supposing the plate safely exposed, there are yet several trifles which may stand in the way of its becoming a perfect negative. We may assume that the majority of practical men are of the opinion that the exposure and development of a plate should be harmonised to each other—in other words, that most workers would not attempt to use the same strength and relative constituents of the developer for one plate very fully exposed and another with the exposure cut down to a minimum. Hence, it becomes highly desirable to know the details of exposure of a plate before commencing development.

Not a few of us, when on a holiday, take the precaution of numbering our exposed plates in some way, so that they can easily be identified before development begins. A neglect of this little trifle may spoil a good thing. In connection with this point, one may take this opportunity of urging upon the younger members of the craft the desirability of always using an exposure pocket book, where is entered details of the month, hour, light, lens stop, and subject. It is well not to trust to memory to put these things down by and by; it should be done at once, and less mistakes are likely to be made. Each plate must be lettered or numbered, of course, so that it may correspond and be recognised before development takes place.

In the matter of changing plates, one is apt, when away from home, to be a little careless about excluding actinic light. One is, perhaps, tired after a long day's excursion, and apt to hope it will not matter—when, alas! the issue of a fogged plate makes one afterwards vainly wish a little more care had been taken to see that all dangerous light had been kept well away from the plate. It is, of course, not always possible to secure a really dark room, but a little forethought may go a long way towards mitigating the possible evil consequences—keeping as far as possible away from a window where light is sneaking in, or getting partly behind a chest of drawers, or utilising a cupboard or wardrobe, and also protecting the plate by turning one's back to the light, and letting the body act as a screen. Then, again, by getting everything ready before the slides or plate boxes are

open, and being expeditious in one's movements, much may be done. Neglect of such trifling matters may prove serious.

Again a warning in time—*experientia docet*, do not leave slides or plate boxes about in the bedroom, where inquisitive domestics may innocently wonder what there is in that little funny box. It is not a pleasant thing to find that a boxful of carefully-made exposures have all been hopelessly fogged in this way. N.B.—Turn the key on all plates exposed or not exposed. It is a trifling precaution that can do no harm, and may save one much annoyance and disappointment.

The foregoing suggestions as to the neglect of some trifles, which may in the issue prove serious, are for the most part drawn either from painful personal experience, or have been learned through the warning example of others. At any rate, they are all practical points, which may by the unthinking or inexperienced be easily overlooked until their due consequences are realised, and when remedy is beyond the court. Therefore the proverbial wise man, *i.e.*, "one who profits by the errors of others," will here exemplify his wisdom by putting into practice the old adage, "forewarned is forearmed."—*Photography*.

FEDERATION OF LOCAL PHARMACEUTICAL ASSOCIATIONS.

A meeting of delegates of various local associations was held at the Grand Central Hotel, Belfast, on Wednesday, August 10, the President, Mr. W. L. Currie, of Glasgow, in the chair. Delegates representative of the following local associations were present:—

- Edinburgh and District Chemists' Trade Association.
- North-East Lancashire Chemists' Association.
- Liverpool Chemists' Association.
- Manchester Pharmaceutical Association.
- Newcastle-on-Tyne and District Chemists' Association.
- Plymouth, Devonport, Stonehouse and District Chemists' Association.
- Glasgow and West of Scotland Pharmaceutical Association.
- Forfarshire and District Chemists' Association.
- Burnley and District Chemists' Association.
- Midland Pharmaceutical Association.
- Midland Chemists' Assistants' Association.
- Cambridge Pharmaceutical Association.

The following resolutions were approved:—

- (a) That it is desirable in the interest of pharmacy that firms trading under ancient titles should also use the names of the present proprietors in conjunction therewith.
- (b) In view of the passing of the Pharmacy Acts Amendment Act, 1898, the Federation suggests that local associations use their best efforts to induce all registered chemists to become members of the Pharmaceutical Society.
- (c) The Federation invites local associations to elicit the opinion of their members as to whether the recommendations issued by the Pharmaceutical Society regarding the keeping and storing of poisons should become bye-laws of the Society.
- (d) That the Secretary be instructed to send a communication to all local associations suggesting that during the ensuing winter session each association should consider, in committee, the whole question of company trading, as it affects the legitimate interests of registered chemists and the protection of the public safety aimed at in the Pharmacy Acts; and that an effort should be made to formulate some definite line of policy on which all registered chemists should agree to act.
- (e) That the Secretary be instructed to send a communication to the Council of the Pharmaceutical Society, congratulating it on the successful passing of the Pharmacy Acts Amendment Act, and urging it to press forward the question of company trading as affecting the legitimate interests of registered chemists.

It was the general opinion of the meeting that local associations could do more towards furthering the aims of the Federation by bringing trade questions forward for discussion and sending the opinions elicited to the Secretary to be brought forward at the next Annual Meeting of the Federation.

Mr. R. C. Cowley, Liverpool, was elected Hon. Secretary of the Federation, in succession to Mr. R. Darton Gibbs, Birmingham.

THIOL is the potassium salt of guaiacol-sulphonic acid, and contains 60 per cent. of guaiacol. It forms a white powder of bitter and subsequently sweetish taste. It is readily soluble in water, does not irritate, is readily absorbed, and is employed as a remedy in tuberculosis. Doses of 1 to 1.5 gramme in twenty-four hours have been prescribed in aqueous solution sweetened with syrup of orange.—*Zeit. d. Allg. oest. Apoth. Ver.*, lii., 306.

FORMULÆ FOR TEST PAPERS.*

POTASSIUM FERRICYANIDE AND CITRIC ACID.—The papers have likewise the property of precipitating albumin from urine.

WURSTER'S DIMETHYL-PARAPHENYLDIAMINE PAPER. (Wurster's red ozone paper).—Filter paper impregnated with a solution of paraphenyldiamine. Indicator of ozone, sulphuretted hydrogen, etc.

WURSTER'S TETRAMETHYL PARAPHENYLDIAMINE PAPER.—Filter paper impregnated with tetramethyl-paraphenyl-diamine. Assumes an intense bluish-violet colour in the presence of traces of active oxygen in neutral or acetic acid solution. Reagent for ozone and peroxide of hydrogen.

REAGENT PAPER (AFTER GEISSLER AND OLIVER) FOR DETECTING ALBUMIN.—(a) *Picric and Citric Acids.*—A precipitate results if a strip of the paper is dipped into urine containing albumin. (b) *Sodium Tungstate and Citric Acid.*—The presence of albumin, mucin, uric acid, peptones, and creatinine is revealed by a precipitate resulting after strips of the above paper have been dipped into the urine.

DETECTION OF SUGAR IN URINE—INDIGO, CARMINE AND CARBONATE OF SODIUM PAPERS.—These papers furnish the Mulder reaction (a successive green, red, and yellow coloration) in the presence of sugar in urine.

GRIESS TEST PAPER.—Filter paper saturated with an alcoholic solution of metaphenylene-diamine. Gives a yellow to brown colour reaction in the presence of nitrous acid and nitrites.

GRIESS RED TEST PAPER.—Filter paper saturated with an alcoholic solution of sulphanic acid and alpha-naphthylamine hydrochloride. The presence of nitrous acid and nitrites produces a dirty red coloration of the paper.

PALLADIUM CHLORIDE PAPER.—Swedish filter paper saturated with a solution of palladium chloride. Reagent for coal gas, carburetted hydrogen, carbonic acid, etc., shows liberation of metallic palladium.

PHENOL PHTHALEIN PAPER.—Filter paper impregnated with an alcoholic phenol phtalein solution employed as indicator in alkalimetry.

PHLOROGLUCIN VANILLIN PAPERS.—Filter paper saturated with alcoholic solution of phloroglucin-vanillin, employed as a reagent for detecting the free hydrochloric acid of gastric juice.—*Deutsch. Amerik. Apoth. Ztg.*, xviii., 100.

AZOLITMINE PAPER.—A reddish-violet bibulous paper impregnated with azolitmine. It is coloured red by acids, blue by alkalis.

LEAD ACETATE PAPER.—Filter paper saturated with a solution of neutral lead acetate, for detecting the presence of sulphuretted hydrogen.

LEAD GLAZED PAPER.—Glazed paper impregnated with carbonate of lead, for detecting the presence of sulphuretted hydrogen.

BRASILINE PAPERS.—Filter paper impregnated with a solution of brasiline; serves as an indicator for acids.

BLUE CARMINE PAPER.—Filter paper impregnated with a solution of indigo carmine, for detecting oxygen.

RED CARMINE PAPER.—Paper saturated with a solution of ammonia-carmine, an indicator of acids, giving a yellowish-red colour reaction.

CURCUMA PAPER.—Filter paper saturated with an alcoholic tincture of turmeric. Indicator of caustic alkalis and alkaline earths, giving a reddish-brown colour reaction. It is coloured brown by boric acid, sulphur-yellow by acids. Sensibility for KHO about 1:180,000, for NH₃ 1:35,000.

FUCHSINE PAPER.—Paper saturated with an alcoholic fuchsine solution, employed for detecting sulphuric acid.

DAHLIA PAPER.—Filter paper impregnated with an alcoholic solution of the colouring matter of *Dahlia variabilis*. Indicator of acids and alkalis.

HÆMATOXYLIN PAPER.—Filter paper saturated with aqueous solution of hæmatoxylin. Extremely sensitive indicator for ammonia, alkali, alkaline earths, and certain metals.

BILBERRY PAPER.—Paper saturated with an alcoholic or aqueous extract of bilberries. Employed as an indicator of ammonia and fixed alkalis.

BLUE AND RED LITMUS PAPER.—Very sensitive indicators obtained by immersing filter paper with a neutral alcoholic litmus tincture. Sensibility of red paper for KOH 1:20,000 of blue paper, for HCl 1:50,000.

COBALT PAPER.—Filter paper impregnated with cobalt chloride and methyl blue solution. Indicator of zinc, copper, and nickel.

CONGO PAPER.—Prepared by impregnating filter paper with a solution of Congo red. Turned blue by acids. Indicator of free acids.

ALBUMIN PAPER.—Paper impregnated with an aqueous solution of albumin. Principally employed in photography.

LACMOID PAPER.—Filter paper saturated with an aqueous solution of lacmoid. Obtainable in red and blue, and used in the same way as litmus paper. The red lacmoid paper is greatly superior to red litmus paper as an indicator for alkalis. It should be kept in a well-stoppered bottle, as it is very apt to spoil.

METHYL ORANGE PAPER.—Filter paper saturated with an aqueous solution of methyl orange. Employed as an indicator of acids and alkalis. The methyl orange paper is coloured deep brownish-yellow by mineral acids.

OZONE PAPER.—Potassium iodide starch paper. (Schonbein's ozone paper.) Filter paper saturated with starch paste which has previously been mixed with potassium iodide. Gives a blue reaction when ozone is present.

THALLIUM PAPER.—Filter paper saturated with thallos hydrate. Gives a brown reaction when ozone is present.

BOETTGER'S TEST PAPER.—Filter paper saturated with neutral gold chloride, coloured violet in the presence of ozone.

POLE TEST PAPER.—Unsize paper saturated with an alcoholic solution of phloroglucin-vanillin. The paper, when moistened, turns red when applied to the negative pole of an electric current.

SILVER PAPER.—Filter paper impregnated with an aqueous solution of silver nitrate. Indicator of chromic acid, arsenious acid, etc. Delicate reagent for arsenic, specially suited for toxicological examinations.

TROPEOLIN PAPER.—Filter paper impregnated with a saturated alcoholic solution of tropeolin. Gives a lilac reaction in the presence of free hydrochloric acid in gastric juice.

POTASSIUM MERCURIC IODIDE AND CITRIC ACID PAPER.—Albuminous urine shaken with this paper gives a voluminous precipitate.

EXTRACTS FROM CONSULAR REPORTS.

THE CHINESE NAME FOR STAR ANISEED is Pa-Chioh, signifying "eight horns or corners," from the shape of the fruit, which consists of eight seed-capsules, arranged to form a star. The tree (*Illicium verum*, Hook. f.) which produces this fruit, Mr. Alexander Hosie reports, occupies a comparatively small area, being confined, as far as is yet known, to Tonquin and the south-west of Kwangsi. The bulk of the aniseed trade has hitherto passed through the port of Pakhoi, and in 1896 Pakhoi exported 6691 piculs, of the value of 113,817 Haikwan taels. This, as well as aniseed oil extracted from the amber-coloured seeds (2053 piculs, valued at 410,692 Haikwan taels), was sent to Hong Kong, while 69 piculs of oil, of the value of 15,552 Haikwan taels, passed Lungchow for Tonquin. It is stated that, owing to the destructive method of collecting the fruit, there is a good crop only once in three years. Complaints have been made that the oil is frequently adulterated with kerosene.

THE OVOID CARDAMOM, the fruit of *Amomum medicine*, Low, like aniseed, is a native of South-western Kwangsi as well as of Tonquin. The centres of export by the West River are Nan-ning and Po-sê.

THE DYE-PLANTS OF KWANGSI are indigo, probably from *Indigofera tinctoria*, L., and the dye-yarn (Shu-liang), the so-called "false gambier," the tuberous root of *Dioscorea rhipogonoides*, Oliver. The former is exported in a liquid state in wooden tubs mostly by junk to the Canton province. Dye-yarns are also largely exported, and are used in the Canton and other provinces for tanning and for dyeing native and foreign cottons, grass-cloth, and silk. The natural dye is brown, if a darker shade is required alum or nutgalls are added, and in Canton the juice of green or unripe persimmons is frequently applied as a varnish to the outside of the cloth. This possesses a waterproofing quality, and to remove dirt only superficial washing is necessary, as the cloth does not absorb the water.

THE MOST IMPORTANT FIBRE-YIELDING PLANT grown in Kwangsi (China) is *Boehmeria nivea*, L., from which rhea, ramie, or China-grass is derived. The chief centre of cultivation lies between Wuchow and Kuei-lin, the capital of the province.

* From the *Pharmaceutische Post*.

SULPHIDE OF ANTIMONY is abundant in the Nan-ning, Ssu-ch'eng, Chên-an, and T'ai-p'ing prefectures of Wuchow, where it is stated there are whole mountains full of the ore.

ENGLISH COPPER SULPHATE finds the readiest market, and is most preferred by the viticulturists of Algeria, according to the report of Consul-General Hay-Newton, it being slightly cheaper and also purer than that from other countries. About 1000 tons are annually imported into the French colony, of which some 478 tons arrive via Marseilles from Great Britain. Sulphate of Copper is used in large quantities in the composition of "Bouillie Borde-laise," as well as for sprinkling on the vines. The price is from 22 to 24 fr. per 100 kilos., and the duty 2 fr. 75 c. to 3 fr., accord- ing to purity.

THE WINE EXPORT OF ALGERIA during 1897 was 80,871,632 gallons, an increase of 9,765,828 gallons over 1896.

PHYLLOXERA has so far caused very little trouble to the vine growers of the province of Algiers, which is entirely exempt from the disease, but the same cannot be said of Oran, where, in the spring of 1897, it gave great cause for anxiety. In the department of Constantine the phylloxera is gaining ground, and notwithstand- ing all precautions taken to check it, the disease seems to increase every year. In the region of Jemmapes the fight against it has been abandoned and the proprietors have been authorised to replant with American vines, but this cannot be done without expense, and they have not the money to expend. The Conseil-Général voted the sum of £4000 to be given to growers who replant in the Philippeville district if the Government gave a like sum. This was decided on, and hopes were entertained that the sum would be forthcoming at once. The growers were disappointed, however, for the Government decided that the amount in question was to be divided, not as first agreed, between the growers of the com- munes of Philippeville and St. Charles, but between all the growers in the arrondissement of Philippeville, which comprises thirteen communes and an area of 406,833 hectares (1,005,184 acres), of which 4822 hectares (11,915 acres) are planted with vines.

PHOSPHATES have recently been discovered at several places in Algiers, viz., Tocqueville, Bordj Rediz (near Setif), and Rio Salado. At Tocqueville 212 tons have been extracted, and at Rio Salado 100 workmen produced 738 tons during five months. The bulk of this was sold, the lowest price realising 40 fr. per ton.

THE ALGERIAN TOBACCO CROP of 1896 amounted to 10,288,408 lbs. and in 1897 to 6,862,376 lbs., the greater part of which was bought by the French Regie; the remainder was manufactured in Algeria and consumed or exported to the French colonies blended with a small portion of American and Havana tobacco. Vice-Consul Drummond-Hay reports that since last year the French Regie have authorised the introduction into France, with a special duty, of two or three Algerian firms' produce.

SULPHURIC ACID is to be manufactured at Bôna (Algeria) if the project of a French firm is carried out. According to Vice-Consul Scratchley, the sea-shore at Philippeville was the site originally chosen for the factory, but this project was abandoned and Bôna decided upon.

THE CASSIA-PRODUCING DISTRICTS OF CHINA are situated in the southern borderlands of Kwangtung and Kwangsi provinces, in the south of the West River. The market town of Ta-wu, in the P'ing-nan district, is the great centre of the cassia trade, where 50,000 to 60,000 piculs are annually disposed of. It is exported, packed in matting, by junk to Canton, where there is a powerful cassia ring, which has an arrangement with the native custom house and likin offices and virtually controls the whole trade of Kwangtung and Kwangsi. The former province is reported to produce three times the export from the latter. The total export of cassia, including cassia lignea, buds, twigs, twig-bark, and broken cassia from the two provinces through Canton in 1896 amounted to 102,810 piculs, valued at 590,798 H. taels. Of so-called cinnamon 99 piculs valued at 4801 H. taels were also exported, as well as 398 piculs of leaf-oil of the value of 56,484 H. taels, making a total value of cassia and cassia products of 653,083 H. taels. China is reported to consume very much more than she exports, so that the total value of the cassia trade must be very considerable.

SELECTED FORMULÆ.

PALATABLE LAXATIVES.

Oil of cinnamon, 2 minims; oil of coriander, 2 minims; oil of caraway, 2 minims; oil of fennel, 2 minims; oil of orange, 10 minims; oil of anise, 10 minims; tincture of ginger, $\frac{1}{2}$ fl. oz.; tincture of podophyllum, $\frac{1}{2}$ fl. oz.; water, $2\frac{1}{2}$ fl. ozs.; fluid extract of senna, 12 fl. ozs.; tartaric acid, 1 oz.; syrup, to make 4 pints. Dissolve the oils in the tincture of ginger, add the tincture of podophyllum, then the senna, then the acid dissolved in the water. Set aside for seven days, and filter. Add sufficient syrup to the filtrate to make up to 4 pints. Rhubarb, 1 oz.; Alexandria senna, 1 oz.; pumpkin seed, $\frac{1}{2}$ oz.; anise seed, $\frac{1}{2}$ oz.; wormseed, $\frac{1}{2}$ oz.; hydrastis, $\frac{1}{2}$ oz.; potassium bicarbonate, 1 oz.; sugar, 32 ozs.; oil of peppermint, 10 minims; glycerin water, alcohol, and treacle, of each *q.s.* Reduce the drugs to No. 40 powder, moisten with a menstruum of glycerin, 1 part; rectified spirit, 2 parts; and water, 3 parts. Macerate forty-eight hours, then percolate up to 2 pints. Dissolve the potassium bicarbonate, sugar, and oil of peppermint in the percolate; lastly, add enough treacle to produce 4 pints. Dose: 1 to 2 teaspoonfuls for children.—*Pediatrics*, iv., 380.

OXYTUBERCULIN.

Hirschfelder gives this name to tuberculin altered by oxidation. After numerous tests he concludes that oxytuberculin is able to heal local and general tuberculosis. The culture medium employed for cultivating the tubercle bacillus consists of veal bouillon, with 4 per cent. of glycerin, 1 per cent. Witte's pepton, $\frac{1}{2}$ per cent. sodium chloride, and $\frac{3}{10}$ per cent. normal carbonate of sodium. After the bacillus is completely grown the culture is sterilised for an hour and filtered. The filtrate is mixed with an eighth part of a 10 per cent. solution of peroxide of hydrogen, put into a bottle plugged with wool, and sterilised thoroughly. The same quantity of the above solution is added every 12 hours, in eight successive portions; free peroxide of hydrogen is removed by alkalisation, before the lymph is used. The advantage of oxytuberculin is said to be that it can be used in proportionally larger doses (20 C.c. per diem) than similar preparations, without producing any ill effects.—*Pharm. Zeitg.*, xlii., 326.

KOLA TABLETS.

The following formulæ for the preparation of kola in a convenient form are due to L. Bernegau:—KOLA TABLETS.—Dried extract of kola, 50 grammes; vanillin sugar, 35 grammes; chocolate powder, 15 grammes; mix intimately with sufficient starch and divide into 100 tablets. An aromatic mixture may be added, such as powdered cinnamon, 10 grammes; powdered cardamoms, 20 grammes; powdered cloves, 0.5 gramme; powdered mace, 0.1 gramme. KOLA PEPPERMINT TABLETS:—Dried extract of kola, 50 grammes; white sugar, 49 grammes; peppermint oil, 1 gramme. Mix intimately with sufficient starch and divide into 100 tablets. KOLA CITRIC ACID TABLETS:—Dried extract of kola, 50 grammes; vanillin sugar, 45 grammes; citric acid, 5 grammes; lemon oil, 2 drops. To be mixed intimately with sufficient starch and divided into 100 tablets. For lozenges the mass is mixed with mucilage of acacia or of tragacanth. Vanillin sugar is composed of sugar, 500, and vanillin, 1. KOLA PEPSIN TABLETS FOR INDIGESTION:—Pepsin, 10; pure hydrochloric acid, 2; milk sugar, 38; dried extract of kola, 50. To be mixed intimately with sufficient starch divided into 100 tablets.—*Pharm. Centralh.*, xxxix., 92, after *Pharm. Ztg.*, 1897, 781.

A GENERAL DISINFECTANT.

Tichborne recommends the following mixture for general disinfecting purposes:—Crystallised phenol, 2; camphor, 6; naphthalene, 1; coloured with rosaniline carbolate. For use on the large scale terebene may be substituted for the camphor, and crude carbolic acid or light tar oils for the crystallised phenol. When sewers have to be disinfected light tar oils are preferable to phenol, since the former, by reason of their low gravity, float on the surface of the sewage, and all gases evolved are bound to pass through the disinfecting layer, whereas when phenol is used its greater gravity causes it to sink, and so the gases do not come in contact with it.—*Dublin Journ. Med. Science* [3], cccvii., 6.

STARCH GLOSS TABLETS.

Starch gloss tablets may be made by mixing stearin, 5 parts, with Japan wax, 2 parts.

PARLIAMENTARY NOTES.

THE LAST WORKING DAY of the House of Lords presented a very interesting exhibition of the Lord Chancellor in a fighting mood. A member of the late Government in a stump speech had hinted that the Select Committee on the Companies Bill had not been working with that assiduity which the country had a right to expect. He had even gone so far as to wickedly suggest that the functions of the Lord Chancellor were confined to making magistrates and drawing magnificent emoluments. This naturally somewhat ruffled Lord Halsbury and led him to submit to the House an elaborate defence of the Select Committee, and an explanation of the circumstances which have contributed to the two years' delay in reporting on the Companies' Bill. In the first place, the Committee has on its strength several of the great Law Lords, and they cannot devote their exclusive energies to the consideration of Committee work without neglecting their more important judicial duties. Then, again, as the Lord Chancellor explained, he has other duties besides sitting on the woolsack, which render it impossible to have a meeting of the Committee every day. Hence the Committee has been obliged to move very slowly. A third reason is to be found in the undisputed fact that the company problem is not an easy one to solve. So far we may sympathise with the Lord Chancellor. But is it the wisest thing to do, if the Government be really in earnest, to remit such a difficult matter to a body which is already overburdened with other duties? And why should it be necessary to have a three years' Select Committee after the Departmental Committee of the Board of Trade have exhaustively investigated the whole question of the inadequacy of company law, has collected evidence, reported conclusions, and even drafted a Bill with a view to giving legislative effect to the amendments thought essential in the interests of commerce and of equity? These be mysteries which no speech from the woolsack is likely to clear up.

THE MIND OF THE LORD CHANCELLOR respecting joint-stock companies was pretty well revealed by two items in his speech. He stated as his conviction that no attempt should be made to retard the development of joint-stock companies carrying on industrial enterprises. And, secondly, he felt that the proportion of fraudulent or bogus companies was ridiculously small when one considered the mass of *bonâ-fide* concerns in this country. Perhaps this may be so, but after the decisions of the House of Lords *in re* Wragge and Salomon, it is rather difficult for an ordinary person to agree to the legal definition of a "*bonâ-fide*" company. The obvious deduction to be made from Lord Halsbury's remarks is that no very sweeping alteration of the law need be expected. The Committee expects to be reappointed next Session, and hopes to complete its labours, but the outcome of those deliberate exertions will probably not be of a very startling nature.

A GOOD WIND-UP to the Session in the House of Commons was the announcement that an Imperial Penny Postage will on December 25 be established between the United Kingdom, Canada, Newfoundland, the Cape of Good Hope, and Natal. Since the opening of Parliament an unprecedented number of postal reforms have been inaugurated, and though the indefatigable Henniker Heaton may have been the exciting cause of many of them, the Postmaster-General and his permanent officers are to be congratulated on the enterprise they have shown and their growing willingness to consider the public convenience.

THE PRIVY COUNCIL OFFICE has just experienced a somewhat violent change. Sir Charles Peel, who has been Clerk to the Council for many years, has retired owing to ill-health and, contrary to expectation, his place has not been taken by the Deputy Clerk, Mr. J. H. Harrison, son of a former Clerk to the Council. The new head of the department is Mr. Almeric W. Fitzroy, a private secretary to the Lord President, and formerly on the staff of the Committee of Council on Education. The post is worth £1700 a year. We may expect to find some of the Scotch Members of Parliament asking questions about this appointment next Session. Mr. Caldwell and Dr. Clarke are specially desirous of effecting economies in the Privy Council Office.

BACTERIOLOGICAL INSTITUTE FOR INDIA.—Replying to Mr. H. Roberts (Denbighshire, W.), Lord George Hamilton stated on the 12th inst. that the Indian Government has been considering the desirability of establishing an institution for the bacteriological investigation of certain diseases specially prevalent in tropical climates. He had no information, however, as to the possible outcome of the proposal.

THE GERMAN MONOPOLY in aniline patents so long upheld by the Patent Law of England has, according to the *Times*, been overthrown by the Board of Trade, which has granted Messrs. Levinstein, Ltd., of Manchester, an order calling upon the patentees to issue a licence to the petitioners to "make, use, exercise, and vend" in the United Kingdom the inventions which the patentees have hitherto refused to exercise here, or allow anyone else to exercise. A minimum royalty of £250 a year is specified. Messrs. W. P. Thompson and Co., of High Holborn, Patent Agents, point out that this is the first time the Board of Trade has exercised its powers under the Patents, Designs, and Trade Marks Act, 1883. No doubt the procedure has involved Messrs. Levinstein in heavy cost, but a severe blow has been struck at the tactics of the foreigner, who thinks to take advantage of British red-tapeism. It is felt that the Board of Trade has been considerably influenced in its action by the speeches and questions in the House of Commons, of Mr. Cawley (Prestwich), and Sir J. Leng (Dundee).

PROCEEDINGS UNDER THE PHARMACY ACTS.

THE PHARMACEUTICAL SOCIETY *v.* THE ACME CHEMICAL CO., LTD.

The Acme Chemical Company, Ltd., was sued at the Tonbridge Petty Sessions, on Tuesday, for selling poison otherwise than as provided in section 17 of the Pharmacy Act, 1868.

Mr. H. A. Darbishire presided over the Bench, and the other Justices sitting were Viscount Hardinge, Col. Stanley Williams, Mr. J. Stanford, Mr. H. J. Wood, and Captain Down, R.A.

Mr. C. Langley Flux, of the firm of Messrs. Flux, Thompson and Flux, solicitors, of London, appeared to support the prosecution, and Mr. A. H. Neve, jun., solicitor, Tonbridge, defended.

Mr. Flux said the proceedings were taken on behalf of the Pharmaceutical Society, under section 17 of the Pharmacy Act of 1868, 31 and 32 Victoria, Chapter 121. The Act provided that no poison should be sold by wholesale or retail unless the box, etc., was distinctly labelled with the name of the article and the word "Poison," and that an entry should be made in a book giving the name and address of the purchaser, and the name and quantity of the article sold, to which entry the signature of the purchaser and that of the person (if any) introducing him, should be affixed. Any breach of this Act rendered the seller liable to a penalty not exceeding £5 for the first offence. In this case, said Mr. Flux, Mr. Harry Moon wrote to the company from his private address, asking them for a tin of their weed killer.

Mr. Neve objected to the contents of the letter being stated as evidence. He had not the faintest idea what the letter contained, and had had no notice from the prosecution to produce a letter. The learned Clerk would inform the Bench that the contents of any letter could not be given in evidence unless the other side had received notice to produce the letter. The letter might be on the file of his clients' correspondence, and he asked them the previous night if they had had notice to produce the correspondence. He might say that he could not prepare his defence until he had some definite knowledge as to what were the intentions of the prosecution in regard to that matter. He objected to the case proceeding that day.

Mr. Harry Moon, a clerk in the employ of the Pharmaceutical Society, was sworn, and stated that he addressed a letter to the Acme Chemical Company.

Mr. Neve here again objected to the contents of the letter being given in evidence, whereupon

The Chairman remarked that the whole case at present seemed to hang upon the letter, and the Bench decided to adjourn it for a fortnight, the prosecution to bear the costs of the adjournment.

It was understood that the Pharmaceutical Society will be represented by counsel at the next hearing.

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CRITICISM OF THE NEW PHARMACOPEIA.

THOUGH the general discussion on the new Pharmacopœia, at Belfast, was very unwisely deferred until so little time remained that it was impossible to do the subject justice, the matter was taken up with so much earnestness that the one hundred minutes which the honorary secretaries thought worth devoting to it were utilised to the best advantage. For above all else, an opportunity was afforded for ascertaining what the average pharmacist thinks of the new "standard and guide." Not unnaturally perhaps, he seemed inclined to attribute all that is objectionable in the book to the wholesale druggist, after making due allowance for the numerous unnecessary modifications introduced for the sake of securing simplification in the classification of doses, and it can only be described as unfortunate, if not unfair, that representatives of the wholesale drug trade should not have had a proper opportunity of defending their position and putting the actual facts of the case clearly before the meeting. A work that has absorbed the united energies of so many prominent pharmacists and medical practitioners for scores of months should be worthy of consideration for a longer period of time than one hundred minutes, at the first representative meeting of the pharmacists of the United Kingdom held after its publication, and it is no excuse to urge the prior claims of a social meeting, however attractive, for there was no good reason whatever why the discussion should have been permitted to clash with a garden party. However, the depths of the official mind are unfathomable, and somewhere in those depths, beyond the ken of ordinary mortals, a reason of some kind may possibly be found for deciding that the British Pharmacopœia, 1898, is worth discussing in a public assembly for one hundred minutes at the outside. The contributors of papers may feel aggrieved at being deprived of the right of reply, and it would not be surprising if the representatives of wholesale houses felt sore that no time was allowed them to defend themselves against what they regard as baseless attacks, but all that counts as nothing if the chief officers of the Conference decline to allow more than one hundred minutes for discussing the main item in their programme, even though six papers have been read which bear directly and exclusively on that subject.

The chief purpose served by the discussion was to emphasise the points mentioned by Dr. SYMES in his presidential address—that it is a grave mistake to exclude pharmacists from the body which is responsible for the work of revision, and that it would be vastly preferable to have all new and altered processes and formulæ criticised before rather than after a new Pharmacopœia had been published. Even with the plan adopted in Germany, opinions doubtless differ to some extent regarding the official monographs, but no such widely differing views could possibly prevail as were manifested in the discussion reported at p. 232 *et seq.* If all the workers who expressed opinions on the results of Pharmacopœia processes on Wednesday week could have exchanged views on the same points in advance of publication of the much-criticised book, the result ought to have been a more generally satisfactory work than at present—good as that undoubtedly is from a pharmaceutical point of view. The plan suggested by Mr. MACLEWAN for compelling recognition has much to be said in its favour, and it is not surprising to find that the ideas expressed in his paper were generally approved of. But it is a question for consideration whether, before resorting to such extreme measures, the Formulary Committee of the B.P.C. would not do well to wake up and do something to justify its existence, especially in the direction of so extending the 'Unofficial Formulary' as to make it a matter of necessity for every chemist in business to possess a copy of the book. Such a work, to be complete, ought to contain, not only improved formulæ for official preparations, but also a formula for every medicinal preparation not official in the British Pharmacopœia but in general demand, together with characters and tests for all non-official crude drugs and chemicals in common use. The 'Unofficial Formulary' would then become worthy of its name, and rival the Pharmacopœia in size and importance.

But, in any case, discussions on the Pharmacopœia processes whether at Conference meetings or elsewhere, should not be allowed to degenerate into squabbles between the retail and wholesale sections in pharmacy. So far as pharmacists have been consulted at all in the compilation of the new Pharmacopœia both sections have been equally consulted, and prominent representatives of each have equally been ignored. What is required is that every one competent to take part in the work of revision should be allowed an opportunity of expressing his opinion before the book is published and before the official formulæ and processes are rendered unalterable for the time being. Until some such plan is resorted to, it cannot be expected that any pharmacopœia will meet with general acceptance as a work embodying the best that is known concerning all official medicaments. Nor can such a plan be a success without the cordial co-operation of pharmacists as a body. The General Medical Council will be wise, therefore, to vary its method of procedure in future, and, if necessary, to obtain fresh legal powers enabling that body to accord to pharmacists the full recognition they are entitled to. There appears to be a growing feeling amongst pharmacists that unless such recognition is forthcoming they ought to decline to have anything to do with future revisions of the Pharmacopœia, and if in addition they proceed to prove, by deeds rather than words, that they alone are competent to deal with a certain section of the work, it may be that long before another new Pharmacopœia is called for pharmacy will have attained its proper position in the matter.

ANNOTATIONS.

MR. R. J. DOWNES, of Dublin, has recently been informed, in a somewhat unamiable note published in the official organ of the Society of which he is President, that no Society in Ireland "is rich enough to buy the editorial opinions" of that journal. One gathers by inference from this pharisaical announcement that the editorial opinions of the journal in question have their price and—judging from those expressed on the Parliamentary work of the past session and on Dr. Symes' presidential address—that price ought not to be excessively high. It seems all the more unkind, therefore, for the gentleman in charge of the Irish official organ thus to twit his official chiefs with the assumed poverty of their organisation. That he should have accused Mr. Walter Hills of being a party to the betrayal of trade interests was to be expected, and it is no more surprising to find him calling Dr. Symes "the *enfant terrible* of the Bloomsbury family party," but why, oh why! need he be so rude to the head of the Society which has purchased the privilege to expound its policy in the pages he controls. Of course, everyone is entitled to hold an independent opinion, but it is not always wise to publish such, and it certainly does appear indiscreet, to say the least, for the editorial opinion of the official organ of the Pharmaceutical Society of Ireland to appear to support the principle of company pharmacy. Let the supporter of such a principle invest his surplus cash in joint-stock drug stores, by all means, if he wishes to do so, but really, for his own sake, he ought not to break out with expensive editorial opinions on the subject. He, at least, is not expected to be consistent.

THE GLAMOUR OF BELFAST still persists with many of us, and no Conference of recent years is likely to leave more permanent recollections than the meeting just concluded. Hospitality and goodwill were rampant in the commercial capital of Ireland from the beginning to the end of the week, and the charms of the ladies who helped to make the proceedings such a success were such as to cause even the most experienced and normally sedate members of the central executive wax sentimental. The highest praise was showered upon Miss Watson, the Hon. Secretary of the Ladies' Committee, and rightly so, for no mere male creature ever went about the business of organisation so systematically. It was even rumoured that one of the honorary secretaries of the B.P.C. had expressed a desire to vacate his position in her favour, so impressed was he with the business-like manner in which she went about her self-imposed task and made everything she touched a success. But all the social arrangements were carried out as successfully as the conditions would permit, and the garden party given by the Lord Mayor and Lady Mayoress was one of the most brilliant affairs recorded in the annals of the B.P.C. Such slight drawbacks as were experienced during the week were entirely due to the thoughtlessness of those persons who had not previously intimated their intention of being present, and as usual in such cases the comfort of the large majority who had taken their tickets in advance was interfered with by the unexpected accession of a number of laggards at the last minute. Great sympathy was expressed on that account with the local Executive Committee, and it is only due to the members of that Committee to say that they overcame all these difficulties in an extremely creditable manner.

THE PLYMOUTH EXECUTIVE COMMITTEE should take the lesson of the Belfast meeting to heart and refuse to supply tickets for any of the social gatherings after the Monday of the Conference week.

It is distinctly unfair to visitors from a distance who have secured tickets in advance for persons living near at hand to wait until they feel sure about the weather and then crowd in and usurp the places that have been bespoken by others. Another point that will require consideration next year is the question of reserving a specified amount of time for purely business purposes. Having definitely arranged that certain hours shall be devoted to the Sessions of Conference, that time should be regarded as inviolable and not curtailed for the sake of taking photographs, attending garden parties, or for any other purpose. It may be that, seeing the days of the Conference are now virtually four, the Sessions of Conference might with advantage be spread over three days and end at an earlier hour each day. Thus, it has been suggested that the business hours should extend from 10 or 10.30 a.m. to 2 p.m. on the Tuesday, Wednesday, and Thursday, leaving Friday for the excursion and three long afternoons for other social functions. There is much to be said in favour of such an arrangement, and we commend it to the consideration of our Plymouth friends. All the papers submitted might be read on the first and second days, whilst a general discussion on some selected topic might take place, and all more or less formal business be transacted, on the third day. There should also, of course, be a smaller number of papers than was the case this year, and none of those accepted should be left out in the cold, whatever might happen.

THE STUDENTS' NUMBER of the *Pharmaceutical Journal* will be published on September 10 next, and the Editor will be pleased to receive as early as possible particulars of courses of study suitable for pharmaceutical students, or any other information that may prove useful in that issue. Preferably, particulars regarding the courses of instruction should be summarised on the lines of what was published last year, as the time involved in searching for what is essential in prospectuses will thus be saved to a considerable extent.

ANOTHER CORONER has been displaying his ignorance and going out of his way to blame a chemist who had done nothing wrong. It appears that an Exmouth medical man had written a prescription for an eyewash containing atropine and cocaine, and that was duly dispensed by Mr. J. T. Bickford, chemist and druggist, who copied the prescription in his prescription book as usual and labelled the bottle containing the eyewash "Not to be taken." The bottle was left within reach of a young child, who drank part of the contents and died shortly afterwards. At the inquest all the facts were properly laid before the jury, but the Coroner, in defiance of both law and fact, told the chemist that he had broken the law by not labelling the bottle "Poison," and had laid himself open to a charge of manslaughter. The chemist protested against that wrong view of the matter, the Pharmacy Act was read, and the medical man who prescribed the eyewash did his best to clear the air. But the Coroner refused to listen to reason, ignored the expressed opinion of several of the jurymen, who thought that the bottle was properly labelled, persisting in his erroneous view of the case, and even going so far as to suggest that the jury would be justified in returning a verdict of manslaughter against the non-offending chemist. This so far worked upon the feelings of the apparently susceptible foreman of the jury, that he added a rider to the verdict on his own account, embodying the Coroner's idea that all medicines containing scheduled poisons should be labelled "Poison," and that naturally served as the text of another uncalled-for sermon. Mr. Bickford is greatly sympathised with in this matter, and we hope the chemists of the district will not let the matter drop until the

unduly officious Coroner has been taught not to exceed his duty or exaggerate facts.

THE CHEMISTS OF ARBROATH are to be congratulated upon their action in protesting to the directors of the local infirmary because the lady superintendent of the infirmary, to whom is at present assigned the duty of dispensing the medicines used in that institution and the medicines supplied to the outdoor patients, neither possesses such qualifications as are by Statute required by a practising dispensing chemist, nor a competent practical knowledge of potent drugs and chemicals. They have also pointed out that under the present arrangement preparations containing as their ingredients some of the most virulent poisons, of which no proper record is kept in the books of the institution, are freely distributed, and that in view of the great danger to which patients in the infirmary and poor persons supplied through the dispensary are thus exposed, a serious responsibility rests on the directors of the infirmary, in respect that under the stringent conditions imposed by the Pharmacy Act on practising chemists whose professional training involves a long and arduous course of study, persons not duly qualified and registered as chemists are debarred under severe penalties from selling poisons, which really means distributing them. It was further urged that in such an institution precautionary measures for the safety of the public are of paramount importance, and that it is a duty specially incumbent on the board responsible for its administration to ensure that in a matter which so vitally concerns the health and the lives of the indoor and outdoor patients alike the arrangements should be such as to command the unqualified confidence of the public. After a prolonged discussion, the directors decided to ascertain whether they could arrange for the employment of a nurse legally qualified to dispense medicines, as an addition to the infirmary staff.

KITCHEN BACTERIOLOGY is now a distinct subject, in Königsburg at least, for according to the *British Medical Journal*, Dr. Jäger of that place has recently given a course of hygiene and bacteriology for ladies, which included practical exercises in the preparation and preservation of food by methods used in bacteriological work. The method of procedure was simplicity itself. In the first place, the vessels employed had well-fitting, overlapping lids, instead of the inside lids used in kitchens all the world over, which allow stray bits of matter that may adhere to their rims to fall into the food. Then, care was taken to avoid opening the vessels in which the food was kept, except such precautions were taken as are common in bacteriological work, and cotton-wool was freely used as a covering material. Special cotton-wool lids had been constructed, which consisted of circular discs of cotton-wool, tightly held between two metal rings, the outer of which formed the overlapping rim of the lid. At the close of the lectures raw and cooked food-stuffs were exhibited, which had been kept in a warm room for five to sixteen days; all were perfectly fresh, and quite unchanged in appearance and taste.

THE VACCINATION ACT, 1898, will not come into operation in its entirety until January 1, 1899, but the provisions of Section 2—the so-called Conscience Clause—came into force on the date of the passing of the Act, and the Local Government Board desires, therefore, at once to draw attention to those provisions. The section states that no parent or other person shall be liable to any penalty under Section 29 or Section 31 of the Vaccination Act of 1867 if within four months from the birth of the child he satisfies two justices or a stipendiary or metropolitan police magistrate in petty sessions that he conscientiously believes that vaccination would be prejudicial to the health of the child, and within seven

days thereafter delivers to the vaccination officer for the district a certificate by such justices or magistrate of such conscientious objection. Though the section comes into operation at once, in its application to a child born before the passing of the Act a period of four months from the passing of the Act is substituted for the period of four months from the birth of the child.

A NEW OPENING FOR WOMEN is suggested by the Countess of Warwick, who is about to conduct an interesting experiment, which is likely, if it meets with success, to have an appreciable effect upon agriculture in England. Lady Warwick's idea is that it would be useful to form settlements of women in different parts of the country for the cultivation of the land, and thus enable them to add to their incomes by the sale of fruit, flowers, vegetables, poultry, eggs, honey, etc., the produce of their gardens and poultry runs. There is little doubt, observes the *Times*, that a moderate means of livelihood can be obtained in this way, but in the present state of keen competition success falls chiefly, if not entirely, to the "trained capacity" and organised worker. Those women, therefore, who propose to embark seriously in such an enterprise must first qualify themselves for the work. The hostel, which Lady Warwick hopes to open in October in connection with Reading College, will be an institution where such qualifications may be obtained, and the grounds of the hostel will afford room for practical work. The institution will be founded for the definite purpose of enabling women over the age of sixteen to obtain a thorough training (theoretical and practical) in the lighter branches of agriculture, viz. :—Flower and fruit growing, and packing for market, especially bush fruit, tomatoes, mushrooms, etc., bee and poultry keeping, dairy work. The Council of Reading College has consented to provide the necessary courses of instruction, and to recognise the Countess of Warwick's Hostel as a place of residence for women students. The full course of instruction will extend over two years, but students who wish to do so may join short courses and special classes, and it is hoped that the inclusive fees for instruction and board will not exceed £50 a year.

THE DISTORTION OF FACTS and misrepresentation of action has nowhere lately been more marked than in a short paragraph in the *Grocer*, which appeals specially to grocers who deal in proprietary articles. The readers of that paper are told that a crusade was opened a few years ago by the Pharmaceutical Society against unregistered persons—especially grocers—who were selling proprietary medicines containing poison. Since then the Poisonous Substances Bill, which the Privy Council introduced, provided for the regulation of the sale of certain poisons. "It did not, however, give the members of the Pharmaceutical Society the monopoly they wanted, and so for some time past they have been working themselves into a kind of frenzy of indignation against the Bill, which the Duke of Devonshire has dropped for the present session." This impartial chronicler then proceeds, "But perhaps the worst feature of the Bill, from the point of view of the chemists, was that, as one of them said at a meeting, 'it would involve inspection, and that was an outrage on the chemists of the country.'" "Why?" he asks. "Surely chemists need to be looked after as much as grocers! They paid their own inspectors to look after grocers who sold poisonous proprietary medicines, and then discovered that many chemists were selling the same preparations without any of the precautions provided by the Pharmacy Act." This is as pretty a version of a cock-and-bull tale as we have met with of late, and chemists who hope to work hand-in-hand with grocers, in regard to the protection of prices, would do well to take note of the manner in which the chief organ of their would-be allies slanders their craft.

The British Pharmacopœia, 1898.

DISCUSSION AT BELFAST.

AS previously announced, it had been arranged in connection with the Belfast Conference to hold a general discussion on the new British Pharmacopœia, but the discussion, unfortunately, was not permitted to take place until the final Session of Conference, on Wednesday afternoon, and the subject was, therefore, most inadequately dealt with, owing to the time then available being so limited. In addition, no opportunity was offered for the authors of papers dealing with the Pharmacopœia to reply to the various criticisms offered, and due allowance must be made for that fact in considering the statements and arguments reported below.

Mr. S. R. ATKINS wished to lead the van of the discussion by saying that of course it must be admitted that any defects that there might be in the new Pharmacopœia must arise from the fact that no Irishman had been engaged on its production. Without saying anything controversial, he wished to say that he did think it was quite time that they as pharmacists demanded respectfully a very different position to that which they had in the production of the Pharmacopœia. It was not enough for them to be brought in simply as experts—and the most important of the experts engaged in its production—but they should ask for a statutory position in its production; that it should not be a position accorded to them as a mere compliment by the body now entrusted legally with its production, but that they should say that, being the body who by their training and their experience were most qualified to furnish the best processes and the best results, they should not simply be invited to co-operate, but that they should ask for something more. Having said this much, he wished to express his difference of opinion from the argument put forward by Mr. MacEwan, who said, in the very valuable paper that he had read, that it would be well if the position of advising on the compilation of the Pharmacopœia were relegated to the British Pharmaceutical Conference. He agreed with him to the extent of thinking that the work which had been done in the past by the Formulary Committee should be continued by them as leading up to the main thing. Speaking for the moment as a member of the Council of the Pharmaceutical Society, he wished to say that that Society was the body to whom that work ought to be entrusted. The Conference could do a good deal of the guerilla warfare leading up to the campaign, but it was the function and the duty of the Society to be represented. This was no new doctrine of his. In the early days when he proposed to read a paper on pharmaceutical ethics, so absolutely conservative were they that there was a very solemn conclave of the elders of that day to decide whether the paper contained any dangerous or explosive matter; but they had advanced since those days. One of the advantages of their meeting at those Conferences was that as free-lances they could stand up and say what in another place it would not be expedient to say. Although they had made great progress, he still thought it was their duty to say that they believed that in future Pharmacopœias the pharmacists should have legal recognition.

Mr. J. C. UMNEY said there were two or three points he should like to refer to. Mr. Bird said it was not usual to be able to obtain ext. ipecac. liq. 1 in 1, with 2.25 per cent. total alkaloids, as recognised in the Pharmacopœia, he did not think there was any difficulty in obtaining 16 fl. ozs. from 1 lb. if really good ipecacuanha was used practically free from stems—the root only. That was his experience on comparatively a large scale. With regard to ext. bellad. liq., Mr. Bird had referred to a paper by Mr. Bryant, calling attention to the fact that belladonna was not exhausted by the official process which he confirmed. The Pharmacopœia made no mention of the time of collection of belladonna roots, which had an important bearing in the future on the belladonna preparations made from the root. The time of collection now practically was in the autumn, which probably was the wrong time for getting the best alkaloidal strength. As long as they used green extract

perhaps this was unavoidable, as they could not have both, but if they did away with the green extract they would be able to get the root at the proper time. With regard to liq. thyroidei, his observation was that half per cent. phenol solution with glycerin did not keep it satisfactorily, and that they would have to make some alteration in the preservative. He (Mr. Bird) also referred in glowing terms to the abolition of proof spirit. This was all very well from a pharmaceutical point of view, but so long as the chemists and Revenue authorities recognised proof spirit for export work, and in everything connected with the buying and selling of spirit, it had to be reduced to the standard of proof. They paid duty as proof spirit. If a spirit was 58 over-proof it was exported as 158. For the present, therefore, they would still have to make their calculations at percentage by volume, and also degrees over-proof. With regard to ung. conii going mouldy through leaving out the boric acid, he quite concurred in that. Then Mr. Bird referred to ung. hyd. nit. He (Mr. Umney) had recorded his experience that this ointment did not keep satisfactorily made with a base heated to the high temperature now prescribed compared to what it did before. Mr. Bird then referred to the difficulty of making tincture of orange. There might be some difficulty, but it would only happen this year in consequence of the Pharmacopœia being issued in April, two or three months after the latest time when the peel could be got. In future, any prudent pharmacist would look forward and make his year's supply in January. Mr. Gadd stated in referring to the process for concentrated liquors, that they did not exhaust the drugs. In the case of the percolated liquors that was not the case, provided the percolation were conducted slowly and in accordance with the terms of the Pharmacopœia. It was the case even with rhubarb, which one would suppose to be the worst of all. He also said that the official formula for Easton's syrup was not satisfactory. His observation was that it was one of the most satisfactory in the Pharmacopœia—at any rate, it appeared so after three or four months' experience. He understood Mr. Gadd to say that the strength of the present preparation of tincture of strophanthus was half what it was before, and more than that with a 1 in 20 preparation the drug was not exhausted. That did not accord with his experience. With reference to the statement about lavender oil corresponding to the characteristics of the Pharmacopœia not being obtainable, he had no knowledge of such difficulty. Then Mr. Kelly referred to the necessity for the test for tartaric acid in citric acid. Under certain conditions and at the time of publication there was no necessity for the test. Of course their relative values to one another were by no means constant, and even at the present time there was a sufficient difference in price to make it necessary to have a test. With regard to the relative proportion of citric and tartaric acid in effervescing preparations, they were adjusted on a manufacturing scale in accordance with the ingredients to be used, there being a necessity in some cases to add more of the citric acid with its molecule of water of crystallisation, according to the nature of the active substance to be exhibited in granular form. If they were to frame some particular test, such as Mr. Dyer suggested, he did not know what wholesale druggists would do. They had enough effervescent preparations returned to them now after being kept for two or three years on the retail druggist's shelves, and if there were to be some particular test proposed, to which they should be required to correspond, even after being kept he did not know how long, they would be still worse off.

Mr. D. LLOYD HOWARD wished to offer a few remarks from a point of view which had not been touched upon in the papers, viz., that of a manufacturer who was not a pharmacist, but a chemist. He thought the chemical manufacturer ought to be considered in framing a Pharmacopœia, because there were many substances, like Rochelle salt, Epsom salts, quinine and camphor, which few practical pharmacists manufactured themselves. The Pharmacopœia, therefore, ought to be a guide to them as well as to the pharmacist. He, therefore, cordially endorsed Mr. MacEwan's

remarks as to the great excellence of the method on which the U.S. Pharmacopœia was compiled. He knew of no other publication which was so concise and clear to the manufacturer, and if the B.P. Committee had taken that as a basis, and given a U.S. Pharmacopœia, the result would have been superior to that now produced. He would only speak of the substances with which he was acquainted. He could not speak of the galenical preparations, which he hoped were all that Mr. Bird claimed for them. That speaker remarked very truly that it was necessary to look both to excellence of product and economy of production. It was very desirable that all products should be of very high quality, but there was a proverb not always borne in mind—that the best is often the enemy of the good, and sometimes he thought they might be tempted by insisting on an unreasonable degree of purity to lead to extravagant expense for which no adequate advantage was obtained. This was especially the case with two articles which were very largely used for domestic purposes as well as pharmacy—citric and tartaric acid. Some years ago there were several prosecutions for selling citric acid containing lead. Undoubtedly some citric acid on the market at that time did contain an amount of lead for which there was no excuse. It was looked into carefully by members of the Drug Club and manufacturers, and it was found that the 1895 B.P. test, if suitably applied, would detect something like 1 part of lead to a million. Now it was difficult to visualise one million, but you might reckon it as 1 grain in about 1½ cwt., so that an acid that contained that degree of impurity cannot do very much harm. In the 1898 Pharmacopœia, instead of the acid being dissolved in water and treated with sulphuretted hydrogen it was directed to be neutralised. That introduced a very serious element of error. It was a very difficult thing to neutralise citric acid or tartaric acid exactly. The public analyst would be very likely, in order to make sure of complete neutralisation, to slightly over-neutralise, and in that case not only was the lead shown by sulphuretted hydrogen in a minute trace, but iron was also shown. It was obvious that in making lemonade or anything of that sort in using natural water, however good, there was almost always a trace of iron in it. Now, was it to the public advantage that the manufacturer of aerated water should be compelled to buy citric acid at an enormous expense containing no trace of iron when he would inevitably put a much greater amount of iron in when he used natural water? With regard to proof spirit he quite agreed with Mr. Umney that it was a great pity that the number of degrees proof were not officially stated, because it was on the proof strength that one had to buy spirit. He could not agree with Mr. Bird, who approved of the 90 per cent. by volume as against a definite strength by weight, because although it might not be the rule to weigh liquids in this country, it was in many other civilised countries, and in the case of such a liquid as alcohol, which behaved very irregularly when mixed with water, the more scientific plan would be to have it of definite strength by weight. Mr. Doran referred to the removal of the tests to the Appendix, but from a chemical point of view he could not help thinking that taking the tests out of the text was a retrograde step of a disastrous nature. It seemed to be thought if you said a thing must not contain a long string of things, beginning with alumina and ending with zinc, any man of reasonable brains was competent to perform the characteristic tests. Of course he was if it were a question of identifying the substances naturally; but if you had to detect a very minute trace, or if you had to fix a limit to the trace that might be permitted, it was a matter of the highest importance to have the exact details of manipulation given in every case. To take one instance, oxide of zinc should not contain more than a trace of sulphate. How were they to estimate that? The answer would be, by dissolving in acid and adding barium chloride. But which acid? It made a material difference, however carefully you avoided an undue excess of acid, whether you used nitric acid or hydrochloric acid. There were scores of other instances in the Pharmacopœia. To revert once more to a comparison of the B.P. with the U.S. Pharmacopœia, in the latter you did not find any such indefinite expression as “shall not show more than the slightest characteristic reaction with” so and so, but you found a definite direction given—“take a certain amount, dissolve it, add a certain amount of barium chloride, filter it off, and it ought not to show a precipitate with” another amount of barium chloride. There you had a limit, and the manufacturer who wished to be well up with his work would take care to be within the limit, but when it came to showing a characteristic reaction, who was to say what was a characteristic reaction? He

looked at the Appendix, and he found “this chloride gives a curdy white precipitate with nitrate of silver.” He should be ashamed to certify some things as free from chloride unless they were a great deal better than that. He should confine himself there to the faint blue which was shown when the test was carefully applied. He earnestly hoped that at some future time they might have not merely the tests inserted in the text, but that careful details should be given in each case varying with the necessities of the case, and that in cases where an impurity was innocuous, and likely to occur in manufacture, that a limit—as fine as you liked, but that some limit should be fixed, and that that should be the standard. Because, although the B.P. occupied a somewhat anomalous position, it was the only guide which a bench of magistrates in the country had. They were placed in a very difficult position. Very likely, although they were all fairly well educated gentlemen, not one of them would have any knowledge of chemistry or physiology. They went by the report of the public analyst, who might be a very good chemist, but was almost certainly not a physiologist, and they fell back on the only authoritative work, the B.P. He could not help thinking that the test for bismuth salicylate was defective. They were working on it now at Stratford, but he had not got the latest results. Some weeks ago they had an inquiry—could they supply bismuth salicylate which would answer the new Pharmacopœia test? They then looked at what they had in stock and found that on shaking up with alcohol at the ordinary temperature it gave a coloration. They looked at one of the other Pharmacopœias, he thought the French, and found it stated there that bismuth salicylate would yield the whole of its salicylic acid on continual boiling with alcohol. It naturally occurred to them that if that were the case it would be very likely that there was some, if only a slight action, with alcohol at the ordinary temperature of the air. They divided a sample into 2 parts; and, shaking one part with a considerable amount of alcohol, carefully cooled down to the temperature of melting ice. When he left they had not tried a lower temperature. That quantity of alcohol was quite sufficient to dissolve out very much more free acid than was at all likely to be present in the sample. They also shook up an equal amount of bismuth salicylate with an equal amount of alcohol at the ordinary temperature. The difference in the colour produced was most marked, and that was to a certain extent *prima facie* evidence that the test was defective, because alcohol had some action at the ordinary temperature of the air on bismuth salicylate.

Mr. WARDLEWORTH thought there was one point which arose out of Mr. Howard's remarks which was very pertinent—that with the increase of the percentage of bitartrate of potassium in cream of tartar there was an alteration in the synonym. He had looked back to two or three Pharmacopœias, and in the last the synonym was “cream of tartar,” but in the 1898 edition it had been altered to “purified cream of tartar.” Now the question to his mind was this, What was the position of the chemist who was asked for cream of tartar, say for domestic purposes such as had been indicated by Mr. Howard, or when asked for cream of tartar for pharmaceutical purposes? It seemed to him a distinct issue was brought about there, for the simple reason that cream of tartar was largely imported with the percentage of bitartrate of potassium varying from 90 up to 98 per cent. If the B.P. was accepted as the standard, what was the position of the man who sold cream of tartar that was not purified? Was the customer to ask for “purified cream of tartar” when he wanted 97½ per cent. bitartrate of potassium, or was the retail chemist to run the risk of selling 92½ per cent., which was a very common percentage, and be caught by the public analyst for selling cream of tartar which was deficient in bitartrate of potassium?

Mr. WELLS rose as an Irishman to ventilate one more Irish grievance which he could assure the Conference was a real one. He alluded to their not having any part as pharmacists in the compilation of the Pharmacopœia. In 1883 they were asked to assist in an informal way with suggestions for the Pharmacopœia then being prepared, but declined on principle, as they thought they ought, as pharmacists, to have a right to take part in it. In 1890 they were again requested to assist, and did send some suggestions, but they were rather busy with a parliamentary campaign, and had very little time to give to it. Of course they had to go by the B.P., but they thought there was too much of the London Pharmacopœia about it. Take mist. ferri aromat., that was a preparation which was very largely used in Dublin, and he knew one retail house where they prepared as much as fifty

gallons at a time, that was left out altogether, but they left in *mist. ferri co.*, a preparation seldom ordered in that city; *dec. chinchonæ* was also largely prescribed in Dublin, but there is now no official standard for these and other old and much used preparations. If they in Ireland had had some little part in the drafting of the book it was probable that each place would have left in the things which were most in use, whilst a great many things might be left out which were perfectly useless. There was another point of general interest to pharmacists all over the kingdom which he feared would cause some trouble, viz., the change in the strengths. Most chemists in Dublin, when the Pharmacopœia became official, began to use it, but with regard to tincture of *nux vomica* and some other potent medicines, they did not know what was intended in the prescriptions of the present time. This was very important. The compilers ought to bear in mind that these unnecessary changes caused an immense amount of trouble. There might be some good reasons for them, but he had not heard of them. He had had four Pharmacopœias and a few Addenda pass through his hands, and he must say he got rather mixed up between them. It was all very well to improve the Pharmacopœia, but unnecessary changes should not be introduced. The only way to arrive at that would be to put it into the hands of the pharmacists, and then they would have a book which the British nation might be proud of.

Mr. T. MALTBY CLAGUE concurred in the view that pharmacists ought to have a statutory right to the making of the Pharmacopœia, or, at all events, a large share in it. He was surprised to hear on Irish soil Mr. Atkins, who was always noted for the graceful way in which he did things, say that the Pharmaceutical Society, which only ruled in the Sister Isle, should be the body to whom this work should be entrusted. He thought the Conference was *par excellence* the body which should have the duty, because it represented Great Britain and Ireland, and so the catastrophe of having a Pharmacopœia compiled without the aid of Irishmen would be avoided. Mr. Atkins began on right lines, but he got sadly astray. He was glad to hear it come as a confession that day that this last Pharmacopœia was a wholesaler's Pharmacopœia. He maintained that the retailers ought to have a great deal more to do with any future Pharmacopœia, and he thought they intended to. The wholesale people had had a little too much their own way this time, but the retailer ought to be represented, because he paid for it more than anyone else. Not one doctor in twenty was in possession of a copy of the 1898 Pharmacopœia; the wholesale druggist absorbed a fair number, but the great bulk of the purchasers came from the men behind the counter. They had a right to criticise the wholesalers' treatment on the subject. They were glad of the generous way in which they set to work, carried out researches, gave samples and read proofs, but he noted in one or two particulars they had not been quite so generous as a retail pharmacist would have been. Where was the generous wholesale house to be found which said when it came to a question of concentrated liquors, they are all quite easy except gentian, we have a good formula for gentian, here it is? but they did not rise to that magnanimity. There were hundreds of retail pharmacists who would gladly have given them a good formula, and one that would keep. There was another point which the wholesalers would have to explain away, either there or when they got into the witness-box, viz., why they put glycerin into tincture of *rhubarb*. He thought it was so that no one could make a reliable analysis of it.

Mr. FARR said he should like to endorse Mr. Bird's remarks that repercolation could be with advantage extended to a number of other preparations. Judging by his own experience, it might have been adapted to a number of drugs where it is not now official. There was no doubt whatever that the use of heat as now official was deleterious in the case of many preparations. Mr. Gadd spoke of the non-exhaustion of belladonna root in making the liquid extract, and working with very small quantities no doubt that would be the case, but with any reasonable quantity a fair degree of exhaustion was obtained. Further, it was questionable how far it was desirable to carry exhaustion in the case of some of these drugs. Taking into consideration the cost of the drug, the process could not be profitably extended beyond a certain degree. It either meant an undue waste of spirit or else the application of heat in recovering spirit that was not rewarded by any extra quantity of active matter. As a rule, the active portion of drugs came away in the earlier fraction, which had a less relative proportion of extractive. Mr. Gadd also spoke of the assay for strychnine in the *nux vomica* preparations, and seemed to be in favour of the reprecipitation process, but personally he could not endorse that

view, though he had used it on a number of occasions. There was no doubt whatever that it contained a small proportion of brucine, which was precipitated with the ferrocyanide of strychnine, but that proportion was very slight, and the extra trouble in the assay was not compensated for, as the actual amount of impurity remaining was almost infinitesimal. The reaction for brucine was very delicate, and also the bitterness could be easily detected. Mr. Bird said, with reference to the concentrated calumba preparation, that the liquid should be 18 ozs. instead of 16 ozs., but he did not think that was permissible, because it would alter the proportion of spirit present in the resultant product. If a definite volume was required it should be made up by adding a mixture of spirit and water on to the filter. He also suggested that the present tincture of *strophanthus*, although only made from half the proportion of drug, was considerably more than half the strength, but he did not think he had any warrant for making that statement. Some two or three years ago Mr. Wright and himself examined into this question, working on the *strophanthus* which had been extracted with ether, and also on that which had not been so extracted. They made preparations for the whole series of different strengths of spirit, and afterwards found that the amount of extractive present in these preparations which was soluble both in absolute alcohol and distilled water, i.e., the amount of extractive less the mucilaginous, resinous, and oily matters present in the seeds which would correspond very fairly with Fraser's impure *strophanthin*, was practically the same, whether the menstruum used were 40 per cent. or 90 per cent., or where the seeds had previously been extracted by means of ether.

Mr. RUTHERFORD HILL said there was one point in Mr. Kelly's paper which he thought deserved notice. He referred to many changes which had taken place in the Pharmacopœia, and particularly to the change in the atomic weights of the elements. Mr. Bird paid a compliment to the Pharmacopœia Committee that in the book now produced they had something thoroughly up to date. He supposed it must be accepted that this change in the atomic weights was with the view of being up to date, but at the same time he did not think there was any justification whatever for these changes. It seemed to him it was almost reducing the question to an absurdity to introduce these atomic weights in the case, for instance, of the volumetric solutions. Take for example sodium hydrate, the equivalent for which was now given as 39.76 in place of 40. Admittedly in volumetric estimations the results were only approximate, and it seemed absurd in arriving at approximate results to trouble with such minute differences. Mr. Kelly remarked that of course they could not change the atomic weight of hydrogen "which remained 1, of course," he said. That was a very common remark, but it seemed to him entirely beside the point. It was not the case at all. Taking hydrogen as unity was perfectly arbitrary, and it seemed to him the mistake that had been made had been in taking hydrogen as unity instead of taking oxygen as 16. It did not matter where you began; if you took oxygen as 16, and made that the central point, you could arrange all the other weights around oxygen, and in that case the hydrogen would come out about 1.007. For most purposes they would not take it as 1.007, but as 1; but if you did wish to be particularly exact in some original research, you might take the 1.007. If instead of taking hydrogen as unity, you began with oxygen as 16, and worked out every single one of the volumetric solutions, and the operations involved in using them, you had round numbers in an immensely greater number of instances than you had when you took hydrogen as unity and oxygen as 15.88. He thought the modern tendency to begin with hydrogen as unity, and give all these minute fractions for the other elements, was an entirely erroneous one, and that it would be much better and make the working out of all these calculations much simpler to take oxygen as 16, and range the other elements around it. He had tried it in many instances, and found in the majority of cases it worked out at practically round numbers for all the calculations.

Mr. COWLEY said with regard to the extraction of belladonna root, working with small quantities he had been able to obtain nearly $1\frac{1}{2}$ times the volume that the Pharmacopœia ordered in the first percolate, and even then it required slightly letting down. With regard to syrup of *rhubarb*, he was at a loss to understand the reason why the coriander was put in to commence with, because in the evaporation almost all trace of the oil of coriander was lost. It would appear to be much better if the oil were put in at the last, or to take, for instance, a small part of the distillate, and add it to the product. He agreed with Mr. Hill with regard to the

atomic weights, and he believed a great number of chemists were adopting the plan he suggested, for it certainly made it much easier to make most of the calculations with which pharmacists had to do.

Mr. MARTINDALE said he must, as one who had assisted the Pharmaceutical Society's Committee in the production of the Pharmacopœia, acknowledge that the book had been fairly criticised, and he was glad that it had come out as well as it had. At the same time he was sorry Dr. Attfield was not present, as they hoped he would be. At the outset he must disclaim holding any brief in favour of the Medical Council. He stood there simply as a member of the Council of the Pharmaceutical Society, and to express his individual opinions. He might say that, whatever claims might be made by pharmacists to be entitled to produce the Pharmacopœia, they had no legal foundation for the claim. The Medical Act of 1858 clearly gave the Medical Council the right to produce the British Pharmacopœia, which should displace the Pharmacopœias of London, Edinburgh, and Dublin, and that had been so far done by the introduction of the Pharmacopœias of 1864, 1867, 1885, and now of 1898. The Pharmaceutical Society Committee gave advice and assistance as far as possible as experts, but they had no voting power with regard to the preparations to be contained in the book. They sat in committee and gave the best attention to the subject, and their reports went to the Medical Council, and more especially to the committee appointed by that Council to deal with the matter. He could not say the position was always agreeable—sometimes there was a little clashing, but at the same time he thought they were in a better position, and that pharmacists and the public were in a better position with regard to it than the pharmacists of the United States were with regard to their Pharmacopœia. As Mr. MacEwan had said the United States Pharmacopœia was really a private speculation. It was undertaken by a committee of revision which produced the first United States Pharmacopœia. It had gone through eleven or twelve revisions, a new edition being produced every ten years, but it was entirely in the hands of a self-elected Committee, just as the Unofficial Formulary was produced by the Conference. In fact, the U.S. Pharmacopœia was more of a private speculation than the Unofficial Formulary, because there was no legal status for the Pharmacopœia of the United States, though it was a legal authority. He granted they took every care possible, and it was a work well worthy of imitation in many respects, but in others he should say the British Pharmacopœia was better. The U.S.P. contained much matter which was irrelevant to a Pharmacopœia. With regard to the British Pharmacopœia, a good many of the chemical tests had been transferred from the text to the Appendix, which he thought was an advantage, though he did not wish to dwell upon that point, and would pass on to some of the criticisms which had been made. First of all, liq. ext. cascara, which had been noticed by Mr. Bird; it was Mr. Moss's formula slightly modified. It was believed by a good many to be a good preparation, although he differed from that, and had expressed himself so on many occasions. He thought a drug which depended a good deal for its activity on its resinous matter should have a better solvent than distilled water as a vehicle for exhausting it; he should have preferred 20 per cent. of alcohol. It had been complained that in making liq. ext. bellad. the root was not fully exhausted. He did not know that it was necessary that any drug, vegetable especially, should be fully exhausted. What was the use of so doing, when the game was not worth the candle? If you had very little left in the marc it was better to throw it away, and save time, labour, and spirit.

Mr. NAYLOR suggested that it was said there was a loss of 20 per cent. total alkaloids.

Mr. J. C. UMNEY added that his experience, working with percolators each containing 100, was equally unfavourable.

Mr. MARTINDALE said he had not any facts before him to show there was such a loss, though he was open to be corrected. From the Pharmacopœia process now given, he got the preparation yielding the amount required by volumetric test, and, therefore, he was satisfied with it. He might have got more, but he hardly thought it was worth the trouble, especially as belladonna root was not very expensive. If it did not cost more than 6*z.* per pound, the labour used in exhausting it was worth more than the root. Coming to the solid extract of belladonna, his experiment produced a sort of moist powder. Mr. Bird's two preparations were shown, one was a very firm extract, but hardly a powder, and the other was somewhat soft. He thought the preparation in most cases would be a coarse, moist pow-

der rather than a solid extract. With regard to ergotine, now called *extractum ergotæ*, he thought this was a very great improvement on the last Pharmacopœia. It was a preparation somewhat similar to that in the Swiss Pharmacopœia, with an improvement suggested by himself and others who had worked at it. They found the Swiss preparation, originated by a Swiss professor, made a much better preparation than that in general use. The ergot was extracted by 60 per cent. alcohol, this was added to water which precipitated the resinous matter. The clear liquor, when concentrated, was acidulated with hydrochloric acid, which threw out the sclererehrin; on neutralising with soda and evaporating you got a preparation perfectly soluble in water when finished. The albuminous and mucilaginous matter in the preparation was not taken up if you used 60 per cent. alcohol at first to exhaust the ergot. About alcohol there had been a good many disputes, and, in fact, a terrible struggle in the Committees. The modification to produce the percentages now introduced, which he thought very much better than the old proof and rectified spirit, which really had no scientific standard at all, was certainly an improvement. Mr. Bird observed liquids were weighed for the formation of ointments, and looking to the probability of contaminating measures, although he was in favour of measuring liquid for most purposes, in this case they were more accurately and satisfactorily weighed. Mr. Bird complained of there being no formula for Parrish's syrup or the compound syrup of hypophosphites, but he did not think it was dignified to try and imitate every nostrum that got into use. It was degrading to pharmacy, and he was very glad they were not put in the Pharmacopœia. If they attempted to put in such preparations as the compound syrup of hypophosphites, look what it meant to introduce quinine, hypophosphites of manganese and iron, etc., and they would have to fill up the book by monographs on half a dozen preparations to insert imitations of these nostrums, which was certainly not worth doing. Syrup of iodide of iron was now very much improved; it was now virtually 10 per cent. It made the preparation a little stronger than the last, and was improved in another way by a test which really would be a check on the wholesale manufacturer, if the retailer did not choose to manufacture this himself. There was great competition nowadays with regard to supplying hospitals and others, and if it were sent in at 6*d.* or 1*s.* a lb., they could see whether it could be done at the price, and if the quantity of iodine was present. Passing to syrup of rhubarb, he was not a wholesale druggist, and wanted his preparation good, and in regard to this syrup he thought that was as good a preparation as could well be introduced. It was exhausted by means of weak alcohol, which exhausted the coriander as well. Percolated in that way you exhausted a drug as well as could be, and with syrup it was made palatable and efficacious. With regard to the loss of oil of coriander it was a very minute trace, it still retained a good deal of the flavour, which was sufficient to disguise the rhubarb. In the case of syrup of senna it was thought almost that it might be made by using the concentrated infusion as a basis, or the concentrated liquor that was made by repercolation. This concentrated liquor would have to stand the test of time, and he rather questioned whether it would stand it. He knew it would not with, perhaps, 30 per cent. of the senna in the market; it would be decomposed before it was finished making, unless you used chlorotonic water rather than plain distilled water as a menstruum. It was suggested they should use that as the liquor to convert into syrup by merely adding sugar, but that was at last discarded, and the syrup of senna made by repeated pressing, as our President once suggested, he thought, at Aberdeen, was adopted. If you added the smallest quantity of liquor necessary to moisten the senna, pressed it out and then put on the second quantity, setting aside the first, and even setting aside the second, and then at last added a little greater excess of menstruum, you got a third liquid, which could be concentrated down to a small volume, and the heat necessary to concentrate that preparation down to a small bulk was expended on the weakest part of the liquid obtained. If that were added to the previous liquors set aside you got a preparation of senna that had not been injured by the prolonged action of heat. A curious point then presented itself; it required Pasteurising, because it did not keep well unless heated up to 190°, or else when the sugar was added it decomposed. It differed from making syrup of senna or extract of senna with water in this sense, that if you employed water you took out a lot more than you needed; you took out a lot of mucilaginous and useless matter which you did not want. If you used 20 per cent. alcohol you only took what was the medicinal matter rejected, the mucilaginous

matter, which was inert, and was better not exhausted. Therefore, he held you got a good syrup of senna although it had been criticised as not being suitable for Ireland, where it was to be contracted for for unions. He held they ought to make preparations good, and if the pharmacists in Ireland, either Dublin or Belfast, could not make their prices meet the preparations, he was sorry for them. If they supplied a good preparation they would get credit for it. Passing on to tincture of rhubarb, he could not defend that altogether; he did not know why glycerin was added to the tincture after the rhubarb was exhausted by alcohol. He had nothing to do with it.

Mr. UMNEY said that suggestion appeared in the 'Year-Book,' but he could not at the moment recall the name of the worker.

Mr. MARTINDALE said, as a pharmacist, he doubted the efficacy of that preparation. Then, coming to the nitrate of mercury ointment, that process came from the formula of a celebrated house, and would make a good preparation if it were carefully done, but it required great experience to make it well. You could get the same results if you used the two solutions of nitrate of mercury and of lard and oil, both at 190° F., before mixing. In the present formula they had the oil and lard at about 300° F., and the mercury solution as cold as possible. He had made the preparation and it would make a good preparation, notwithstanding what had been said. He had made it exactly by the Pharmacopœia, taking the quantities named. With regard to liquid extract of nux vomica, the testing of that was only for the amount of strychnine it contained. There came to the knowledge of the Committee the pretty well authenticated fact that brucia is almost inert, and to volumetrically estimate the amount of combined alkaloids in the preparation which would give probably half strychnine and half brucia, this without verifying the amount of strychnine present, might give a preparation of very uncertain strength and doubtful utility, so that now it was to be tested for the amount of strychnine only. Compound extract of colocynth was a wholesale preparation. He did not like the preparation in the B.P., and should have much preferred to exhaust the colocynth by means of alcohol and evaporate that down to dryness, and added this to the other powdered drugs present. Why should they continue the evaporation with all the drugs which were dried merely to make a preparation which in powder had a nicer appearance? When this was suggested to be continued he said that his drugs were made to act and not to look at. The extract of strophanthus was exhausted by means of ether and alcohol and evaporated down to such a condition that it had to be diluted in a certain amount of sugar of milk. When you got the result it was a white powder; it was hardly in the nature of an extract. Extract of Calabar beans was a pasty extract, not a hard, stiff paste. He agreed with Mr. Umney and another speaker with regard to Easton's syrup; that of the Pharmacopœia had stood the test of keeping better than various others which had been prepared under his own supervision, not exactly according to the formula. The formula in the Pharmacopœia was to use sulphate of quinine rather than phosphate, it was suggested that the precipitated preparation of quinine should be used dissolved with phosphoric acid; you washed the quinine away by such a method. The small quantity of sulphuric acid which would be left in the preparation was not worth notice. He had proved that it would keep well for twelve months if carefully prepared without being much coloured. The alteration in the strength of the tinctures was not a pharmacist's alteration; it was introduced by the medical authorities. They wanted the doses of the tinctures to be 5 to 15 minims if active, or if weak half a drachm to 1 drachm. The alteration in the tinctures of aconite, nux vomica, and strophanthus was made to please the medical authorities. He held that it was a mistake, as it meant administering a larger quantity of alcohol than was necessary, and it was retrograding to alter their doses merely to please medical students. It would have been much better to have made them of decimal strengths, 1 in 5 and 1 in 10—1 in 5 if possible, but if not 1 in 10—then if the student knew the dose of a drug he would know the dose of the preparation. It would be 5 times, and in some cases 10 times, the quantity of the crude drug itself. He thought to make preparations of the present variable strengths was a mistake. Ung. staphisagriæ, Mr. Gadd said, would be much better made with the oil, but he did not think the oil contained all the properties of the drug, and that the maceration of the stavesacre seed in the melted fat gave a better preparation than if it were made from the oil. Unfortunately they left out the boracic acid from the ung. conii, with the result, as two of the speakers had corroborated, that it became fungoid. However, in this case it was not their choice,

but that of the Medical Council; they merely advised the formula. With regard to salicylate of bismuth, he agreed with Mr. Kelly and Mr. Howard that no salicylate of bismuth would stand the test of the B.P. You could wash out from even basic salicylate of bismuth salicylic acid by treatment with cold alcohol. You would get no preparation up to a present standard. He had not much sympathy with Mr. Howard as a chemical manufacturer in other respects. He held that they must keep manufacturers up to the mark. They wanted to produce a good article, and it was the business of the chemist to see that they did it. Then with regard to the U.S. Pharmacopœia limit of adulteration, he did not believe in limits of adulteration. Suppose they applied the same to milk. If they had a limit the milkman would adulterate up to the standard. It was a great mistake to set limits, it was very much better to have it indefinite and to get the manufacturers to produce as good an article as they could, and keep them up to a very high standard if necessary. With regard to Mr. Druce's remarks, he wished Mr. Holmes had been present to deal with them, but he agreed with Mr. Druce that the botanical part of the work had been thoroughly well revised, and had been brought up to date as well as any part of the book. With regard to Mr. Wells' remarks on mist. fer. aromat., it was not thrown out by pharmacists, but by the Medical Council themselves. The same remark applied to compound tincture of cinchona. The changes in strength were made entirely on the responsibility of the medical authorities. With regard to purified cream of tartar, he held that unless they sold it as purified it need not be up to the standard. Ordinarily, cream of tartar could not be up to the standard of the Pharmacopœia if it be natural cream of tartar. He was pleased to see that the Pharmacopœia had been accepted so well as it had. He thought it was a great advance on the last one, and when it got into full working order it would turn out very satisfactory. There were not above a dozen preparations which need to interfere greatly with the doses. Medical men need be under no alarm that they were getting a weaker or stronger preparation than the last if they would only learn the details of about ten preparations.

The PRESIDENT said they had had an extremely interesting discussion on the Pharmacopœia, and he should like to have said a good deal about it himself had time allowed. He should be sorry if there were the least idea that any of the remarks made there with reference to the B.P. were regarded as showing that pharmacists were in any way antagonistic to the medical profession. Several years ago, when the Society attempted to obtain recognition of pharmacists on the Pharmacopœia Committee, and sent out a form of petition for the purpose, to be signed by medical men, he, as the Local Secretary of Liverpool at that time, took it round to all the leading medical men in Liverpool, and did not get one refusal. Every medical man signed it, and he was very much complimented on the effort that was being made. It was, therefore, not a question of antagonism to the medical profession. Those who had been accustomed to take the volume and read the words "by authority" on the cover would be a little shocked when they heard Mr. MacEwan put the question "Why should British pharmacists trouble about the Pharmacopœia?" He, however, went on to explain his reasons, and he (Dr. Symes) might confirm his statement, because he had read the short Act of Parliament which authorised the Medical Council to prepare a Pharmacopœia, and there was not one word in that Act which prevented them from appointing a committee partly of pharmacists. He was afraid it was rather an unorthodox view, but he believed that if they had stood up for their position, and refused to act at all unless they had a proper status, they would before now have had the position they desired. It might be interesting to those Irish gentlemen who felt hurt that they were not properly represented to say that when three Pharmacopœias existed, one for Dublin, one for London, and one for Edinburgh, the Dublin Pharmacopœia was the only one which had the authority of an Act of Parliament. The London one was authoritative by an Order in Council; but that of Edinburgh had no authority whatever. Such was the statement in the preamble to the Act he had referred to. Referring to the present work he might say that there were difficulties in the way of reducing all kinds of tinctures to two uniform series of doses; if he were a medical man it would certainly puzzle him far more to remember whether such and such a tincture belonged to this class or that than to remember the actual dose. It seemed absurd that in drugs of all sorts of potentialities there should be an attempt to reduce those to two particular standard doses, whilst at the same time recognising the fact that these drugs must be dealt with differently

in the process of preparation and could not all be exhausted by any particular strength of spirit, so that they had wisely introduced four strengths of alcohol for exhausting various drugs. If they recognised the diversity with regard to the alcoholic extraction why try to reduce them to two levels in the matter of dose? As a matter of percentage certainly it would be very convenient if they had definite substances to deal with to have, say, 5 and 10 per cent. solutions, and so on. Whilst they had altered some preparations with this object in view, hydrocyanic acid, one of the most potent drugs in the Pharmacopœia, which would have borne making 1 per cent. had been left at 2 per cent. He thought it would have been a great advantage to have had hydrocyanic acid in a 1 per cent. solution, it would have been a very definite thing, affording greater accuracy in dispensing, and probably possessing better keeping qualities. If they were to have these alterations they should be at least consistent. He did not know whether time would allow of all the gentlemen who had read papers making replies, but if there were any vital point on which any remarks had to be made he should like to hear them.

Mr. BIRD said he should like to remove one or two little misapprehensions which appeared to have occurred from some of the statements he had heard. With regard to tincture of orange, he did not mention anything about the difficulty of making it. He simply alluded to the alleged objection to the use of fresh orange peel; but with regard to what Mr. Howard said respecting the strength of the alcohol in the Pharmacopœia, he found no fault with that whatever, and did not suggest that the strength should be expressed by weight. If you had to make a dilute alcohol in summer or in winter it was certainly better to weigh the spirit than to mix by volume. In the first place you had to reduce both liquids to 15°·5 C., then mix them, and then cool them down again to the required temperature. With regard to Mr. Wells' observations, the change of strength in the tinctures had affected Englishmen quite as much as Irishmen. The imitation of proprietaries referred to by Mr. Maitindale had a precedent in the Pharmacopœia, and there really was a great disappointment that those two syrups, the chemical food and the hypophosphites were not included. The new Pharmacopœia was essentially a physicians' Pharmacopœia, and perhaps their convenience had been primarily studied, but he did not think pharmacists had lost by the new formulæ. A man bought, say, 1 lb. of liquid extract of belladonna. He had several preparations which could be made extemporaneously, and was able to make those preparations with a minimum of trouble, and with an advantage formerly afforded only by non-official liquors. It was a great pleasure to him that this discussion had come before the Conference, because it really reflected so many interests, the interests of pharmacists not only of Great Britain, but of Ireland as well, and very wide and desirable publicity was given by the reports of what took place at those meetings.

Mr. MACEWAN asked if the Executive Committee in the course of the next year would definitely consider the proposals which had been made with regard to the recognition of pharmacists in compiling the Pharmacopœia. Several members had asked him if no definite resolution would be put, but he thought if the Committee took it up as a point of honour in association with the Formulary Committee, and made some inquiries, and put something definite before them next year, they would come to a conclusion once for all. This was the only Imperial British pharmaceutical body, the only body which could properly act, and for that reason the British Pharmaceutical Conference Executive ought to put into itself a little backbone, and give them something definite to guide them in the future.

The PRESIDENT said he felt sure that the authors of these Pharmacopœia papers would have replied more fully to the interesting criticisms had time permitted.

METHYLENE BLUE IN AFFECTIONS OF THE URINARY ORGANS.—D'Aulnay has employed methylene blue, both internally and as an injection, in various affections of the urinary organs. He finds that it is useful in epithelial nephritis, causing increased diuresis and complete disappearance of the albumin. In cystitis, the internal administration was accompanied by injections of the dilute aqueous solution with marked benefit. In gonorrhœal urethritis the effect was very variable. It is, however, found to be a good germicide and analgesic, and is likely to be useful in the treatment of those cases of urinary trouble where these properties will be valuable.—*Bull. Gén. de Thérap.*, cxxxiii., 353.

NEW REMEDIES.

GLYCEROL OF TEREbene AS AN ANTISEPTIC DRESSING.—A Russian doctor has employed a glycerol of terebene, prepared as described below, with much success as an antiseptic dressing. Doubtless the efficacy of the preparation is due to the hydrogen peroxide which it contains. Into a stoppered separator of a capacity of 5 or 6 litres, a mixture of glycerin, 7, water, 1, and terebene, 4, is added and left for a fortnight, with frequent agitation, at ordinary temperatures. The mouth of the bottle is fitted with a cork carrying two tubes, one of which passes to the bottom of the liquid; with this arrangement air is occasionally drawn through the fluid. Gradually the lower stratum, which originally consisted of glycerin and water, changes to an opaque, viscous mass, having the aromatic odour of terebene. This is the glycerol used. Compresses of tarlatan impregnated with this substance are placed directly on the parts, which are then covered with absorbent cotton. It is an energetic disinfectant, and promotes the rapid healing of wounds.—*Bullet. Commerc.*, xv, 466.

PROTARGOL—THE NEW SILVER COMPOUND.—As prepared by Eichengrun, this is a light yellow powder readily soluble in water, especially if it is first moistened with a little water previous to adding the bulk of the liquid. The solution is quite clear and light brown, and may be prepared up to 50 per cent. Its reaction is neutral, and it does not decompose on warming, but becomes brown after continual heating. The proportion of silver is 8·3 per cent. Protargol is, in this respect, richer than argonin, which contains 4·2 per cent., and argentamine containing 6·3 per cent., while it surpasses both these preparations in bactericidal action. The solutions of protargol are not decomposed by alkalis, alkaline sulphides, albumin, sodium chloride, or acids. Concentrated hydrochloric acid produces a precipitate, but this does not consist of silver chloride, but of unchanged protargol, which is dissolved again on dilution. This peculiar property of protargol has a favourable influence on its physiological action. In consequence of the extremely stable combination of the silver, no irritation or pain results when it is applied as an antiseptic; nevertheless it possesses marked bactericidal properties, especially on unhealthy wounds. Excellent results have been obtained in the treatment of acute gonorrhœa with dilute solutions of $\frac{1}{4}$ per cent. which may be rapidly increased to 1 to 1½ per cent. Stronger solutions of 5 to 10 per cent. used for urethritis of females were borne without any irritation resulting. Neisser states that he obtained better and more prompt results with protargol than with any other remedy.—*Pharm. Centr.*, xxxviii., 639.

TINCTURE OF MYRRH IN MIXED INFECTION.—The internal administration of myrrh, which is stated to bring about a marked increase in the number of leucocytes, continues to find favour in continental practice in cases of mixed infection. Stoll, of Munich, reports on eighty cases with only one death treated by this method. He prescribes tincture of myrrh, 4; glycerin, 8; distilled water to 200.—*Pediat.*, v., 365, after *Therap. Gaz.*

BIRCH LEAVES AS A DIURETIC.—Huchard confirms the statement of Winternitz that a decoction of birch leaves acts as a useful diuretic. In order to render the resinous matter soluble Moreau recommends the use of a little sodium bicarbonate. The decoction is made thus: From 10 to 50 grms. of the leaves are boiled in 1000 C.c. of water, then cooled to 30 to 40° C., and 1 gm. sodium bicarbonate is added. Instead of this decoction, an extract, made by percolation with alcohol from the leaves gathered from the flowering tree, is given in pills in a daily dose of 1·6 to 2·4 grammes.—*Répertoire* [3], x., 24, after *Journ. des Pract.*

QUINORAL.—This is a neutral quinine preparation, an oily syrup-like liquid, having a very bitter taste. It is soluble in every proportion in water and spirituous fluids. It is said to be free from the irritating effects on the heart caused by quinine or chloral. Quinoral is said to be principally an antiseptic and a valuable substitute for dangerous metallic compounds and phenol preparations. Bacteriological experiments with solutions of quinoral showed that bacteria were killed more rapidly with them than with sublimate. Quinoral is prescribed for internal use in doses of 0·05 to 1·0 gramme. Larger doses act as a hypnotic, especially in delirium tremens.—*Zeit. d. allg. oest. Apoth. Ver.*, li., 754.

ANALYTICAL NOTES.

DETERMINATION OF OIL IN DISTILLED AROMATIC WATERS.—Ranwez' method has been tested by Beckurts and Fierichs, who, while approving of the process in general, recommend the following modification:—Sixty grammes of sodium chloride are dissolved in 200 C.c. of the water in a separator, and the ethereal oil is washed out with ether by repeated shaking with successive quantities. The united ethereal solutions are dried over calcium chloride, and the solvent evaporated as follows:—The ether is distilled off on the water-bath until only 10 to 15 C.c. remain, and this is removed with the aid of a filter pump thus: the distillation flask is closed with a cork with two perforations, one of which is fitted with a short tube reaching only into the neck of the flask, and bent at right angles at the other end. This end is connected by indiarubber tubing to the air pump. The second perforation is fitted with a tube reaching almost to the surface of the ethereal layer contained in the flask, the arrangement resembling that of a wash bottle. The longer tube is connected to a drying tube about 40 Cm. long, 1.5 Cm. in diameter, filled with three-fourths of calcium chloride and one-fourth of caustic potash. The air pump being set now in motion, the remainder of the ether is rapidly evaporated, and the temperature of the flask sinks to freezing point, thus preventing the escape of any of the ethereal oil. As soon as the ice on the sides of the flask has disappeared, the vacuum is broken and the flask dried and weighed. Fresh distilled fennel and peppermint water will be found to contain 0.6 gramme of ethereal oil per litre, or 0.06 per cent. Concentrated aromatic waters cannot be tested in this manner, as they all contain more or less alcohol.—*Apoth. Zeit.*, 1897, 563.

ASSAY OF RED LEAD.—Baucher recommends the following process for testing commercial red lead:—*Foreign Impurities.*—Ten grammes of the sample are treated with 10 per cent. nitric acid until all the monoxide is dissolved. Invert sugar is then added to reduce the dioxide formed and render it soluble in the acid. The residue is allowed to subside, the liquid is decanted, and the insoluble matter again treated with nitric acid. The insoluble residue is washed first by decantation, then on a tared filter, and finally dried at 105° C. before weighing. The amount of insoluble matter should not exceed 1.5 per cent. *Determination of Dioxide.*—Ten grammes of the sample are heated on a sand bath for four hours with 500 C.c. of 10 per cent. nitric acid. After standing, the deposited dioxide is washed by decantation, collected and dried. The amount found should lie between 22 and 24 per cent. *Determination of Free Litharge.*—Ten grammes of the sample are digested on the water-bath with 20 grammes of neutral lead acetate, and 200 C.c. of water; after the insoluble portion has deposited the clear liquid is decanted, the residue washed, collected, and dried as above, the loss of weight giving the amount of free litharge. Theoretically, red lead should contain no litharge, but in actual practice commercial samples are found to give from 56 to 40 per cent. A red lead which contains a large proportion of litharge attacks zinc with great rapidity in the presence of sea water or fresh water rich in ammoniacal salts. This has an important bearing on certain technical applications of red lead. *Combined monoxide.*—This is determined by difference from the previously obtained figures. *Barium sulphate* is often used to adulterate red lead; it will be found in the insoluble residuum. Lime and the salts of other metals will be detected in the usual way in the nitric acid solution.—*Petit Moniteur de la Pharm.*, xlvii., 2651.

TESTING MILK SUGAR.—The following method is recommended by C. Beutner:—1.2 gramme of milk sugar are treated with 12 C.c. of alcohol, 60 per cent.; 10 C.c. of the resulting filtrate, representing 1 gramme of the sample, are evaporated on the water bath, and should leave only 0.03 gramme of residue. The average weight with pure milk sugar is 0.027. Milk sugar adulterated with 5 per cent. of cane sugar tested in this way furnished 0.076 gramme of residue. Deducting 0.027 for milk sugar, 0.049 or 4.9 per cent. is obtained for the cane sugar. Adulterations with 5 per cent. of glucose furnished a result of 4.7 and 4.8 per cent.; a mixture of 5 per cent. glucose and 5 per cent. cane sugar furnished a result of 9.6 and 9.7 per cent.; and an adulteration with 20 per cent. of glucose a result of 18.7 per cent. This test not only detects any adulterations, but also furnishes a good indication of their amount.—*Zeit. d. Allg. Oest. Apoth. Ver.*, lii., 6, after *Schweiz. Woch. f. Chem. Pharm.*, 1897, 589.

LETTERS TO THE EDITOR.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ADVERTISEMENTS AND ORDERS for copies of the 'PHARMACEUTICAL JOURNAL' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers."

ARTICLES AND REPORTS sent for the Editor's approval should be accompanied by stamped directed envelopes, otherwise no guarantee can be given that they will be returned if not found suitable.

CORRESPONDENTS should write in ink, on one side of the paper only, and must authenticate the matter sent with their names and addresses—of course no necessarily for publication. No notice can be taken of anonymous communications

LIQUORES CONCENTRATI.

Sir,—Your correspondent "Fluid Drachm" would wish us to think that he holds a brief on behalf of the poor dispenser. If I were the latter individual I would not have him for my advocate. For the sooner the dispenser sets himself with earnestness to think and work in terms of the metric system the better for him as to brains, pocket, and prospects. Again, let not dispenser think that the liquores concentrati are introduced into the Pharmacopœia for his convenience; as I read in the preface, page xvii., it is partly for that of the prescriber, but as to the dispenser, he, like one's good wife, should have his humour most when he obeys. Again, "Fluid Drachm" slides by the main issue and makes great importance of the merest trifles. "Alas" for my argument, says he (or she), "the liquors are uniformly 1 to 9. Yes; and there are only nine of them, which, with one representative of a well-known decoction, brings up the number to the fatal ten. How is this? In one list of a wholesale druggist before me I see enumerated no less than thirty-two so-called concentrated infusions, all of them 1 to 7; and in another seventy liquid extracts, all of them 1 to 1, with a note to the effect that these are they which have been most approved in medical practice, but they will be glad to prepare any others on request. Now this is a specimen of what I call unnatural uniformity. Orders—money—will do anything, but the responsible compilers of the Pharmacopœia, doubtless with plenty of money to spend, and plenty of scientific talent to boot, can find ten only of the one, and eighteen only of the other fit for inclusion in its pages. "Some of these compounds underwent deterioration on keeping, or were wanting in flavour and aroma, and were accordingly rejected"; and this being in accord with the experience of all who are competent to speak on the subject—except the traders themselves—could I not with justice have used a much stronger word than "Nonsense" to expose such absurdities? On the subject of doses "Fluid Drachm" would imply that the compilers were not sufficiently versed in arithmetic, that fragment at least of it which deals with the recurrent decimal, which, of course, is absurd. What we, as dispensers, are mostly concerned with is the fact that we have an official statement of doses—within wide boundaries—to fall back upon in case of need. All the minutiae concerning doses belongs to the prescriber; here, again, our wisdom consists in simple obedience.

Marylebone, N. W., August 16, 1898.

J. C. HYSLOP.

CHEMISTS AND THE SALE OF FOOD AND DRUGS ACT.

Sir,—Your correspondent H. C. Standage, in his haste to condemn, has fallen into several errors. Statistics show Erdington to be a healthy place; adulteration far below the average; and samples taken under the Food and Drugs Act to be well over the required two per 1000. I can also assure him that the Sanitary Committee of the Warwickshire County Council, which has the administration of the Act, is by no means harsh on the chemist, as a few weeks ago, when I brought forward the question of prosecutions under the new B.P., I was assured that the County Analyst, Dr. Bostock Hill, would pass any drug which corresponded to the standard of either the new or old B.P. until such time as the chemists and physicians had ample opportunities to familiarise themselves with the changes, and by special motion of the chair.

man I was elected to serve on that Committee so as to safeguard the interests of the trade. It may also interest your correspondent to know that the whole of the samples of drugs taken in the district last quarter were satisfactory, and that the inspector, whilst not ever in evidence, is by no means idle.

Erdington, near Birmingham.
August 16, 1898.

RICHARD HOLLICK.

Sir,—In last week's issue of the Journal I notice a letter signed "H. C. Standage," which contains a mistake, which is, I fancy, more or less common, viz., that the public analyst selects the samples to be analysed. As a matter of fact, he has nothing whatever to do with either the selection or the number of samples submitted to him. It is no doubt true that in many districts the Food and Drugs Act is very inadequately carried out, and that in many it is almost a dead letter. But this is the fault of the local authorities, and not of the analyst. The analyst is generally paid a very small retaining fee and a fee of one guinea per sample analysed. I have no doubt, therefore, that the majority of analysts would be only too glad to receive ten times the number of samples that they do now, either of food or drugs. The number of drugs analysed by all the public analysts put together must be very small, and out of all proportion to the samples of food (milk, butter, etc.) examined. The chief reason of this is, I think, the fact that the inspectors do not know what to ask for, and it is, and rightly so, no part of the analyst's duty to make any suggestions in that direction. I have no doubt that the drugs sold by pharmaceutical chemists are seldom adulterated (at any rate intentionally); but other people also sell drugs. I am strongly of opinion that the retail sale of poisonous drugs should be confined to pharmacists.

August 16, 1898.

PUBLIC ANALYST (139/36).

COMPANY PHARMACY.

Sir,—A most useful and suggestive letter appears in the Journal for August 23 from Mr. Glass. If it should set sharpwitted chemists re-perusing the Pharmacy Act, 1868, it will have effected much good. Mr. Gladstone once noticed the conventional rebuke "Be not wise above what is written" by saying, "Are we quite sure we are wise up to what is written?" I wish to put forward a few points from the aforesaid Act, subject to correction from the better informed of course. The preamble does not use the singular at all, but says "persons," therefore all the persons of which a company consists should be qualified, even if they be "legion," not that one should cover a multitude. Clause 1 says any person, but read with the preamble must still mean any or all, keeping open shop. Clause 3 says all persons, before the passing of this Act; not subsequently, which shuts out all interests since acquired (supposed to be). Clause 16 reserves rights to certain persons, therefore, no other rights can exist. Clause 26: The Privy Council may direct, etc. Would the Privy Council cause to be erased from the Register those guilty of covering, which is generally admitted to be infamous conduct, that is, professionally? Is the Register so kept that the names of persons covering can be identified? Generally; all or any persons keeping open shop must be examined: a company cannot be examined, therefore a company cannot lawfully keep open shop.

London, August 12, 1898.

E. WARRELL.

ETHEREAL OR ETHERIAL?

Sir,—It is perhaps too much to expect that the British Pharmacopœia should pay the same attention to questions of literary correctness as to the department of scientific nomenclature and terminology, which we have all seen revived again in connection with the issue of another edition of the work. It is therefore with diffidence that I direct attention to the spelling of the word "etherial" in this and in all the other text-books to which I have access. Ever since I have had occasion to consider the matter, I have been impressed with the incongruity of employing the spelling "etherial," which is so intimately associated with the sublimer subjects of poetry and astronomy, to the base, material, even though volatile products, of the pharmacy and chemical laboratory. The best authorities recognise both spellings, and, with your permission, I submit to your readers that this is a point which, though comparatively trifling, seems to call for the exercise of so much discrimination as I am disposed to claim for it.

August 13, 1898.

LIBRA (139/31).

AQUA SPIRÆA ULMARIE.

Sir,—Your correspondent inquires if meadow-sweet has been used in the preparation of a distilled water? During my apprenticeship in 1830 we distilled it from flowers by the sackful. The water was considered by ladies a good cosmetic and more agreeable than elder-flower water. I sometimes noticed a substance that crystallised on the apex of the cone, but my employers did not think it of any importance. It may, however, prove worthy of investigation in these days of patient research. Perhaps your correspondent may look out for, "and when found," "make a note of it."

Kew, August 16, 1898.

R. GOODWIN MUMBAY.

Sir,—In reply to Mr. G. Woodman, respecting this water, I find the following mentioned in the 'British Flora Medica (1877),' "the distilled water is said to be a good vehicle for other medicines," and "the flowers themselves have been used to strew about the room where patients are lying with fever, etc.," also "that the flowers were reckoned sudorific and antispasmodic, and a warm infusion has been given with success to provoke the appearance of receding or languishing eruptive diseases."

Sheffield, August 17, 1898.

J. PRESTON.

THE PHARMACOPŒIA DISCUSSION AT BELFAST.

Sir,—The discussion on the new Pharmacopœia, having extended far beyond the hour fixed for the concluding business of the Conference, was prematurely closed by the President. As there was no opportunity at the meeting for a detailed reply, Dr. Symes has desired me to deal, through the pharmaceutical press, with the points on galenic pharmacy raised by the various speakers. Mr. J. C. Umney alluded to the bad keeping qualities of liquor thyroidei. According to the Pharmacopœia, it should be "freshly prepared," but further on in the same sentence we are told that it is to be "kept" in well-stoppered, sterilised bottles. So that the efficacy or otherwise of the preservative depends on the construction placed upon the expression "freshly prepared." A well-known authority on these animal extracts told me that liq. thyroidei prepared with chloroform water (B.P., 1885) in place of phenol solution will keep good for quite six months—certainly the official liquor does not remain "free from any odour of putrescence for this period." Mr. Umney regretted the abolition of proof spirit on the ground that this standard is recognised by chemists and the Inland Revenue for export work. Whilst agreeing with him that for this purpose the proof standard is useful, I still strongly maintain that from the standpoint of the pharmaceutical laboratory the system of the Pharmacopœia is the more advantageous in every way. The Pharmacopœia is a guide for the preparation of medicines, and naturally does not study the convenience of those who export tinctures, etc., in bond. After all, the inconvenience to the latter is more apparent than real, for the many published spirit tables show the relation between proof strength and percentage volume at a glance. With reference to tincture of orange, what I wished to point out was that for the reason mentioned by Mr. Umney, the objections raised against the use of fresh peel have little weight. I think it would be inconsistent to officially state the equivalent of 90 per cent. alcohol in proof degrees as desired by Mr. Howard. 58° o.p. is well known commercially as the approximate strength, and having obtained the standard alcohol, all other operations can be conducted according to the Pharmacopœia system. Mr. Howard preferred to express the strength of the standard alcohol by weight instead of by volume. The official plan appears the more suitable for pharmaceutical purposes, 90 per cent. by weight being much stronger than and consequently too far removed from the rectified spirit of the 1885 Pharmacopœia. On the other hand, in order to take advantage of simple relations in strength the diluted alcohols would have been mixed by weight, a method which, where alcohol is concerned, is quicker and more accurate than measurement. Mr. Wells spoke of the inconvenience caused by changes in the strength of potent preparations like tr. nucis vom. This has been felt by everyone, and only emphasises the fact that the convenience of physicians has been the chief consideration with the compilers, and that as far as possible their object has been to simplify matters for the medical practitioner. Mr. Clague concurred in the view that the Pharmacopœia is a wholesaler's Pharmacopœia, and that retailers have not had sufficient to do with its compilation. A glance, however, at the list of names constituting the Pharmacopœia Committee shows that the retail element far outweighs the wholesale on that committee. I cannot

admit that the wholesale pharmacist is favoured more than his retail *confrère* by the new Pharmacopœia. The latter now makes his tinctures, etc., as easily as before, in some instances even more easily. The standardised liquid extracts, perhaps, are more difficult for him, but these serve as liquors for the extemporaneous production of the tinctures, etc., into which they enter, and thus render the economy claimed for such preparations officially possible. Mr. Clague also reproaches the wholesale houses for their want of magnanimity in not coming forward with a good formula for liq. gent. co. conc. This was one of those infusions experimented with by the compilers (under the advice, presumably, of the Pharmacopœia Committee), which underwent deterioration on keeping, or were wanting in flavour or aroma, and as wholesalers knew nothing of the contents of the Pharmacopœia until several copies of the work had been printed, it is not easy to see how they could have come forward with a good formula for the liquor in question. The presence of glycerin in tincture of rhubarb, which Mr. Clague wished wholesalers to explain away, can hardly be placed to their credit, for its use was recommended in 1893 by W. Warrington in the *Western Druggist* "to prevent precipitation, and render the tincture more permanent." A reference to this, as mentioned by Mr. J. C. Umney, may be found in the 'Year-Book' for 1893, p. 196. Mr. Farr did not follow my meaning with regard to liq. calumbæ conc. The suggestion was to use sufficient water at the second maceration to yield a definite quantity of product. The quantity of water would, of course, depend on the amount of liquid obtained at the first pressing. As the formula stands it is possible for the product to vary both in proportion of alcohol and extractive. Mr. Martindale was of opinion that the ext. casc. sag. liq. is not so good as the 1885 preparation on account of the absence of spirit in the menstruum and consequent imperfect solution of the resinous constituents of the bark. Although at first sight this is apparently a defect in the formula, experience shows that the concentrated aqueous solution of certain principles of the bark forms a very good solvent for the resinous portion, the latter precipitating on the addition of much water. Certain it is that after treatment with water, as in the B.P. process, neither boiling water nor proof spirit removes any appreciable amount of extractive from the marc. Ext. belladon. alch. generally occurs as a pale granular non-coherent mass, bearing little resemblance to an extract, and I did not intend to convey the impression that it possesses any of the physical properties of an ordinary extract. The ground on which Mr. Martindale defends the omission of the phosphate and hypophosphite syrups appears hardly tenable when the inclusion of liquor picis carb. and liq. pancreatis is called to mind, for precisely the same argument as to the undignified practice of imitating nostrums is applicable in those cases also. Might not the second difficulty which he mentions have been overcome by inserting very short characters and tests for the manganese, quinine, and other hypophosphites, etc., required in the formula? I am pleased that this important subject has been discussed at a meeting of the British Pharmaceutical Conference, a body which represents such varied interests of pharmacists, not only in Great Britain and Ireland, but throughout the British Empire, and the publication of whose proceedings affords such wide and desirable publicity to all matters considered at its sessions.

London, August 16, 1898.

F. C. J. BIRD.

AMMONIATED ALCOHOL.

Sir,—This preparation, when procured from wholesale druggists, is but too often very deficient in anhydrous ammonia unless prepared according to the Ph. Borussica 1847, and even then it only contains 10 parts in 100. In some cases I have known liq. ammon. fort., s.g. 0.880, to be mixed with s.v.r. and sent out as ammoniated alcohol, with the result that the addition of essential oils renders the liquid of course turbid. Some time ago I became acquainted with the proprietor of an ice manufactory, where he used anhydrous ammonia, and I induced him to saturate a quart of 60 o.p. spirit. In a few minutes after the tap was turned on heat was generated, so that ice had to be used: the result was an ammoniated alcohol which was as powerful as liq. ammon. fort., and in which essential oils were freely soluble. This article I have now kept in a well-stoppered bottle for fully six years, and although converted into Godfrey's essence its strength is unimpaired.

North Kensington, W., August 12, 1898.

PERCY WELLS.

ANSWERS TO QUERIES.

Special Notice.—Scientific, technical, legal, and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms, and the registered number added in each instance should be quoted in any subsequent communication on the same subject.

OIL OF BIRCH.—The simplest way of answering your question will be to try the experiment. [Reply to APPRENTICE.—14/19.]

PETROLEUM HAIR WASH.—The most effectual petroleum hair wash is nothing but odourless petroleum oil, flavoured with a little lemon oil. [Reply to J. A. D.—15/5.]

COMPOSITION OF MIXTURE.—Whilst prepared to assist readers to any reasonable extent, we cannot undertake to perform analyses of complex mixtures free of cost. Your customer should be asked to pay an analyst's fee. [Reply to PHARMACIST.—15/8.]

COMING OF AGE.—The fact of your attaining the age of twenty-one years would not release you from any legal contract or agreement into which you had entered. The question as to whether your contract was a legal one is a matter for a lawyer. It will probably depend upon the manner in which your indentures have been drawn up. [Reply to MEDICAMENTUM.—14/31.]

ILLEGAL SALE OF POISON.—Communications regarding the illegal sale of scheduled poisons should in all cases be addressed to the Registrar under the Pharmacy Acts, 17, Bloomsbury Square, London, W.C. All such communications are regarded as confidential. [Reply to J. T.—139/17.]

WATERPROOFING MATERIAL.—Apply, first of all, a hot solution of copper sulphate, 1, in water, 20. Thoroughly moisten the material with this; before it is dry again apply a solution of yellow soap, 42, in hot water, 20, and go over the surface already saturated with the copper, then dry. Possibly a solution of alum instead of copper will answer; if so try it. Take care that the soap solution is in excess, so as to thoroughly decompose all the copper sulphate. [Reply to G. W. M.—14/13.]

SKELETON LEAVES.—Immerse the leaves in a 1 in 8 solution of nitric acid until, on brushing with an old tooth or shaving brush the cellular tissue readily separates and leaves the skeleton. When the soft tissue has thus been removed, wash thoroughly first in a little very dilute ammonia, then in plain water. Finally bleach by immersion in a solution of peroxide of hydrogen freely exposed to the sunlight. This is best done in a wide-mouth (pickle) bottle. The time required to soften the cellulose will depend on the delicacy of the tissues. [Reply to A. H. N.—15/2.]

STUDY OF THE B.P.—There is nothing contradictory in the two statements, as you will see if you do not dissociate the one first quoted from what immediately follows in the same sentence. Some things, of course, you must commit to memory, but to depend upon memory only, instead of bringing the reasoning faculty into play, would be to commit an unpardonable error. Above all things do not for a moment imagine that we are attempting to provide students with a "short cut" to the study of the B.P. As a matter of fact, most students who work conscientiously on the lines indicated in our notes will cover much more ground than they would otherwise. [Reply to ARO.—139/26.]

OBITUARY.

NEED.—On August 7, the wife of J. Need, Chemist, Malvern. Aged 40.

STUART.—On August 15, John Edward Stuart, Pharmaceutical Chemist, New Bond Street, London, W. Aged 88. Mr. Stuart had been a member of the Pharmaceutical Society since 1850.



Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Chlorophyll Produced in Obscurity.

A. Etard and M. Bouilhac find that *Nostoc punctiforme*, cultivated in perfect darkness in a suitable solution of glucose, affords a bright green growth, the colour of which is due to chlorophyll. The fresh colouring matter gives precisely the same absorption bands as fresh chlorophyll grown under normal conditions. It is an interesting problem whether the chlorophyll thus produced is physiologically inert, or if it retains the function of converting the sugar, in the dark, into other organic materials.—*Comptes rendus*, cxxvii., 119.

Ovalbuminic Acid.

By the action of iodine on powdered egg albumin in the presence of amorphous phosphorus and water, J. M. Albahary has obtained a decomposition product free from iodine which acts as an acid and gives a crystalline sodium salt, which has been obtained in fine needles. When liberated from this combination the acid melts with decomposition at 260° to 270° C. It is practically insoluble in water, also in solutions of neutral alkaline carbonates, but dissolves in mineral acids. From solution in hydrochloric acid it gives precipitates with picric acid, phosphomolybdic acid, and also with gold and platinum salts. In certain reactions it resembles caseo-albumin of A. Gautier, but this latter does not give either a gold compound or a crystalline sodium salt.—*Comptes rendus*, cxxvii., 121.

Alkaline Secretions of Ants.

C. Janet finds that instead of giving, as was expected, an acid reaction, test papers exposed in the chambers and galleries of ants' nests gave indication of a marked alkalinity, as long as the inmates were undisturbed. When, however, they were excited, the alkaline reaction was replaced by a marked acidity. It was found that this alkalinity was more intense in these species—the *Formicinae*—which secrete the greatest amount of acid venom. The alkaline secretion is furnished by the tegumentary glands, especially those in the buccal region. It is supposed that its function is to serve as an antidote to the acid venom and to prevent auto-intoxication of the insects when large quantities of formic acid are discharged by them when defending their nests.—*Comptes rendus*, cxxvii., 130.

Oil of Melaleuca Viridiflora.

Dobousquet de Laborderies reports most favourably on the essential oil of *Melaleuca viridiflora*, a native of New Caledonia, where it grows in the neighbourhood of Gomen. The oil contains 66 per cent. of cineol, some terpineol, a trace of butyric, valerianic, and acetic esters, and a terpene. The author makes the erroneous statement that oils of eucalyptus and of cajuput contain considerable quantities of aldehydes, which are toxic; the oil of *Melaleuca viridiflora* is stated to be free from these bodies. The oil has given good results in the treatment of tuberculosis and other respiratory affections; it was given in capsules containing 25 centigrammes, 4 to 10 of which were taken daily. Good results were also obtained in various affections of the urinary system; in cystitis, a 2 per cent. solution was useful as an injection. As an application in rheumatism and in neuralgia, the oil was also an extremely valuable agent. When employed hypodermically, it was free from irritant action. In commerce the oil has been imported under the name of "gomenol" or of "oil of niouli."—*Bullet. Gén. de Thérap.*, cxxxvi., 1.

Hydrocyanic Acid in Plants.

Hebert communicates to *Revue Independente*, the results of a wide series of experiments made to determine what plants contain or yield hydrocyanic acid. No trace of prussic acid was found in any of the *Aroidae*. The young green buds of *Ribes rubrum* gave a few milligrammes per 100 grammes, but the fully developed growing parts contained none. Traces were also found under like conditions in *Ribes nigrum* and *R. aureum*. Many rosaceous plants contain the acid, but it is not present in the cultivated plants of the genus *Rosa*. The embryo of the seeds of the Japanese medlar, *Eryobothrya japonica*, gives 0.040 per cent.; *Aquilegia vulgaris*, when in the young state, contains it to some extent in the combined form, as a body analogous to amygdalin, and to a less degree in the free state, in the flowers. In these it is almost all found in the ovaries. In fact, as a result of the investigation, it would appear that the presence of prussic acid or of bodies resembling amygdalin is practically confined to those parts of the plant which contain chlorophyll.—*Les Nouv. Rem.*, xiv., 271.

Adulteration of Saffron.

J. Wauters has made analyses of commercial varieties of saffron and its adulterations. A coal-tar derivative made by a German firm closely imitates the colour of the genuine drug, and is largely used as an adulterant. Curious to relate, it is itself adulterated with 75 per cent. of sodium chloride. Féminelle, derived from a species of marigold, which has long been employed to sophisticate saffron, is also coloured with a similar compound. In the assay of saffron, the proportion of genuine drug may be estimated from the amount of crocetin present, a microscopical examination reveals the presence of feminel, whilst the added colouring matter may be estimated by noting the percentage of sodium chloride present. A good test consists in trying the tinctorial power of a sample on wool, silk, and cotton. These materials strike a citron-yellow colour with a solution of the true drug, containing tartaric acid, which is not altered by subsequently treating the materials with potassium hydroxide. Under treatment with a solution of the spurious article, the wool takes a deep brownish-red; the silk a deep orange-yellow, and the cotton a lighter yellow tint; in each case the addition of potassium hydroxide causes a deepening of colour.—*Bull. de l'Assoc. Belge des Chim.*, xii., 103.

Oil of Cade.

Paul Adam has further investigated the characters of this natural product with a view to determine whether it is possible for the pharmacist to procure the genuine article. He obtained five commercial samples, and determined the density, viscosity and various analytical data. Considerable differences were noted, among them the viscosity varying between 32 and 360, the specific gravity between 0.9874 (at 0° C.) and 1.031 (at 14° C.). From the lack of uniformity shown by these average samples the author concludes that this drug, which formerly was held in high repute, will be dispensed with in the future.—*Bull. de la Soc. Chim. de Paris*, xix., 580.

Organic Glycerophosphates.

Adrian and Trillat have prepared several of the organic glycerophosphates, including those of cocaine, quinine, and phenylhydrazine. They find that these compounds are better obtained by the interaction of an acid salt with the organic base than by using glycerophosphoric acid itself. Their paper gives some of the properties of these important substances which are now engaging considerable attention among the medical profession.—*Bull. de la Soc. Chim. de Paris*, xix., 684.

GLACIAL ACETIC ACID—A NICE POINT.

BY JOHN C. UMNEY.

The British Pharmacopœia (1898) describes glacial acetic acid as containing 99 per cent. by weight of hydrogen acetate. In the 1885 edition it was described as containing "nearly" 99 per cent. of real acid. The characters and tests of the new Pharmacopœia, notwithstanding this slight alteration in description, are practically identical with those of the 1885 Pharmacopœia, and require that the acid shall have a specific gravity of 1.058; that it shall remain crystalline until the temperature rises above 60° Fahr. (15.5 C.), and that it shall indicate by titration 98.9 per cent. of real acetic acid, when titrated with volumetric solution of sodium hydroxide.

Now, although the acid is described as containing 99 per cent. by weight of hydrogen acetate, the temperature of liquefaction after crystallisation is not in accordance with this percentage.

The strength of glacial acetic acid may be determined more accurately by its melting point than by titration, and the melting point after solidification of glacial acetic acid of various strengths was the subject of a communication to this Journal by Rüdorff (series 3, vol. ii., page 241). From the results there quoted it will be seen that the solidifying point of a glacial acetic acid containing 99 per cent. of real hydrogen acetate is 14.8 C. and one containing 99½ per cent. is 16.65 C.

The following table is abstracted from Rüdorff's communication:

100 parts of mixture	Solidifying point.
Containing 0.0 of water	+16.7 C.
" 0.497 "	+16.65 C.
" 0.99 "	+14.8 C.
" 1.477 "	+14.00 C.
" 1.961 "	+13.25 C.

It is evident from this, and I have been able to confirm the results by experiment, that glacial acetic acid containing actually 99 per cent. does not remain crystalline after the temperature rises to more than 14.8 C.

The United States Pharmacopœia describes the acid as containing 99 per cent. of absolute acid, and states that at a temperature somewhat below 15° C., the acid becomes a crystalline solid, becoming liquid again at about 15° C.

Although the point must necessarily appear a very small one to pharmacists and others here, still it has an important commercial bearing to export druggists, many of whom are called to ship this concentrated acid in thousands of pounds annually.

Glacial acetic acid is admitted into New Zealand at an *ad valorem* duty of 20 per cent., but if the strength falls below that of the British Pharmacopœia it is required that 5*d.* per lb. duty should be paid upon it, practically five times as much as the proper duty already referred to.

The method adopted by the New Zealand Customs for the determination of strength has hitherto been based upon the liquefying point after crystallisation, and an acid which melted at a lower temperature than 15.5 C. has been subjected to payment of the amount referred to (5*d.* per lb.), such impost being justified by the statement in the British Pharmacopœia, which is viewed by the Customs chemical official as absolutely accurate.

It seems desirable, therefore, to record the fact that glacial acetic acid having a melting point of 15.5 C., will have a real hydrogen acetate strength of over 99 per cent., whilst an acid containing 99 per cent. or 89.9 per cent., which is the amount indicated by the titration in the British Pharmacopœia, will have a melting point of 14.7 to 14.8 C.

This trivial point has given rise to much correspondence between exporters in the city of London and importers in New Zealand, the latter expecting of course to be reimbursed for any duties in which they have been mulcted, the inaccuracy referred to notwithstanding.

ON THE SYNTHESIS OF ALBUMIN.

BY ALFRED H. ALLEN.

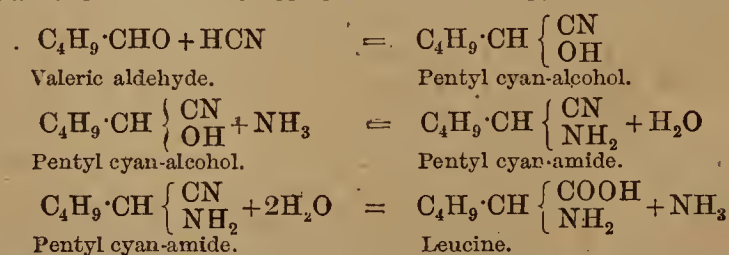
The announcement that Dr. Leo Lilienfeld, at the recent International Congress of Applied Chemistry at Vienna, had claimed to have effected the synthesis of albumin, will be received by chemists with considerably more scepticism than it has met with at the hands of the professional paragraphists. The circumstances of the announcement are not such as to encourage implicit faith in the reality of the alleged discovery, but Dr. Lilienfeld may be the victim in this respect of excess of zeal on the part of the reporters.

From the accounts which have hitherto come to hand it appears that it is not true albumin of which Dr. Lilienfeld claims to have effected the synthesis, but "peptone," which is a very different thing. It is said to be produced by the condensation of glycocine (amido-acetic acid) with phenol, by means of phosphorus oxychloride. The reaction is stated to occur quantitatively and with great facility, allowing of the whole process being shown at the meeting. Further, Dr. Lilienfeld is said to have demonstrated by the most conclusive tests the absolute identity of his product with natural peptone, or, according to some accounts, with true albumin. Seeing how very ill-defined are the chemical tests for "peptone," and that more than one kind of peptone is recognised, this part of the account must be received with caution. Still more doubt attaches to the statement that Dr. Lilienfeld's product has the same elementary composition as natural peptone (or albumin). Seeing that natural albumin and peptone both contain sulphur as an essential constituent, and that Dr. Lilienfeld's process does not involve the employment of sulphur in any form, there seems to be a screw very loose somewhere.

Although the description of the mode of formation of Lilienfeld's body appears to negative the conclusion that he has effected the synthesis of either albumin or peptone, it by no means follows that he has not produced an albuminoid substance of great theoretical interest. He has undoubtedly been working in the right direction; in fact, his method may not improbably have been suggested by the interesting and ingenious suggestions of Dr. P. W. Latham (Croonian Lectures, 1886).

Commencing with the fact that by the reaction of hydrocyanic acid on aldehyde, cyan-ethylic alcohol, $\text{CH}_3 \cdot \text{CH}(\text{CN}) \cdot \text{OH}$, is formed, Latham points out that the cyan-alcohols are, as a class, very unstable bodies readily undergoing change, and when treated with ammonia form unstable cyan-amides, which easily undergo condensation with formation of imido nitriles and elimination of ammonia. Latham thinks these facts suggest the inquiry: "Have we not in these cyanogen compounds substances possessing some properties that belong to living tissue, namely, those of undergoing intra-molecular change and also condensation? And, further, if from these substances we can obtain the various products which result from the disintegration of albumin, may not albumin itself be simply a compound made up of these elements?"

In the laboratory, it is practicable to obtain from these cyan-alcohols the corresponding amido-acids, glycocine, leucine, etc., and all the acids of the acetic and lactic series.



Latham suggests that, if it were found possible to reverse the process, albumin might be built up theoretically from such constituents.

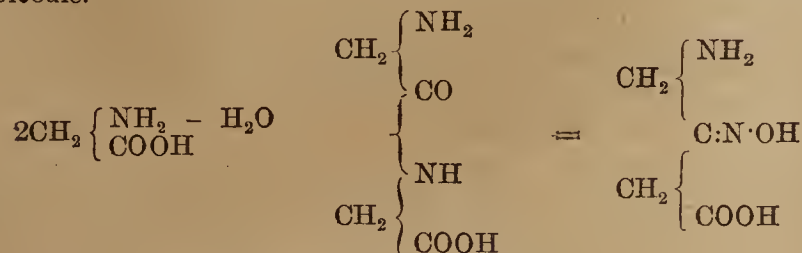
Latham further instances the well-known molecular transposition by which ammonium cyanate is converted into urea, and quotes Pflüger's remark that the great molecular energy of cyanogen compounds suggests that the functional metabolism of protoplasm by which energy is set free may be compared to the conversion of the energetic unstable cyanogen compounds into the less energetic and more stable amides. In other words, that ammonium cyanate is a type of living, and urea of dead, nitrogen, and that the conversion of the former into the latter is an image of the essential change which takes place when a living proteid dies.

In accordance with this view the group, CO·NH, is dead nitrogen, and would, on becoming part of a living tissue, be transformed into =C:N·OH.

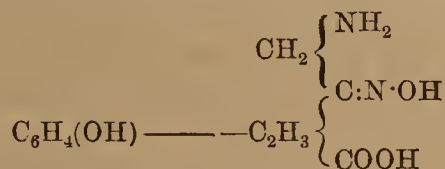
Cyanic acid, CNOH, is itself readily susceptible of polymerisation, with formation of cyanelide, C₃H₃N₃O₃.

Latham points out that the glycines are capable of uniting with each other, glycocine being not improbably glycocine amidacetate, H₃N { O·CO·CH₂ } NH₂; and that by the dehydration of this and allied bodies, cyan-alcohols might be formed.

Thus, a double molecule of glycocine by dehydration would give a substance which might contain either a CO·NH group or a C:N·OH group, according to the arrangement of the atoms in the molecule.



Trysine is a member of the glycine group, and has the constitution of a para-hydroxyphenol-amidopropionic acid. Latham shows that by coalescence with glycocine and elimination of water it would yield a body of the following constitution:—



By similar ingenious reasoning Latham shows how such a body as taurine may be introduced into the molecule, and he finally builds up the formula given at the end of this article, as possibly representing the constitution of albumin.

This suggestive formula contains C₇₂H₁₁₈N₁₈O₂₂S, and differs only by H₆ from Lüberküln's formula for albumin, C₇₂H₁₁₂N₁₈O₂₂S.

The discovery of lysine, lysatine, and trysophan or protein-chromogen necessitates some modification of the formula, which, of course, cannot be regarded as more than an ingenious and highly suggestive arrangement which might be of service as a working hypothesis.

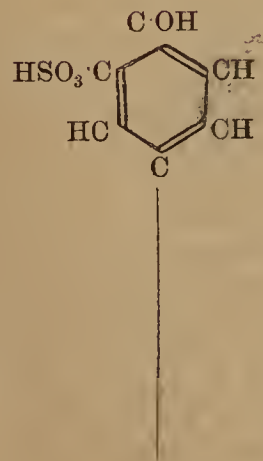
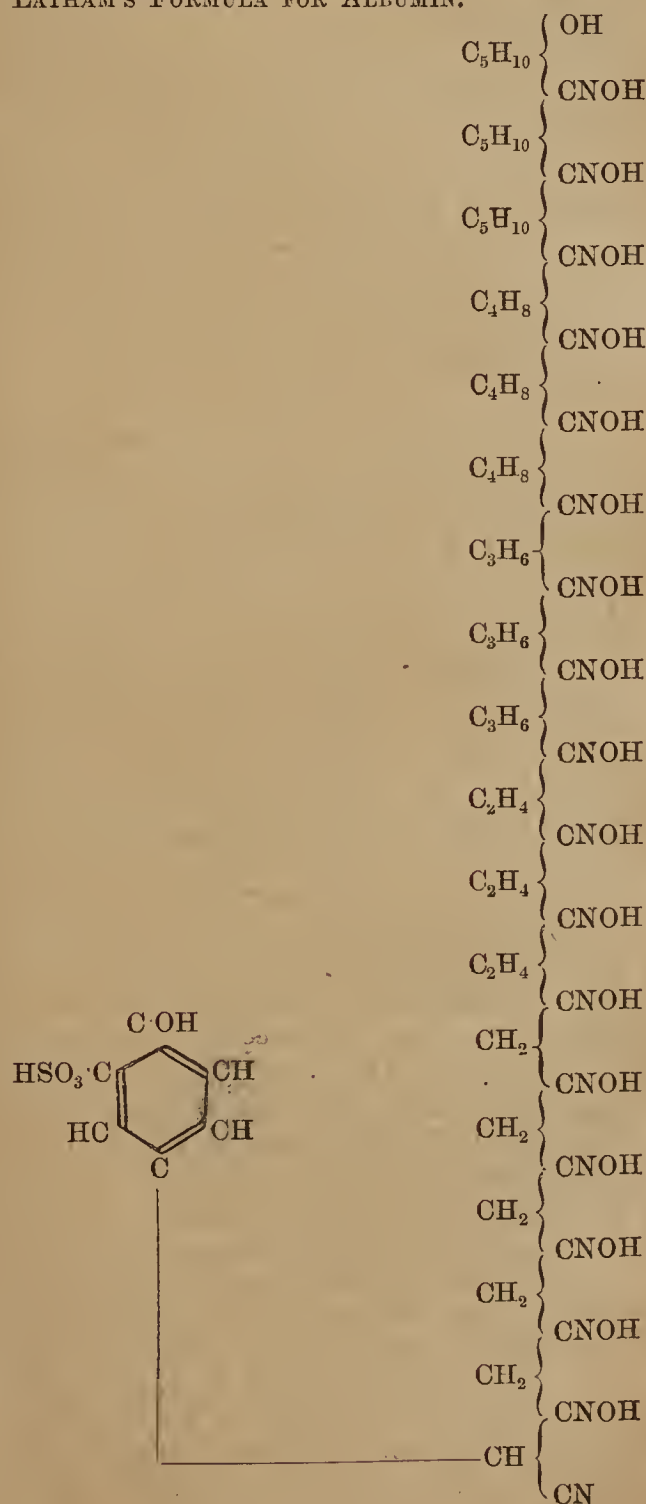
Pflüger has observed, and Loew and Bokorny have corroborated the fact, that living proteid matter in the cells of various algæ reduces silver from a dilute alkaline solution of the nitrate, but that dead protoplasm or proteid does not give the reaction. Hence it is suggested that a compound of aldehydic nature exists in living protoplasm. By the reaction of formic aldehyde with ammonia, aspartic aldehyde may be supposed to be formed, a body which, though unknown, has the same composition as leucine. By its repeated polymerisation in presence of hydrogen and a sulphur compound, with elimination of water, the following equation may be realised:—6C₁₂H₁₇N₃O₄ + H₂S + 6H₂ = C₇₂H₁₁₂N₁₈SO₂₂ + 2H₂O.

Grimaux (*Compt. rend.*, xciii., 771) has proposed to define

proteids as "nitrogenised colloids, which by hydrolysis split up into amidated acids, carbon dioxide, and ammonia." On heating aspartic anhydride to 130° with urea for two hours, Grimaux obtained a thick mass, completely soluble in boiling water to a gummy, highly colloid liquid, yielding highly gelatinous precipitates with acids, alkaline salts, magnesium and aluminium sulphates, solutions of iron, copper, and mercury, and with tannin. The jelly yielded by acetic acid dried up to a substance resembling dried albumin. It softened in boiling water without undergoing solution, but dissolved in caustic potash to a liquid giving a violet coloration with cupric sulphate.

Of course, it by no means follows, as Dr. Lilienfeld is reported to have said, that a synthetical product of the same ultimate composition as peptone will have the same food-value. This fact is familiar to the mere tyro; but it may be of interest to recall the case of quinine, the synthesis of which may any day be effected. Already two distinct basic substances isomeric with quinine have been prepared synthetically, but neither base has the physiological characters of true quinine.

LATHAM'S FORMULA FOR ALBUMIN.



Public Health Congress at Dublin.

At Dublin, on the 18th inst., the Congress of the Institute of Public Health was opened at Trinity College, and the same day the Health Exhibition was opened in the Royal University. The presidential address was delivered by Sir Charles A. Cameron, M.D., President of the Congress, in the Examination Hall, Trinity College, and this function was largely attended by representatives from almost every part of the world. Handsomely got-up guides were extensively circulated, giving details *in extenso* of the daily programme between the 18th and 27th inst., on which latter date the exhibition will be brought to a close. The business of the Congress began on the day of the opening, when, following the President's address, a move was made to the Royal University buildings, where at noon the "Healtheries" was formally opened by the Lord Lieutenant, after which the remainder of the day was devoted to pleasure-seeking, including garden parties, concerts, etc. On Friday the serious business of the Congress commenced at 10 o'clock, and the reading of papers on preventive medicine and vital statistics, chemistry and meteorology, engineering and building construction, and a number of kindred subjects was indulged in, the Congress being divided into four sections, each presided over by its own particular chairman. Close on one hundred papers and addresses were submitted, but many of the former were taken as read.

A noteworthy feature of the Congress was the conferring of honorary degrees by the Apothecaries' Hall of Ireland and other licensing bodies. An inspection was made of the principal buildings in connection with the Public Health Department of the Corporation, and their working explained to the delegates. Large public works and institutions throughout the city were also visited. Excursions to various beauty spots in Ireland were largely patronised.

On Saturday morning, August 20, PROFESSOR TICHBORNE read a paper on

The Adulteration of Food and Drugs.

It was, he said, probably well known to most of the members of the Congress that it was contemplated, he might say promised by the present Government, to bring in a Bill to amend the Food Adulteration Acts. This movement was the outcome of a general consensus of opinion that the Acts as they stood at present were unsatisfactory in their working. He thought he was justified in saying that the public analysts were not satisfied, further, that vendors, *i.e.*, retailers, wholesale merchants and manufacturers, were also dissatisfied, whilst Somerset House, which was constituted a court of appeal by these Acts, seemed to be anything but happy. It had resulted in a most contentious kind of struggle all round, which had not added one iota to the settlement of the numerous questions in dispute; no side had gained in kudos. The public at large, who were really the most concerned, understood very little about the question, and in addressing the Congress on the matter he hoped to draw attention thereto, but at the same time he wished to avoid becoming the partisan of any particular class.

A Committee of the House was appointed, and finally reported upon the Foods and Adulteration Acts in 1896. It was originally appointed by the previous Government and was continued by its successor. The Committee carried on its investigation for three years and examined 68 witnesses, and he, the essayist, had the honour of being summoned before that Committee in 1895, but circumstances prevented him giving evidence before March, 1896. The report of that Committee was in three large Blue Books, and dealt in a most exhaustive manner with the whole subject. The evidence was taken from every standpoint. It dealt with a lot of special recommendations, many of which were of great value and certainly should be provided for in the Bill. But there was one great principle inserted in the recommendations of the Committee which Mr. Chaplin, who was bringing in a Bill on the subject, seemed to ignore. It was the backbone of the whole question, and its omission made light of the labours of that important and expensive inquiry. What was asked was that a representative board should be constructed whose functions should be to determine and fix the standards of the limits of purity and other questions as to the methods to be adopted. That question of the Board had been placed by himself

before the Committee in 1895; but, as he had already explained, circumstances prevented him from going forward to give evidence in support of it until 1896. He was pleased to see that Professor Hehner, who had been examined a few days before him, also advocated a very similar Board, and as that gentleman was supposed to be the mouthpiece of the Society of Public Analysts his evidence came with great weight. They had had no communication with each other. The merchants who felt aggrieved by some prosecutions regarded such a board as the way out of the difficulty, and after such a general concurrence of opinion, the Committee ended their labours by reporting also that this was the way to make the Acts work smoothly. Imagine the surprise of all interested to find that the whole matter was ignored in the new Bill.

He would illustrate what was meant by fixing a standard of limit by one of the most familiar instances which might be considered as typical of many more, *viz.*, the standard of limit as regarded water in milk. Water occurred as one of the natural constituents of milk. The vendor spun the milk out by adding more. Now in the milk analyses the analyst primarily divided his analysis into three parts—butter fat, solids less fat, and water. He was not now dealing with odd ingredients, such as chalk, sheep's brains, glue, starch, *et hoc genus omne*. Some of these adulterations were too gross to withstand the modern analyst, and hence become extinct. Now the butter fat was estimated to determine the "richness" of the milk, or to see if it had been skimmed, but the analyst relied upon the solid less fat to determine the added water, if any, thus:—

$$\left. \begin{array}{l} \text{One pint of milk (con-} \\ \text{tains a minimum of} \\ \text{solids less fat, 8.5)} \end{array} \right\} + \left\{ \begin{array}{l} \text{One pint of} \\ \text{water con-} \\ \text{taining no} \\ \text{solids.} \end{array} \right\} = \left\{ \begin{array}{l} \text{Adulterated milk con-} \\ \text{tains 4.25 solids less fat} \\ \text{or 50 per cent. of added} \\ \text{water.} \end{array} \right.$$

This seemed very simple if the solids of the pure milk were always constant, but unfortunately they were not. Even leaving out extraordinary samples, pure samples ranged from 8 to 11¼ per cent. It was self-evident that some standard of limit to pure milk must be fixed, and thus the term standard of limit (not an average as some would wish to establish). This limit should be of such a nature that the vendor could sell all his milk as long as it was pure and within reasonable limits, but it should not be one which would allow him to stretch his milk by the aid of the pump. This was one of the few food products which by general consent and general necessity they had arrived at a standard of limit, and that was that the solids less fat in milk should never fall below 8.5 per cent. But this very one was an apt illustration of the importance of standard as regarded the subject of adulteration. If they took up the book on 'Milk,' published in 1883 by Dr. Bell, the late head of Somerset House Laboratory, they would find a most interesting illustration of the importance of fixing fair standards. They found that standard of limit of solids less fat had been fixed by the Court of Appeal, if he might use the term, as 9 per cent., but at the foot of the page in the same book they found a note that Dr., now Sir Charles, Cameron in 1881 conclusively showed that the majority of country cows would not respond to that high limit, and so it had been altered by general consent to 8.5 per cent., his view being endorsed by analysts in other countries. Assuming such to be correct, did it not show that hundreds of men for some years had been unjustly prosecuted, and in many cases heavily fined? As a rule the milk vendor deserved all he got in that, but let them be just, or the law would get into disrepute. In dwelling upon this part of his subject, the speaker said he only wished to emphasise the importance of fixing these standards, which must be placed in the hands of those who know what they are about, and that they were not questions which could be left to the individual caprice of any one who chose to adjudicate. As long as Somerset House was the court of appeal they must be represented upon the Board of Control; but so must the analysts and the vendors through their Chamber of Commerce, and as these Acts covered drugs, so must the medical profession, however constituted; but he was sure no special Government Department would ever settle these questions to satisfy contending interests. They had tried it and failed. What did it matter if the Board

were called the Board of Inland Revenue or the Board of Agriculture?

Preservatives.

The question of the use of preservatives in food products, such as boric acid, salicylic acid, formaldehyde, calcium bisulphide, etc., was a burning one at the present time. Some analysts were for prohibiting such preservatives altogether. Others said they might be used in limited and restricted quantities; but the manufacturers said it was right to use them without limit, so long as they produced wholesome products. Now, who was to determine whether the preservative used was wholesome, whether necessary at all, and if so, what should be the maximum quantity allowed? He found there was the greatest diversity of opinion upon these cases when they came into courts of law. He maintained that such questions should first be dealt with by a Board, who would approach the question from a judicial and unbiassed position, and no manufacturer should be allowed to use any substance for such purpose which was not permitted. If a preservative be allowed, the amount allowable should be specified and the food products named in which it was permissible, and they should never be allowed to be used in quantities for the purpose of weight making. Salt, alcohol, spices, hops and many other things had long been employed, and no one would think of objecting to their use, because of their properties being so well known. Why should one stand still and refuse to make use of the progress of science in that direction if they were equally harmless?

The New Pharmacopœia as a Standard.

He wished to make a few observations upon the important question of the new Pharmacopœia as a standard of adulteration of drugs. It would afford subject matter for a lengthened communication by itself, but time would only permit him to glance at it in the most superficial manner. As regarded drugs and their preparation, the old Pharmacopœia had always been accepted as the criterion, and its standards of purity used by the courts. The Pharmacopœia of 1898 would not be likely to lose ground in that respect. As one of the Committee who formed the new B.P., he could state at once that although it was not compiled from the point of view of being an analyst's book, the tests had been very much extended and made more crucial, besides which the standardising had had more attention paid to it. It was no longer a student's book, but was intended to be a work of reference, first for the medical man, and indirectly for the analyst. Thus processes of their *modus operandi* were ignored, but standards of purity and strength were minutely detailed. It was a book for the expert. Now, taking the new Pharmacopœia as a whole, they would find that with a view to making the medicines more efficacious the cost of production had been greatly enhanced. Thus the commercial value was very much increased, and a corresponding tendency to adulteration would be created, at least it would be so for the next few years, which might be called the transition period. An endeavour to substitute the old pharmacopœial preparations would be very common. There was a term which had become very familiar in Dublin, namely, "The housing of the very poor," but there was also a very important question, and that was the physicking of the very poor. He meant that they should see that the medicine which the medical officers prescribed should be pure and up to strength. This was a question of life and death, and the medical officer could not do his best if he were not backed up by a proper supply of medicine.

They could only trust to the Local Government Board to see to that important question; but the present orders were in direct variance to such a reform being carried out, and their order was that the lowest contract in money value for drugs to the Poor Law Union must be taken. How could the honest contractor work against such an order when some of the contractors openly said they were not bound to supply the new pharmacopœial preparations? What were the medical men to do? The Local Government Board say they must trust to the medical officers to keep up the quality. How could such a proposition be carried out? The strength of ninety-four articles in the Pharmacopœia had been changed. The medical officer prescribed that useful medicine hypodermic solution of morphine, an invaluable medicine, but at the same time a deadly one. He thought he was giving one-twentieth of a grain of morphine, but he was really giving double that quantity. Besides, why should the medical officers convert themselves into analysts, even if they possessed the very special training necessary for such work? They were not paid for it. They had no time to

hold two distinct and separate functions, and many complications might arise which would place them in a false position.

The New Adulteration Bill.

But the most extraordinary part of the new Bill was the fact that it was brought in under the misleading name of "Agricultural Products, etc. (Adulteration)." A Bill brought forward this Session, but which was, he believed, only a pulse-feeler of the contending parties, was introduced, to be at once dropped. It was, however, held suspended over their heads for the next Session. The "etc." was not his insertion, but really stood as the heading of the Bill. It had evidently been found necessary to explain the objects of the Bill by saying "Adulteration." Something on the principle of Artemus Ward's picture of a bovine, underneath which appeared the statement "This is a cow." He did not think there was another Act in existence with a title similar to that referred to, but, strange to say, it was endorsed by Mr. T. W. Russell, who was Chairman of the Adulteration Committee. Mr. Chaplain, in introducing the measure into the House on July 22, said it was alleged that the existing Acts would be perfectly adequate if they were efficiently administered. Now, the very existence of the three years' Committee was based on the assumption that they were not adequate, and the verdict of the Committee was that they were quite inoperative, and in many cases unjust in their working. It seemed to him to shift the responsibility very much on to the Board of Agriculture. That Board might have a great deal to do with the question of butter and milk and the contagious diseases of animals, but surely it was a very narrow view to whittle the question to such limits as these. What had the Board of Agriculture to do with the subject of adulteration of wines, medicines, and such-like questions? As regarded the Court of Reference Mr. Chaplain said that the Committee recommended a Court of Reference, as it was termed, to prescribe standards of quantity and purity for all kinds and descriptions of food, but in place of what he (Mr. Chaplain) thought would be rather cumbrous machinery for the purpose of this Bill, he would propose that the Board of Agriculture have power to make regulations, etc. Would not the Board of Agriculture be a very cumbrous machine for fixing the standards, and whom would it satisfy? It did not even satisfy the Chambers of Agriculture. It contained a few clauses which would be very useful in connection with the importing of adulterated products from other countries, but which would have to be greatly modified to make them practical, but save as regards this they found the whole Act was contrary to the recommendation of the Government Committee. Professor Tichborne concluded his paper by expressing his belief that they got too much centralisation of local departmental details executed in London. If they had a Court of Arbitration it would, perhaps, be said that it would be necessary to meet in London. Very well; but Ireland and Scotland must have their representatives thereon, and when experts had to do departmental work it should be done in Ireland and Scotland. The Court of Appeal for Ireland should be in Ireland, not in London. Every phase of work removed from Ireland helped to make it discontented, and not worth living in, and it became a returnless waste to the most intellectual of its inhabitants.

Mr. R. J. Downes, president of the Pharmaceutical Society of Ireland, said the Bill to which Professor Tichborne had drawn attention was one of those numerous kites which the present Government was fond of flying. The kite used to be a useful scientific instrument, and was employed to ascertain both the direction and force of the wind, and, with the aid of an attached thermometer, the temperature; and he believed when they saw these kites, if they were interested they should blow their strongest and their hottest. Flying a kite was useful to see if it was well balanced, but looking back to his school days, a very important part was the adjustment of the belly-band, and that was, he thought, just the part to which Professor Tichborne drew attention. The Bill itself, if they knew more of it, might be a very superior Bill, and one which they might approve of; but the Board of Control was the essential part which required to be adjusted to make it carry and to render it workable. A Board of Reference on which would be represented the persons to be chiefly affected, but that Board would sit in London and fix standards, but there should be local boards of administration, and it should not be necessary to send all disputes to Somerset House to be upset or confirmed there. Ireland and Scotland should have their public laboratories, and in Dublin they could be easily

established and worked. As instances of the need of a Board of Reference that would control those matters in things affecting one's own trading, one of the earliest troubles they had had in England was over milk of sulphur, a preparation which had been and was still in demand. In 1864 for the first time the pharmacopœial authorities inserted precipitated sulphur, a very proper article to have in the Pharmacopœia, but milk of sulphur was an impure precipitate containing lime, but still preferred by the public for various reasons, but the analyst insisted on having the pure precipitate when milk of sulphur was asked for. Another innocent preparation known as lime juice and glycerin, many years before the public as a toilet preparation, the analyst has discovered contains no glycerin. This article was first named, he believed, under the impression that whenever there was saponification glycerin was liberated. These were instances in which a Board of Reference would not, he believed, have sanctioned prosecutions. As regarded the Pharmacopœia, it was of course a standard for all medical prescriptive work, but otherwise it might be questioned. Previous to 1885 linseed meal was the ground linseed cake, but in the Pharmacopœia of that year it was misdescribed as ground linseed under the old name of *lini farina*, and prosecutions ran over England and came across to Belfast, and thence to Dublin. He maintained that the old article had not lost the right to its own name any more than that their own Sir Charles Cameron should lose his because another Sir Charles was created. At last the case came before the Queen's Bench in Dublin, with the result that the judges decided that linseed meal was a domestic remedy, and that cake meal might be sold for it by the grocer and general merchant, but that if bought of the druggist it was a medical article, and the Pharmacopœia article should be supplied by the druggist. In the present year the Pharmacopœial authorities have thrown out the tincture of orange peel, which was sold since the days of Christeson, and appropriated the name to a new article introduced in 1885 under the title of *tinctura ourantii recens*, but the old tincture had by no means lost favour, and if pharmacists sold it as asked for he had the food inspector hovering over him, and if the doctor wished to order it he must indicate it by affixing a date to it. These also, he thought, indicated a necessity for a Board of Control on which the various bodies interested and likely to suffer by the zeal of the analyst should be represented. At this juncture the time allowed for discussing the paper expired, and Mr. Downes was unable to add to his remarks. There was no other criticism on the paper.

On Tuesday, August 3, Mr. R. J. DOWNES, President of the Pharmaceutical Society of Ireland, read the following paper before the Congress, on

Legislation as Regards the Sale of Poisons.

It is of interest that the first attempt to regulate the sale of poison in the United Kingdom is an Act of the Irish Parliament in 1791, which incorporated the Society of Apothecaries, and known as the Irish Apothecaries Act (31 George, cap. 34).

Section 28 provided that "Arsenic is not to be kept with medicines. No apothecary within the Kingdom of Ireland shall grind, compound, sell, or keep arsenic, oils or colours for painters' use in the shop or room wherein he compounds medicines, under a penalty of five pounds." This would indicate that the art of an apothecary was very mixed at that date.

Section 30 provided that "Less than one pound of arsenic to be entered. Every apothecary, druggist, or other such person selling any quantity less than one pound weight of arsenic shall, at the time of such sale and before delivering, enter in a book to be kept for that purpose the quantity sold and the time when it was sold, to which entry the person buying shall sign his or her name, addition, and place of abode, or in case such person so purchasing cannot write, the name, addition, and place of abode of such person being written, such person shall set his or her name thereto, and the same shall be attested by such apothecary or druggist or some other person present; and in case such apothecary or druggist shall not know the person buying to be of such name or place of abode, then such apothecary or druggist shall not deliver such arsenic until it shall be certified to him by some person known to such apothecary or druggist that the person buying is the same as he or she describes himself or herself to be; and in case any apothecary or druggist selling arsenic shall fail herein, he or she shall forfeit the sum of twenty pounds to be recovered as hereinafter mentioned."

Section 31 provided that "If mischief shall arise by arsenic sold and the apothecary to die, such book to be received as evidence."

These sections appear to be the fountain head of subsequent legislation. It is interesting to note that there is no mention of a label of any sort; that the druggist is mentioned as distinct from the apothecary; that the book is to be received in case of the death of the apothecary, and the word "she" which occurs in the final clause of Section 30. The label is the only advance in the British Acts, the clause as to identification is more specific in the Irish than in the British Acts. From the expression on "other people selling" it would at first sight appear that others than the "apothecary and druggist" might sell, but if so, the word "such" is out of place. We know from experience that down to much later than the middle of this century the druggists' business was a very close one; no one was allowed into it without apprenticeship, the term of which varied according to the age of the apprentice, from seven to five years generally, ending by maturity at twenty-one years, at which age he obtained his "freedom," so that the druggist in Ireland was always an experienced man.

The druggist in England also probably existed from time immemorial and learned the business, as all businesses were learned in those days, by service. We find that they were so early as 1815 in organised opposition to the efforts of the London apothecaries, who had been from the time of their incorporation, in 1794, planning "heroic measures for their suppression."

The first British effort to regulate the sale of poisons was the Arsenic Act passed in 1885, and it is remarkable that even at this date there is no mention of a label. It extended to Ireland without repeating the clauses of the Irish Act, and required the arsenic to be coloured; it fixed 10 lbs. as a quantity which might be sold without colouring, except when sold by wholesale; it exempted medical prescriptions and "the sale of arsenic by wholesale and retail dealers upon orders in writing in the ordinary course of wholesale dealing." The penalty is "not exceeding £20."

In 1857 and 1859 attempts were made at legislation to regulate the sale of poisons which were not successful. In 1863 the "Act to prohibit the sale and use of poisoned grain and seed" was passed, which was followed in 1864 by "an Act to prohibit the placing of poisoned flesh and poisonous matters in plantations, fields, and open places, and to extend the Poisoned Grain Prohibition Act, 1863."

Between this and 1868 several attempts were made to compass the control of poisons in general, and to obtain the exclusive right to the compounding of medicines to the pharmaceutical body which had been incorporated by Royal Charter, date February 18, 1843. This Charter was confirmed by Act of Parliament in 1852, which "greatly strengthened the position of the Pharmaceutical Society, as it secured the protection of the title "Pharmaceutical Chemist," "Pharmacist," etc., and gave legislative authority to the examinations and other transactions of the Society, but it left the business and title of "Chemist and Druggist," including the sale of poisons, open to anyone without restriction, excepting that provided by the Arsenic Act.

In 1868 the first Act was passed requiring the qualification of the seller of poisons, known as "The Pharmacy Act, 1868." The preamble states: "Whereas it is expedient for the safety of the public that persons keeping open shop for the retailing, dispensing, or compounding of poisons, and persons known as chemists and druggists should possess a competent practical knowledge of their business"; and Section I. provides: "It shall be unlawful for any person to sell or keep open shop for retailing, dispensing, or compounding poisons, or to assume or use the title 'chemist and druggist,' or chemist, or druggist, or pharmacist, or dispensing chemist, or druggist in any part of Great Britain, unless such person shall be a pharmaceutical chemist or a chemist and druggist within the meaning of this Act, and be registered under this Act." The 17th Section of this Act constitutes the Poison Law of Great Britain, and provides for the manner of selling poisons. This Act does not extend to Ireland, there having been no society in Ireland corresponding with the "Pharmaceutical Society of Great Britain," but in 1870 "the Sale of Poisons (Ireland) Act" was passed, the 2nd Section of which is a copy of the 17th Section of the Pharmacy Act, 1868. In 1875, Ireland advanced to the position of having a "Pharmaceutical Society" of its own, called into existence specially for the purpose of remedying the "inconvenience" which existed throughout Ireland of a great deficiency "of establishments and shops for the sale of medicines and compounding of prescriptions," and to this body was given the exclusive right of keeping open shop for the sale of poisons; but

in Ireland there survived the old "chemists and druggists" who were in business on their own account at the passing of the Act—a hard dying set, who were not registered at the time, and under cover of whose existence many of their assistants and apprentices ventured to go into business on their own account, and from the difficulties which the Society had to encounter were permitted to go into and carry on business. These combined, and in 1890 an Act was passed enabling them to continue the business of druggist on passing an examination after service, which was fixed by the Act at four years, but having no right to compound medical prescriptions. So much for the history of legislation. The requirement that the proprietor shall be a person qualified in law has been the outcome of healthy and natural development, of slow, cautious, and steady growth of public opinion, and that being so it is not expected that the steps will be retraced; but, admittedly, perfection is not reached. Accidents do happen, and poisons are carelessly distributed, but it is shown that the public have been well served, that many misadventures have been averted through the care of a specially trained body of licensed poison sellers, and that the restrictions have not in anywise inconvenienced the public.

The two fixed principles of the laws affecting the sale of poisons are:—

1. That the proprietor keeping open shop shall be qualified by experience, education, and examination.

2. That when any sale is made by "any apprentice or servant," the proprietor is the responsible person.

Recent attempts at legislation indicate the intention of the Government to reverse this principle. The "Bill to Regulate the Sale of Poisonous Substances" recently introduced and dropped, and also the amendment proposed by the Lord Chancellor to the "Pharmacy Act (1868) Amendment Bill" were both steps to the reversal of the principle which is the essence of the present law.

The first provided for free trade in "poisonous substances," providing that the seller should label them as required by the Poisons Act for poisons. The Privy Council has power to place these poisons in the Schedule, but refuse to do so; and to cover its position it distinguishes them as "poisonous substances," but requires the seller to treat them and describe them as "poison." Surely that is evidence enough that they are poisons and should be placed in the Schedule? If the public are encouraged to look to the huxter and general merchant for "poisonous substances" which are to be labelled "poison," and are equally dangerous with those that are scheduled, it is not likely that they will appreciate the distinction between "poisonous substances," so regularly sold and labelled, and the scheduled poison, which can only be sold by traders having a certificate of "competent knowledge," or that purchasing their white vitriol, sugar of lead, and vitriol in one shop they will understand why they must go to another for their sublimate and white arsenic. Opposed to the "inconvenience" of the individual, the fact of having to go to a qualified person, charged with responsibility, is both a safeguard to the public and a caution to the buyer; and the sense of responsibility and liability to be deprived of his licence exact a discrimination on the part of the seller which is a very important factor of safety to the public. As regards the second proposition of the Government, the Pharmaceutical Society of Ireland has complained that unqualified sellers, when prosecuted, incorporate themselves under the Companies Acts, as companies which have been ruled to be outside the Pharmacy Acts, and then continue to sell poisons. The remedy attempted was to fully legalise such companies and place them on the registers of the Societies, thus placing a company of seven or more unqualified proprietors on an equal, or rather a more favourable, footing than the individual who had fulfilled all the requirements of the law at an expenditure of time, study, and money. The Society's objection to these two propositions is not to be assumed to be a desire of monopoly, but having had the charge and responsibility of this class of business as regards Ireland continuously for several centuries, and specially as a legal trust since 1875, while the like may be said for the Pharmaceutical Society of Great Britain, we are warranted in protesting against a reversal of the principle, which was adopted by the public after consideration, for Great Britain, in 1868, and confirmed and readopted in Ireland in 1875 and 1890.

The sale of poison is but a fractional part of the business of the pharmaceutical chemist or registered druggist, and so far as the profits are concerned the majority would probably gladly surrender them with their responsibilities, but it is an essential part of their business and cannot be surrendered; but what they do value is the confidence of the public and the status and prestige

which are theirs by virtue of having attained to the qualification required by the public, and they cannot agreeably see others sharing that position without any such sacrifices as they have made to attain it. Their position is that of continually standing between the public and risk, exercising and inculcating caution, and supplying information, benefits the extent of which neither the craft nor the public can be aware. Two instances to illustrate what I mean:—(a) Mr. R. H. Parker, of Maida Vale, writes me: "A young gentleman wished to be supplied with some morphine, said he was a medical student and seemed straightforward, but I hesitated and finally refused to supply. I learned afterwards that he was 'wrong in the head' was under the charge of a keeper, whom he had thrown off his guard and escaped into the street, and went round to all the chemists he could find to try and get morphine. Fortunately the other chemists were equally careful, and the lunatic was found and placed in his keeper's charge. He said he would have swallowed 100 grains of morphine if he could have got it." (b) During the writing of this paper I was asked for twopennyworth of laudanum. On inquiring as to the purpose for which it was wanted, I was informed "To give a couple of drops to the baby; it is always crying with pains." The sale was refused and the person advised to consult a doctor. And I have just received a letter from Mr. J. H. Webb, of Luton, in which he says, "The two cases following well illustrate the advantage to the public of the qualified seller: (1) We were asked for sulphuric acid, but on inquiry found it was to be used as a gargle, so supplied sulphurous. (2) Carbolic acid asked for and refused, because it was to be used 'to bathe the eyes with.' These cases are, I think, typical. Had the customers gone to the druggist they would without doubt have received what they asked for, and legally no blame would be attached for the disastrous and possibly fatal results."

The Poison Act provides a schedule of poisons in two parts. Part 1, containing poisons in exceptional demand, which may not be sold promiscuously but in such a way that the sale can be traced from the seller to the buyer and from the buyer to the seller, and not unless the buyer is known or vouched to the seller. In these cases I have always thought the date of the sale should be placed on the label as a help in investigation afterwards if it should be necessary, the second part containing poisons in general demand. Labelling is required in every case with the name of the poison, the word "poison," and the name and address of the seller. The seller being, in the case of a private business, the proprietor, but in the case of a company "the hand that sells"; for this reason we are told that a company cannot sell. The Schedule might be improved by placing preparations containing the poisons of the first part, if not over a defined strength, in the second part of the Schedule. Transactions, in the ordinary course of wholesale dealing, are exempted from some of the provisions of Section 17, and from the operation of the Pharmacy Act in both countries, but the Amendment Act, 1890, makes no exception in favour of the wholesale dealer as to qualification.

Wholesale dealing is not defined; "The Apothecaries Act," 1791, exempts sales of arsenic over 1 lb., and the "Arsenic Act," 1850, exempts sales of arsenic over 10 lbs. from their provisions, indicating a line between wholesale and retail. Wholesale dealing may be defined as (1) a sale to a person qualified to sell by retail; or (2) to a manufacturer for use in the processes of his business; or (3) to Bodies who usually buy by contract, but in no case should it extend to the individual for domestic or personal use.

Poisons in proprietary preparations come under the regulations for the sale of poisons generally. The judges have laid down if there is enough poison in the quantity sold to destroy life, it is a sale of the poison. As regards labelling it is often overlooked that the name of the poison contained should be on the container, the obvious advantage of this requirement being, that in case of a misadventure the doctor when called in will have the immediate knowledge of the poison the effects of which he has to deal with, and for this reason I consider it essential that the label should be affixed to the container and not to the "external wrapper or cover."

Patent medicines are exempt from the provisions of the Pharmacy Acts, but not from those of the Poisons Acts. This enables anyone to sell a patented poison, and attempts have been made to get scheduled poison patented under special names, but by the activity of the British Society, they have been frustrated.

Poisons in prescriptions may not be left out of a paper such as this. They are properly exempted from the "poison" label under

the Poisons Act, and are properly dispensed under authority of the prescriber on the first occasion, but how about repetitions without subsequent authority? This is a matter often discussed by dispensing chemists, and on which I believe they would be glad of a binding rule. Of course there are many prescriptions in which poisons are prescribed which may be considered as free from any risk from repetition and treated accordingly, but the sleeping and composing draughts easily lead to habits which are with difficulty thrown off, and by which an appetite is created, developing in many cases a craving or a mania for the drug. I believe the prescription should be restricted by the prescriber indicating for how long and how often it may be repeated; and for the prevention of its being repeated at other establishments contrary to indication, the chemist first dispensing should retain the prescription and not be at liberty to give a copy or to dispense other than as ordered, or on any account knowingly supply the same or similar drug to the patient. At present the repetition is at the discretion of the patient. We are sometimes asked by friends to reduce the strength of the medicine supplied, and even our City Coroner censured one of our body because when selling chloroform he had not reduced it with spirit. This is a course which in no way should be commended, for assuming that we were able for any time to carry on the deceit, it would be a very serious matter when the medicine was supplied elsewhere of its proper strength. There is also the risk of the patient increasing the dose believing the medicine was losing its effect. The procuring of an extra supply from different houses would be prevented by the prescription being retained by the chemist first dispensing.

There are the medicated wines, not strong enough to be treated as poisonous substances, and yet just as mischievous in their insidious creation of a morbid habit. It might be open to the Society to prosecute in these cases, but so long as physicians order, and chemists cannot sell them without the excise licence, it would be a serious matter to interfere with the ability of the patient to procure; besides, in Ireland, the Poisons Act, which requires proper labelling, is properly a Police Act, and they should interfere in the first instance, and prove that they are poisons within the meaning of the Act and have them labelled accordingly. I refer to the coca wines, which vary in strength up to $1\frac{1}{4}$ grain of cocaine in each wineglassful.

In these days of shopping by post the sale of poisons through the post must be recognised as inevitable. As regards the poisons of the first part of the Schedule, I believe it to be strictly illegal, as the requirements of the Act cannot be complied with; but, as regards the second part it is not so. It is, however, a question whether it is wise to allow the supplying of poisons to strangers through the post; to known customers it is different. Poisoning of lands and hounds may be accomplished in this way, throwing suspicion on all the local druggists and affording no clue to the police of the district. I have met with a gentleman whose trouble in life was to prevent the supply of chlorodyne to his wife. Wherever he went his first care was to warn the chemists of the neighbourhood not to supply, but she got the list of chemists outside the district, money was sent with the order, and the chlorodyne came by the next mail. Sometimes it was sent via some soft goods trader, and came with some purchases from the latter, and so got in despite her husband's watchfulness. When she failed locally she ordered from England and Scotland or wherever she could get a chemist's address.

So far I have only dealt with distribution by sale, as that is all which is legally provided for; but the distribution of poison otherwise than by sale is very extensive—by public bodies, municipal, parochial and charitable, and also by the public.

As regards the former of these I have not been able to get such information as I expected, my impression having been that the method of distribution by sanitary officers was, to say the least, careless. My correspondent, however, does not confirm that view, although Sir R. Thorne Thorne informs me that the Local Government Board "issue no instructions," and I am informed by correspondence "that the practice of the sanitary authorities and local boards of the (London) metropolis differs in the various localities, and that, in fact, each authority used its own discretion in the matter, which is equivalent to saying that they do as they like." This correspondent adds that in the district from which he wrote, "the practice of distribution to the public is discouraged as much as possible, and very little carbolic acid is allowed to go out of the hands of the sanitary officers. In the few cases where it is given out, the containing vessel is carefully labelled with the name of the article

and the word 'poison.'" I wrote the Medical Officer of Health of the capitals of the four provinces in Ireland, and received replies from Belfast and Dublin which correspond with what is reported from London. The dispensing of poisonous liniments and lotions at our dispensaries is certainly not what it should be. It is the frequent experience of the chemist to handle bottles which have been used for dispensing liniments and lotions that are commonly employed as containers of beverages, and not infrequently with the original label still on. I inquired of four leading mineral water makers "if they could confirm my opinion that mineral water bottles are largely employed by the poor for the carrying of medicines supplied at dispensaries, and that frequently poisonous liquids, liniments, lotions and carbolic acid are dispensed in them." Three reply practically alike—"That no such practice obtains," and "quite apart from this, however, the system of washing adopted by all large firms would preclude the possibility of danger through a bottle so used being refilled with aerated water." I did not suggest a danger to the public from the use of unwashed bottles, but the reference to "large firms" implies that the same vouching cannot be given to "small firms." The reply of the fourth is as follows:—"You are quite right in what you say about the use of mineral water bottles are put to, and to our knowledge they are used for all the purposes stated in your letter." As a specific instance, I had myself presented to me a mineral water bottle for a repetition of a prescription which had been dispensed in it at an hospital dispensary, the prescription being for 2 ozs. liniment of aconite. Having written to persons who are engaged in such dispensing, one writes: "As far as I am aware, it is the practice in all hospitals in town to put liniments and lotions into whatever bottles the patients bring, the only precaution taken being to put a poison label on. It is rather hard to see what the hospital authorities can do in the matter, because they cannot be expected to supply the patients with bottles, and, on the other hand, the poor people in a great many instances cannot be expected to buy special liniment bottles." Another correspondent who has had varied experience, referring to one dispensary, says: "Any old noggin bottle or lemonade bottle was given, as they could not use mixture bottles, for if the liniments contained oils, etc., they would be useless for future use." In another case he says: "I am glad to say only an odd liniment or lotion was ordered; these had to be dispensed with just a poison label attached, for want of others, as the only label generally stocked was 'a tablespoonful three times a day,' and when liniment labels were ordered they were usually crossed out as being a luxury which added to the expense," and adds, "I always made it a point to tell them in the case of all poisonous preparations to pour down the sewer or sink when done with." I am informed that in country districts matters are even worse. The most frequently used bottles at dispensaries are the whisky noggin and half pint. Such being the case, it argues well for the intelligence of the necessitous poor that so few accidents occur. The difficulty of "prescribing regulations as to the keeping, dispensing, and selling of poisons" which the Government are inclined to impose on the Privy Council is very great, for what would be convenient under one set of circumstances would not be convenient under another, and what would suit one business house would not suit another, or even the same house at another time. The Pharmaceutical Society of Great Britain, which has power to make regulations of this character, drew up certain suggestions, but only adopted them as recommendations. Those recommended have been generally followed. The only law is that contained in the Irish Apothecaries Act, which prohibits arsenic being kept "in the shop or room wherein" medicines are compounded. Extending the principle of this restriction, I think it might be enacted that poisons may not be kept or sold in the shop or room in which groceries and excisable liquors are sold, or in bottles in common use for the containing of beverages.

The great bulk of accidents as such occur, I believe, through the neglect by the public of reasonable caution, and the fact that there is no legal obligation on them probably encourages the idea of their irresponsibility. Lately it occurred that a cyclist, seeing "what he thought was a barrel of water near the road, drank some of the contents, but discovered when it was too late that it was arsenical weed killer." A similar accident occurred in Newry Barracks a couple of years ago. I doubt if in either case the preparation was coloured with soot and indigo. If it had it would hardly have been partaken of. The question of storage more nearly affects the public than the seller who, conscious of his responsibility, will always adopt such precautions as the nature and

extent of his business requires. In conclusion, I would recommend :—

(a) That "wholesale dealing" should be defined as :—

1. A sale to a person qualified to sell by retail.
2. A sale to a manufacturer for use in the processes of his business.
3. A sale to public bodies, who usually buy by contract.

(b) That the principle of qualification of the proprietor should not be departed from.

(c) That "poisonous substances" recognised to be poison should be added to the Poison Schedule.

(d) That potent and seductive poisons in prescriptions should not be repeated, excepted to the special direction of the prescriber.

(e) That poisons may not be kept or sold in the shop or room in which groceries and excisable liquors are kept or sold, or in bottles in common use for the containing of beverages.

(f) That a legal as well as a moral obligation should rest on the public as to storing and distributing poisons.

Although I have undertaken the responsibility of this paper at the request of the Pharmaceutical Council, I desire to acknowledge that my colleagues are not responsible for any of my recommendations, as I have had no opportunity of submitting them for their review.

A discussion on Mr. Downes' paper having taken place his recommendations were approved by the sectional meeting, on the motion of Professor J. W. Moore, M.D., President of the section, seconded by Professor Thrift, F.T.C.D., and they were subsequently adopted at the general meeting by the Congress.

EXTRACTS FROM CONSULAR REPORTS.

THE QUANTITY OF SUGAR produced from beetroot at different periods in the history of the beetroot sugar industry in Russia—viz., from the year 1800 to the season of 1897-98—is set forth in an interesting report by Consul H. Smith, dealing with that subject. In the early years of the industry, $\frac{1}{2}$ lb. of sugar was extracted from 12 poods (4 cwts.) of roots. In 1830 this had risen to 6 lbs., in 1848 to 15 lbs., in 1863 to 22 lbs., in 1872 to 29 lbs., in 1882 to 35 lbs., in 1892 to $42\frac{1}{2}$ lbs, and at the present time to $44\frac{1}{2}$ lbs. These figures clearly demonstrate not only the great advance which has been made in the improvement of machinery used in the trade, but also in the scientific cultivation of the beetroot, a cultivation which has been so scientifically carried out that the sugar yielding part has been brought practically to a state of perfection.

THE FACTORY which was established on a very extensive scale a little over a year ago in the Uddevalla Consular District (Sweden), for the purpose of producing caustic soda and bleaching powder, has, according to the report of Vice-Consul Thorburn, up to the present proved but an experimental affair. None of its products have as yet appeared in the market, and nothing has been done beyond putting up new machinery. It is hoped, however, by the promoters that success will finally attend the electrical process employed, and if so, it is expected that it will be colossal, as the power for electrical purposes and the raw material are there in unlimited quantities.

FRESH FLOWERS to the weight of 1,326,000 kilos (1244 tons) were imported into Germany during 1897 from the Cape.

MANUFACTURERS OF CHEMICALS in the Palatinate, it is reported, complain that the low duties in Germany allow the so-called "English-red" to be imported to their detriment. Substitutes for indigo and madder are made at a large establishment called the "Badischer Aniline and Soda Company," at Ludwigshafen.

THE PENCIL INDUSTRY of Bavaria was first established at the beginning of the eighteenth century, and now supplies the whole world. The chief seat of the pencil trade in Germany is at Nuremberg, where the well-known firm of Faber has its factory.

FROM THE BAVARIAN VACCINATION STATISTICS it appears that in 1897, out of 164,800 children 150,942 were vaccinated for the first time, and 147,714 of them successfully. Of the 13,858 children who were not subjected to vaccination, 1050 evaded the law purposely, while the remainder were excused on medical grounds or

were absent from home or not to be traced. Of the 124,277 persons liable to be vaccinated for the second time, 120,523 were successfully operated upon, and only 235 persons evaded the law wilfully. Calf lymph was used, and in 1896 eighty-eight calves sufficed to produce 484,000 portions of lymph.

SCHWEINFURT IN BAVARIA is reported to be the seat of the largest firm in Europe for making steel balls for bicycle bearings. The two factories owned by the firm there produce annually 2,000,000 gross with 600 men working 10 hours a day.

A STRIKING DECREASE IN TOBACCO CULTURE, owing to the disuse of pipe smoking in favour of cigars and cigarettes, and partly also to the low prices for tobacco, is reported from South Germany. In the districts of Fürth and Würzburg there were planted with tobacco in 1890, 896 hectares; in 1895, 557 hectares; and in the two following years, 477 and 344 hectares respectively. In Thuringia the falling-off is from 132 hectares in 1894 to 102 in 1897.

THE STATE EXPENDITURE ON EDUCATION in Germany has increased during the last eight years (1890-97) by nearly £3,500,000. Of this increase religious expenditure accounted for £430,000; universities, £580,000; higher education, £320,000; elementary education, £1,470,000; art and science, £186,000; technical education, £107,000; religion and education, £150,000; medical expenditure figuring last and least with £43,000 of an increase. The chief item of increase was elementary education. The charge to the State under this heading was only £225,000 in 1871. In 1887-88 it had risen to £1,333,000. In 1890-91 charges were transferred from the communes to the State, which then had to pay £2,900,000 towards elementary education, a sum which has since risen to £3,300,000. The State contributions are so organised that, while it bears the greater part of the charges for schools in the country districts, the town schools are made more than self-supporting.

THE FINANCE MINISTER OF GERMANY calls attention to the fact that, under the head of Commercial Education, the receipts in 1890-91 amounted to £2500 and the expenditure to £93,000, while in 1897-98 the figures were £30,000 and £195,000 respectively.

THE FOREIGN OPIUM TRADE in China is reported by Acting Consul-General Mansfield to be slowly dying a natural death. It is his opinion that in a few more years the Indian drug will at best be an exotic luxury consumed only by a few rich connoisseurs. Native opium is being used in largely increasing quantities, and the quality is said to be steadily improving. Prices vary very slightly, and as the native article is so much cheaper than the foreign drug, competition between the two is rapidly becoming impossible. The falling off in the net import for 1897 was 446 chests.

THE IMPORT OF MORPHINE into Shanghai in 1897 was no less than 68,000 oz. Its yearly increase undoubtedly shows that the morphine habit is gaining ground among the Chinese, while the consumption of opium is increasing, despite the fact that the import of Indian opium is falling-off.

FOR THE MONTH OF JULY of the present year the imports of chemicals, dye-stuffs and tanning substances from foreign countries and British possessions into the United Kingdom decreased to the extent of £12,523, compared with the import of the same month last year, while for the seven months ending July 31, there was a decrease of £491,960. The exports of chemicals, and chemical and medicinal preparations for July, 1898, increased by £7626, but for the seven months ending with July the returns show a decrease of £232,233 on the corresponding period of the previous year.

THE EXPORT OF OLIVE OIL to England from Gallipoli from January 1 to June 30, of the years 1897-98, show a great difference, being 1247 Imperial tuns in the former, and 93 in the latter period. Russia, on the other hand, took a greater quantity in 1898 than in 1897, viz., 204 and 633 Imperial tuns respectively. Russia's portion, however, was restricted to really first-class burning oils which could not be found elsewhere, and for which high premiums over current rates were in many cases willingly paid. The total quantity of oil exported during the first six months of the two years was 2161 and 1163 Imperial tuns respectively.

PRACTICAL PHARMACOGRAPHY.

CASCARILLA.

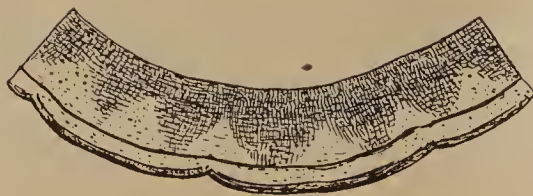
Cascarilla Bark.—Ecorce de Cascarille.—Cascarillarinde.

MACROSCOPIC CHARACTERS.

Cascarilla bark is obtained from *Croton eluteria*, Benn. It occurs in commerce in quilled pieces, which vary considerably in size in different importations, consisting sometimes almost entirely of slender quills, apparently obtained from young branches, and in other consignments of thicker quills obtained from the trunk. The slender pieces usually present a greyish white or chalky appearance, the epidermal or corky layer separating more or less in places, and exposing a dull brown surface marked with longitudinal striæ and a few transverse furrows which vary much in number in different pieces, being few or almost absent in some pieces and in others more numerous. These markings are also evident in a less degree on the parts where the corky layer has exfoliated. The inner surface is nearly smooth or very faintly striated. The larger pieces are frequently dotted over with the black apothecia of one or more species of lichen. The smaller quills are about the size of a goosequill, and the larger rarely exceed in size the littlefinger. The usual length of the quills is from two or three inches, in bold specimens sometimes attaining five inches. The fracture is dark brown, short, and somewhat resinous, exhibiting under a good lens numerous thin whitish medullary rays, but no groups of sclerenchymatous cells, the cortical portion is usually of a paler colour and thus affords a line of demarcation, which is rather exaggerated and too straight in the figure B. The odour



A



B

Cascarilla.—A. Outer surface of bark. B. Transverse section, slightly magnified.

of the bark is slight, though very fragrant when burnt. The taste is aromatic and bitter. Cascarilla is not easily mistaken for other barks on account of its characteristic flavour. A bark somewhat similar to it but possessing emetic properties was at one time imported (*Pharm. Journ.* [3], iv., p. 810). The quills resemble the larger quills of cascarilla in size and in the presence of lichen apothecia, but have a pale buff, not chalky-white, appearance externally and the corky layer does not exfoliate. The inner surface is pinkish-brown and more distinctly striated, it is not aromatic or bitter, and the tincture is darkened by solution of ferric chloride. Under the microscope it is seen to differ in the presence of numerous roundish groups of sclerenchymatous cells. These cells and the laminated structure of the bark can be seen with the aid of a good lens.

MICROSCOPIC CHARACTERS

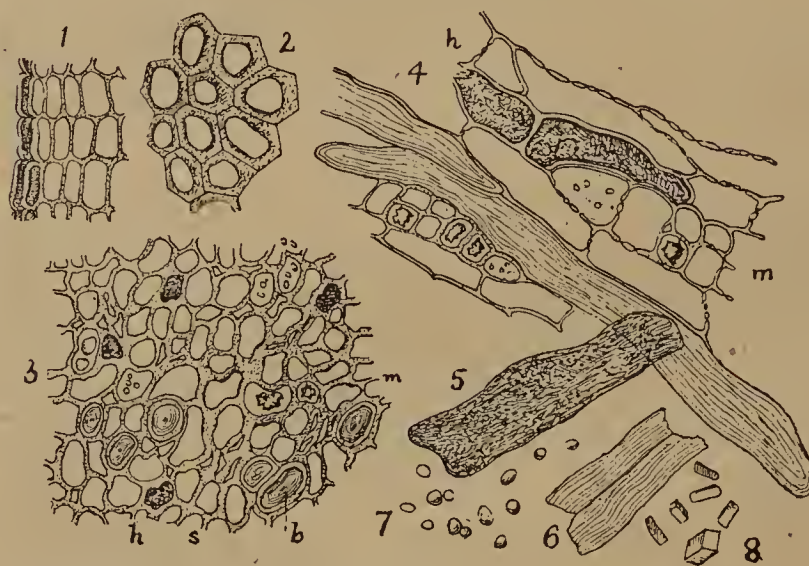
Cork.—Consists of tabular cells, the older portion having thickened tangential walls. Between the cork and the cortical parenchyma is a narrow band of phelloderm.

Cortical parenchyma.—This is made up of tangentially extended thin-walled parenchyma containing a large number of oil receptacles, which are only distinguishable by the nature of their contents. Some of the cells contain cluster crystals and isolated crystals of calcium oxalate; others are filled with a dark brown resinoid substance; the larger proportion are filled with small starch grains.



Cascarilla.—Transverse Section.*—c. Cork. o. Cortical parenchyma, p. Phloem. l. Oil receptacles. s. Bast-fibres. q. Phloem rays. r. Medullary rays. (After Berg.) x abt. 40.

Phloem.—The phloem rays are usually only a few cells broad; they consist of thin-walled parenchyma with strands of obliterated sieve tubes and scattered bast fibres, which are isolated except in the primary phloem, where they are found in small groups. The rays are gathered into wedge-shaped masses caused by the gradually widening of some of the medullary rays. A large number of cells, which are extended vertically, contain a dark brown resinous substance. In the inner phloem the medullary rays are one or two cells broad; the cells are thin-walled and many of them contain cluster crystals of calcium oxalate. The phloem parenchyma is rich in starch, which is found, for the most part, in small isolated grains, but compound grains are by no means uncommon.



Cascarilla.—1. Transverse section of cork and phelloderm. 2. Cork in surface view. 3. Transverse section of phloem—b. Bast-fibre. h. Resin cells. m. Medullary ray. s. Sieve tube strand. 4. Tangential section of phloem—m. Medullary ray with cluster crystal. h. resin cells. 5. Resin mass which has fallen out of cell. 6. Fragment of bast-fibres. 7. Starch. 8. Crystals of calcium oxalate. (After Moeller) x abt. 180.

Distinctive Characters.—The dark-brown resin receptacles of cortex and phloem. The scattered isolated bast-fibres and obliterated sieve tubes. Two kinds of crystals of calcium oxalate—isolated and clustered. The presence of cluster crystals in medullary rays. The absence of stone cells.

* NOTE.—This illustration does not indicate the cells containing the resinoid matters in the phloem, and it fails to show the relative number of oil receptacles in the cortex and the bast-fibres, which in both cases are much more numerous than represented.

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THE PHARMACOPŒIA AS A STANDARD.

ACCORDING to Professor TICHBORNE, whose luminous address to the Institute of Public Health is fully reported at page 244, the new Pharmacopœia is intended by those responsible for its production to be a work of reference, first for the medical man, and indirectly for the analyst. Pharmacists apparently are nowhere in this connection, despite the fact that the preface to the work states that the General Medical Council has always desired, in the British Pharmacopœia, "to afford to the members of the medical profession and those engaged in the preparation of medicines throughout the British Empire one uniform standard and guide, whereby the nature and composition of substances to be used in medicine may be ascertained and determined." This passage, of course, is quoted from the preface to the 1867 Pharmacopœia, and the fact that it is so quoted for the second time seems to indicate that the General Medical Council desires to manifest a continuity of purpose in the matter. The only reference to analysts in the preface to the 1898 Pharmacopœia is in connection with the employment by that possibly useful body of public servants of Imperial and metric vessels for purposes of measurement. Whilst making due allowance, therefore, for the fact that Professor TICHBORNE was a member of the Pharmacopœia Committee of the General Medical Council, we must demur to the inference that may be gathered from his paper, that the Pharmacopœia is not intended as a work of reference for the pharmacist. It would also appear to be but very "indirectly" intended as a work of reference for the analyst.

How far the Pharmacopœia is to be regarded as a standard is, of course, a disputed point. The Medical Acts are silent on the point, the Sale of Food and Drugs Acts are equally unsatisfactory aids to a solution of the problem, and the only British Act which refers to the matter is the Pharmacy Act, 1868, which stipulates that "any person . . . who shall compound any medicines of the British Pharmacopœia, except according to the formularies of the said Pharmacopœia, shall, for every such offence, be liable to pay a penalty or sum of five pounds." Such penalty must be sued for, recovered, and dealt with in the manner provided by the Pharmacy Act, 1852, for the recovery of penalties under that Act, that is to say, the Registrar of the Pharmaceutical Society must sue the alleged offender, by the authority of the Council of the Society. But this power to

institute proceedings for compounding official medicines according to other than official formularies has never been exercised, and up to the present time the clause quoted has remained a dead letter. A similar provision is found in the Pharmacy Act (Ireland), 1875, but we are not aware that it has been rigorously enforced in the sister isle. The fact remains, however, that it is illegal in the United Kingdom to compound any medicines official in the British Pharmacopœia except in strict accordance with the directions printed in that work, and there is little reason to doubt that pharmacists as a class loyally observe the requirements of the law in that respect.

But in the course of time the British Pharmacopœia has come to represent the custom of the country, and it is now generally accepted that a purchaser asking for any medicine that happens to be official in the Pharmacopœia, without stating anything to the contrary, ought to receive the medicine compounded according to the formularies of that work. Otherwise, it is more than probable that the courts of law would decide that the medicine sold is not of the nature, substance, and quality of the article demanded, and therefore that the sale has been to the prejudice of the purchasers. In fact, the existing position appears to be that if a purchaser asks for, say, compound tincture of rhubarb, he is to be understood to ask for the Pharmacopœia preparation known by that name, and in default the seller infringes that section of the Sale of Food and Drugs Act, 1875, which provides that "no person shall sell any compound article of food or compounded drug which is not composed of ingredients in accordance with the demand of the purchaser." But public analysts have induced some magistrates to go beyond this, convictions having been obtained for the sale of non-compounded drugs which were not in accordance with the Pharmacopœia requirements. Such convictions would appear to be irregular, even if the substance sold be required for medicinal purposes, whilst if, say, sodium bicarbonate be required for domestic or experimental purposes, it cannot seriously be contended that the Pharmacopœia article alone must be supplied. But even with regard to compounded drugs much uncertainty exists, for if custom alone endues the Pharmacopœia with authority as a standard under the Sale of Food and Drugs Acts, what is to be done if the preparation asked for is one of which the formula has been altered in the new Pharmacopœia? Custom demands the preparation official a few months ago, the Pharmacopœia article differs; may it not then be assumed that the purchaser who is supplied with the latter suffers prejudice, and would it not be unreasonable to punish the seller for supplying what his customers have been in the habit of receiving for so many years past? Clearly the matter is in a paradoxical position and, for the sake of chemists and druggists more than anyone else, the sooner there is definite legislation on this point the better.

THE SALE OF POISONS.

THE comprehensive paper read by the President of the Pharmaceutical Society of Ireland, at the Public Health Congress (see p. 246), is full of interest to all pharmacists in the United Kingdom, and those whose acquaintance with the historical aspect of the subject treated in the paper is deficient should not hesitate to spare the comparatively limited time required for careful perusal of the paper. It is also important to note that Mr. DOWNES' recommendations were adopted at a general meeting of the Congress.

ANNOTATIONS.

THE NOTES ON THE B.P., which have been appearing in the Journal for some time past, are the subject of some complimentary remarks from a reader, who states that he followed them with much interest and profit when studying for the Minor examination. He is now commencing work for the Major examination, "notwithstanding the passing of the Pharmacy Acts Amendment Act," and expresses the opinion that the new series of B.P. notes will create and foster a desire on the part of students to become pharmaceutical chemists. That opinion is, of course, supported by the fact that in pharmacy as in other professions the man who works most thoroughly for a given examination is most likely to proceed to a higher one. The object kept in view in preparing the explanatory notes in the "Students' Page" has been to encourage thoroughness, and it is gratifying to find that the desired end has been attained in a considerable number of cases. With regard to a suggestion by the same correspondent that Major students should be helped in their home-reading, the Editor will be glad to have the opinions of readers as to what direction such assistance should take. The articles on practical pharmacography, physico-chemistry, etc., have been specially written with a view to assisting advanced students, but further suggestions will always be gladly entertained.

INSTRUCTION IN SCIENCE is being further encouraged by the Scotch Education Department, which has issued a circular containing proposals for the recognition of higher grade science schools. The idea is to encourage such instruction in combination with a sound scheme of general education, and it is proposed to make grants on conditions to the managers of schools which provide a satisfactory course of instruction, extending over not less than three years, to pupils who have obtained a merit certificate or otherwise satisfy the Department of their capacity to profit by such advanced instruction. The Department must be satisfied that the school possesses sufficient laboratory accommodation, and a workshop or room specially adapted and equipped for instruction in the use of tools. A course of instruction extending over at least three years must be submitted to and approved by the Department, which must also be satisfied that the teachers have a competent knowledge of the subjects which they are to teach, and that they have had experience in treating the subject experimentally. As a rule, not more than forty pupils in a class may be instructed by one teacher at one time, nor more than twenty-five in practical work. Each period of practical instruction shall be of at least one hour and a-half in duration. The schools must not be conducted with a view to private profit, they must be specially approved as required by the educational circumstances of the district, and must also be accessible to pupils of all classes who show the requisite attainments.

THE FEMININE INVASION of pharmacy continues to be encouraged in that section of the public press which devotes its attention especially to women's needs. The latest article on the subject appears in *Woman*, and that, singularly enough, is free from serious errors. The writer commences with the statement that in order to succeed as a pharmaceutical chemist three things are necessary—money, brains, and business capacity. The amount required of the first-named essential is fixed at a thousand pounds—three hundred for fees and the cost of board and lodging for three years, and the remainder for establishing or purchasing a business. A weak point in the article is the statement that "A source of emolument which should not be lost sight of is the securing of apprentices." Even though a pharmacist

should act on the classic suggestion to make money—honestly if possible, but missing no opportunity of making it—he or she should at least have the decency to abstain from accumulating pelf at the expense of pupils or their guardians. It is only fair to state, however, that whilst girls are informed that a hundred guineas (*sic*) is a very ordinary premium, and told they should, when fully qualified as pharmacists, do all in their power to obtain apprentices, they are also advised to spare no pains to help those apprentices forward. To those who propose starting on their own account, the following hints are given as being likely to prove useful: "Take nothing for granted; investigate everything—yourself when purchasing a business. If you have not the necessary technical knowledge yourself, get some qualified and trustworthy person to overhaul the books. Indeed, it would be better in every case to entrust this task to a reliable accountant. The neighbourhood should be examined as critically as the books. Some neighbourhoods are going up, others are going down. If the inhabitants are leaving, business is leaving also. If from want of means you cannot go at once into a first-class locality, select a new and rising neighbourhood, where people live all the year round, rather than where they congregate for a half-season." Boys might do worse than act upon this advice, as well as girls.

INFRINGEMENT OF THE MEDICAL ACT is probably much more common than are convictions for such infringement, just as is the case in connection with the Pharmacy Acts, but despite the difficulties which seem inevitable in all such cases, a conviction has been secured at Norwich, in which apparently the defendant gave himself away by the misuse of a comma. Thus, the *Times* reports that at the Norwich Police Court an individual who has conducted a large practice in that city as a herbalist, under the title of "Dr. Matthews and Son," was summoned at the instance of the Medical Defence Union for wilfully and falsely using the name and title of "doctor," and for using the title of "surgeon." The evidence showed that over the defendant's place of business the name of "Dr. Matthews and Son" was painted, while on his bill-heads he described himself as "surgeon, accoucheur, etc." It was urged by the prosecuting counsel that the comma after the word "surgeon" showed that the defendant intended to represent himself as such. It was submitted for the defence that these proceedings constituted persecution, and that the Medical Defence Union was moved by some envious members of the faculty in Norwich, but the magistrates decided that in using the word "surgeon" the defendant had committed an infringement of the law. He was, therefore, fined one pound and costs with an alternative of seven days' imprisonment. On the following day, he was proceeded against by the Apothecaries' Society for acting as an apothecary and supplying medicines without the necessary qualification. Judgment was given for the plaintiff Society by consent, and Judge Willis, in giving judgment, said that the law under which the proceedings were taken was an extremely wise one; it was most important that persons who undertook the care of other people's health should be duly qualified for the purpose. He could see no persecution in the matter; the law existed and must be obeyed.

THE MEDICAL AUTHORITIES are reported to have resolved to prosecute even more stringently than has previously been the case in their campaign against unqualified assistants. It is stated that the General Medical Council has been appealed to on the point whether it would be an offence for a qualified medical man to assist in the administration of anæsthetics by an unqualified dental practitioner. The reply is said to allow of no doubt whatever upon

the subject, the Registrar of the Council declaring that not only would it be an offence, but that the Dental Committee would recommend the Council to investigate closely every case of the kind reported to it. Administration under such circumstances will therefore presumably be declared to be infamous conduct.

THE MEDICAL PROFESSION is reminded by the *Medical Press* of its repeated warnings to the profession "against the rapid invasion of its official privileges by the holders of sham diplomas." Amongst such diplomas are apparently included the certificates vouching for qualification held by dentists, pharmacists, nurses, and others, who are alleged to have already seized, or to be trying to seize, "a portion of the medical territory." By some these remarks by one of the least of our medical contemporaries might be considered impudent, but we prefer to regard them as indicative of the absence on a holiday of those responsible for the proper conduct of the paper. The cause of this particular outburst, by the way, is the decision of the Spectacle Makers' Company to take steps to secure that persons who deal in spectacles should know something about their business, and we are told that the latest advance of the "enemy" is the establishment by that Company of "a sham diploma in spectacle making, which will entitle every druggist who desires to make money by the sale of a few dozen of spectacles, to go through the farce of an examination, and thereafter to hang up in his shop an illuminated parchment, which will appear to the unsophisticated customer as a portentous official authorisation of the trader to advise on all optical and ophthalmic specialties." This diatribe, which, with slight alteration, might with equal fitness apply to some certificates granted by a medical corporation, is not the sort of thing to check progress, and the step taken by the London City Guild which is attacked undoubtedly tends in the direction of progress. Chemists and dentists should not fail to note that a medical organ of some pretension refers to them as "holders of sham diplomas."

GREGORY'S POWDER is a mixture of which the correct composition ought to be well known at the present day, but there appears to be a persistent tendency in certain quarters to confuse magnesium oxide and carbonate, and to assume that the latter may without disadvantage be used in place of light magnesia. A case under the Sale of Food and Drugs Act was heard at Lambeth a few days ago, in which the defendant—Charles Gadd—who was incorrectly described as a chemist, was charged with selling Gregory's powder containing 32.41 per cent. of magnesium carbonate and only 34.43 per cent. of light magnesia. The defence, ludicrously enough, was that the powder had been compounded according to the British Pharmacopœia, but that by exposure to air the light magnesia had absorbed carbon dioxide and become converted into carbonate. Mr. Frederick Davis, Principal of the Imperial College of Chemistry, was called in support of the above statement, and is reported by the *Standard* to have stated that "when exposed to the atmosphere calcined magnesia absorbed carbonic acid gas and became converted into carbonate. The time during which the change would take place would vary, as it would depend upon the state of the atmosphere at the time." Questioned by the magistrate as to the quantity of carbonate he would expect to find in Gregory's powder, this witness replied "Generally 15 per cent." He also accounted for the presence of the very much larger proportion found in the powder sold by the defendant by the supposition that "it had been kept too long." It is almost inconceivable that such evidence could be given by anyone possessing even an elementary knowledge of the rudiments of chemistry, and it is not surprising to find that the magistrate—

Mr. Hopkins—was sceptical, his decision being that the defendant must pay a fine of forty shillings and costs.

JOSEPHUS STILL SURVIVES, and in the *Daily Mail* of Wednesday he poses as a champion of chemists as against doctors. Commencing with the obvious truism that a subject affecting the interest of the public to a momentous extent is that of dispensing by doctors, he proceeds to alarm the world at large by the assertion that "at present it can be used in the hands of the unscrupulous to smother crime." "It" presumably means dispensing by doctors, and the world at large is now doubtless gasping at the idea suggested by Josephus. Continuing, he says: "There is not the division of labour between the doctor and the chemist there should be. The doctor should prescribe and the chemist dispense, and there ought to be no departure from this rule, but at present, dispensing by the chemist is the exception, save in the West-end of London and fashionable resorts. In 1868 the Pharmacy Act came into force, wherein it decreed that before a chemist be permitted to dispense and sell scheduled poisons he must prove himself capable by passing a very stringent and searching examination in chemistry, pharmacy, materia medica, and dispensing. Since then 90 per cent. of the chemists have passed these examinations, yet the bulk of dispensing is done by the doctors, who have but a smattering of the art." But the gravest point, according to Josephus, is that through inadvertence or by design the medical man may send medicine improperly dispensed, or containing some poisonous drug by which his patient becomes very ill or dies. "In the one case he can explain his error away; but in the latter he can sign the death certificate and for ever hush up the true cause of decease." And so ends this chapter of horrors.

SIR JOHN LUBBOCK is nothing if not interesting, and his address to the International Congress of Zoologists, on Tuesday last, was as full of interest as anything he has yet said or published. Few people, he remarked, seem to realise how much science has done for man; and still fewer how much more it would do if permitted. More students, he thinks, would doubtless have devoted themselves to science if it were not so systematically repressed in our schools; if boys and girls were not given the impression that the field of discovery is well-nigh exhausted. But far from that being the case, much of the land surface of the globe is still unexplored; the ocean is almost unknown; our collections contain thousands of new species waiting to be described, and the life history of many of our commonest species remain to be investigated or have only recently been discovered. As an instance in point, Sir John referred to the common eel, the life history of which, until quite recently, was absolutely unknown. Aristotle pointed out that eels were neither male nor female, and that their eggs were unknown. That remained true until a few years ago. No one had ever seen the egg of an eel, or a young eel less than five centimetres in length. But we now know, thanks mainly to the researches of Grassi, that the parent eels go down to the sea and breed in the depths of the ocean in water not less than three thousand feet below the surface. There they adopt a marriage dress of silver and their eyes considerably enlarge, so as to make the most of the dim light in the ocean depths. In the same regions several small species of fishes had been regarded as a special family known as *Leptocephali*. Those also were never known to breed. It now appears that they are the larvæ of eels, that known as *Leptocephalus brevirostris* being the young of our common fresh-water eel. When it gets to the length of about an inch it changes into one of the tiny eels known as elvers, which swarm in thousands up our rivers. Thus the habits of the eel reverse those of the salmon.

Notes on the Conference at Belfast.

By M. B. P. C.

DR. SYMES expresses the views of all who attended the Belfast Conference in a letter he has addressed to the *Northern Whig*, wherein he states that the great success of the recent meeting was largely due to local effort, as was in some measure acknowledged by the earnest vote of thanks accorded to the local committees (ladies and gentlemen); to the Lord Mayor of Belfast and his family; to Principal Hamilton, of the Queen's College; to members of the medical profession and others whose generosity and display of good feeling all will long remember. Speaking for himself, as President at the Belfast meeting, Dr. Symes adds his acknowledgments to the Press generally, and particularly to that of Belfast, for the way in which it recognised the broad principle that, although the Conference dealt with matters relating to the profession of pharmacy, its work was of public interest and tended to the welfare of the community at large. In conclusion he says: "Adding to this the charming weather, the delightful scenery, the extensive and interesting manufactures with which we were made familiar, and the excellent hotel accommodation at a most moderate tariff, it would be difficult to find the individual who did not leave Belfast with the most pleasant recollections of his or her visit."

THE RECEPTION AT QUEEN'S COLLEGE, being held after the conclusion of the first day's business instead of the night before as usual, was probably more largely attended on that account, since so many members and friends find it difficult to arrive before the commencement of the Sessions of Conference. The exhibition of old herbals by Mr. R. M. Young, J.P., attracted much attention, the members who witnessed the demonstration on colour photography by Professor Letts vouched for the interest taken in that subject, and Mr. John Wylie's lecture and practical demonstrations on interference phenomena were also well attended. But the concert in the Great Hall of the College proved the chief attraction of the evening, taking precedence even over the refreshment room, which is saying a great deal. It was only possible to move about the hall with great difficulty, and a place of much larger dimensions could easily have been filled by the company assembled. The artistes were too numerous for individual mention, but their efforts were greatly appreciated generally, as well as those of the string band of the Royal Irish Rifles, which enlivened the proceedings at intervals during the evening.

THE GARDEN PARTY in the Botanic Gardens Park was on a grander scale than anything the members of the Conference had been accustomed to. The invitations issued by the Right Hon. the Lord Mayor and Lady Mayoress were eagerly sought after, and some fifteen hundred residents of Belfast and district were present to meet the visitors from afar. The Park was closed to the public for the occasion, and the manner in which the visitors were entertained can only be described as princely. Even the weather seemed as though it had been expressly arranged for the occasion, and everything combined to render the garden party one of the most memorable incidents of the week. Enjoyment was depicted on every countenance, and it almost seemed as if the proceedings at the headquarters the same evening were much livelier than they would have been had the garden party not been held.

THE CONCERTS at the Grand Central Hotel were pleasantly varied, but both grave and gay songs and recitations were equally well received. Without any desire to appear invidious in singling out any of the performers for special reference, it may be stated that Mrs. Theodore Wright was in great request, and an Irish jig was prettily danced by Master Hicks and Miss Gillen, who were dressed in appropriate costumes. Mr. Tom White, the genial representative of Messrs. Harker, Stagg, and Morgan, was busily engaged, together with other hospitable Irishmen, in finding performers and looking after the comfort of those present at the smoking concert, and the proceedings terminated in what was probably a more cordially noisy fashion than any similar affair in the past.

THE OFFICIAL PROGRAMME, which was presented to everyone attending the Sessions of Conference, was specially compiled by Messrs. James Tate and James Guiler, of Belfast. The outcome of their labours was an exceedingly handy guide to the city, as well as to the week's proceedings, and as it was most tastefully printed in colours by Messrs. Olley and Co., many of the copies distributed will doubtless be kept as pleasant reminders of a week happily spent. It should be mentioned, by the way, that this official programme and guide was printed and distributed gratis by Messrs. Olley and Co. Mr. R. A. Jones, pharmaceutical chemist, also distributed free copies of his interesting guide to the Carlingford Lough district.

THE EXCURSION TO GARRON TOWER was, beyond doubt, the great event of the Belfast meeting, on the social side. Unfortunately, there were numerous applications for tickets long after the time at which it would have been reasonable to refuse to supply them, and in consequence of that the general comfort was to some extent interfered with at meal times, on account of the difficulty experienced in providing at a moment's notice for so many more than were originally expected. All's well that ends well, however, and doubtless no one but the energetic local secretary, Mr. McKnight, has since thought much about the inconvenience caused by the unexpected crush. The route chosen for the excursion, along the Antrim coast from Larne to Garron Tower, could not well have been bettered, the weather was again well in hand, and the whole of the members of the large party, seated in innumerable coaches, were in the best of good spirits.

HUMOUROUS INCIDENTS were plentiful, the chief being connected with the erratic conduct of the motor car that was to have conveyed the presidential party to Garron Tower. A brilliant start was made, after all the coaches had passed on, but in view of the tendency displayed by the vehicle to steer its own course towards the sea, it was unanimously decided to exchange into what was not inappropriately described as a "Chinese junk on wheels." The old and new presidents and their suite then sailed majestically along, being saluted with storms of applause as they passed the more ordinary vehicles, one by one. Then a piper was met on the road who made a collection on the strength of an anticipated performance of "The Wearing of the Green." But when the performance commenced, the only tune that piper could approach within measurable distance of was "The Campbells are Coming." Disappointed ones in the unfortunate audience, therefore, as well as others who had paid the piper to go away, were inclined to suggest that their money should be returned, a most improbable thing under the circumstances. Amusement was also caused by the picture of distinguished Conference officials racing down a slope at Garron Tower, whilst several more or less prominent individuals rolled down the self-same slope inadvertently.

THE SPEECHES AT GARRON TOWER—after luncheon, of course—were many and brilliant, and after they had all been disposed of a photograph of the party was taken in duplicate by Messrs. Lafayette's representative. The drive was then resumed until Glenariff was reached, when all but the extra large sized visitors proceeded to walk or scramble up the beautiful glen, duly impressed with the beauty of their surroundings, but not unmindful of the fact that tea was waiting at the other end. Those who progressed best were rewarded by a capital meal, others were less fortunate, and a few were perforce compelled to await their return to Belfast ere food was attainable. But unbroken merriment was maintained to the end, and everybody was satisfied that the day had been well spent, thanks to the arrangements made by their Ulster hosts.

OF THE MINOR EVENTS in the programme it must suffice to say that they all passed off satisfactorily. The ladies were well looked after during the Sessions of Conference, being shown over the premises of Messrs. Robinson and Cleaver, linen manufacturers; Messrs. Marcus, Ward and Co.'s printing works, the York Street Flax Spinning Mill, Messrs. William Ewart and Co.'s Brookfield Linen Mill, and the Linfield Weaving Factory. Miss Watson, Mrs. Payne, and Mrs. Clotworthy were prominent amongst the members of the Ulster Ladies' Committee, and there were no shortcomings so far as their arrangements were concerned. Gallaher's Tobacco Factory, Harland and Wolff's Shipbuilding Yard, and the Belfast Rope Works were visited in turn on the Friday, and after that the members of the Conference dispersed once more, some to labour and some to play, but all imbued with a strong feeling of gratitude towards those who had done their best to make the meeting of 1898 a success and a record.

THE CONFERENCE PHOTOGRAPHS, taken by Messrs. Lafayette, of Belfast, are much more numerous than usual. Time was when one photograph, taken on the excursion day, was deemed enough. On this occasion, however, two photographs were taken outside the Queen's College, after luncheon on the Tuesday; four at least record incidents at the garden party; and two show practically the whole of the party assembled in the grounds at Garron Tower. One of the last mentioned is decidedly better than the other, but all the photographs are good, and those taken outside the Queen's College are excellent. A photograph of the Ulster Ladies' Committee is particularly fine, and should find a large sale amongst the more sentimental members of the Central Executive of the Conference.

ABSENTEES from the Belfast meeting unfortunately included the Presidents of the British and Irish Pharmaceutical Societies. The word "unfortunately" is used advisedly, for both gentlemen missed an excellent opportunity of making the acquaintance of a large number of prominent pharmacists in the two islands, and of exchanging views with them on matters of pressing importance to pharmacy at the present time. Much difficulty was experienced by lay reporters in finding an appropriate name for the Conference—all assuming that the meeting must be "a" Conference held by some Society or Association—and their assumption was practically justified by the fact that the Belfast meeting was virtually a conference of the British and Irish Societies, with a few outsiders thrown in, but without the official heads of the two statutory bodies being in attendance. There seems little reason to doubt that in course of time both Societies will find it desirable to hold their annual meetings at different centres each year, and the advantage of so doing will be great.

PHARMACY IN IRELAND.

[From our Belfast Correspondent.]

SOME TIME AGO a Belfast house obtained the contract for the supply of some drugs to the Cork Union. When the locality of the tender was announced a section of the Guardians raised the cry "Orange Pills," which being interpreted probably implies "green pills for green people." This is sufficiently rancorous, though it is not without precedent, as during the illness of Frederick the Noble some partisans in their violent animus against Sir Morell Mackenzie declared the doctrine of "German doctors for German Kings." In the former instance, however, reason prevailed, although a few persons found it a very "bitter pill" to swallow. "Rebel" Cork has latterly chosen the commercial capital as its exemplar, and there are suggestions to abolish the conveyance of the wounded to medical aid per hack-car and stretcher and follow the Belfast method, instituting an ambulance van and corps and placing the fire brigade in charge of it.

A TECHNICAL INSTITUTE FOR BELFAST is just now on the tapis, a deputation of Councillors having visited England to acquire information as to what is most suitable. In the absence of technological schools supported by the Corporation the Working Men's Institute has for many years ably, though much handicapped financially, held the pass for hundreds of artisans, apprentices, etc., and to some advantage, as the Schools of Science and Art at South Kensington can testify by the many Belfast students who have won an entrance to those halls of learning. The success and high position to which the Institute has attained is chiefly due to Mr. Robert Barklie, F.C.S., who, formerly being an analyst of note, is an interesting and able lecturer on chemical science. He was assistant in the Queen's College to the late Professor Andrews.

MR. BARKLIE'S LECTURES are not a sodden mass of dry detail, nor does he hesitate if occasion prompt to relieve the tedium of science by the gaiety of humour. The vast stock of modern apparatus and appliances for practical and experimental demonstrations are hardly surpassed by any school in Ireland. It is felt that Mr. Barklie's long experience and numerous qualifications will justify his selection as head of the new Institute.

YOUR FARMER, though in the main a very shrewd fellow, has always shown himself stubbornly averse to profiting by the teachings or discoveries of science. Of late, however, the chemic-agricultural style of farming is beginning to gain favour. As a result of spraying with copper sulphate the crop of tubers has doubled. A necessary part of a farmer's equipment now is a book of blue litmus paper, to test the spraying solution as to when sufficient lime is present. Cases of poisoning have occurred, due to negligence. One man, finding the tube of the machine becoming plugged, applied his mouth to the orifice and sucked down a good supply of sulphate; two children ate some berries that had received a portion of the spray, whilst another farmer got some of the solution into a fresh cut. Medical treatment obviated in each case a fatal termination. It is also stated that an outbreak of fever at Ballymena is attributed to the consumption of cabbages which were accidentally sprayed.

AN OUTBREAK OF MEASLES in Valencia Island has been the unhappy cause of disagreement between two knights of the lance. Dr. Letters, a Scot, has declared that the epidemic was due to an inaccurate diagnosis at the commencement. Dr. Trant considers this a *casus belli*, and has opened hostilities in Tralee law courts. It is not easy to understand how the characteristic rash could have been mistaken, but an inadvertence is a liability from which none are exempt. But when doctors disagree, who shall decide?

PROFESSOR LORRAINE SMITH having made a bacteriological examination of a well of water owned by the Belfast Board of Guardians found that it contained 200 bacteria per cubic centimetre. It would seem that this is not an excessive population as drinking-water goes. It might be probable that the banishment of bacteria, etc., would not reduce the earth to universal Edenic convalescence. The physical constitution of the European has become inured to all the diseases and their complications which medical science has discovered, and it would, perhaps, be as disastrous to suddenly withdraw them from the sphere of their influence as to suddenly introduce them to primitive man.

The emaciated, anæmic, fibrous-looking clerk of to-day, who has not missed one disease since childhood that can properly fall to the lot of an average adult, is a prodigy of health and virility when compared with bulky primeval man, who would become an easy prey to the most innocent bacillus.

THE JULY PHARMACEUTICAL EXAMINATIONS have resulted in ten candidates being successful in the final, and eight failing. About the same proportions were maintained in the Preliminary, twelve passing out of a score.

THE ANNUAL CONGRESS of the Institute of Health opened its sessions on August 18, in Trinity College, Dublin. Sir Chas. Cameron presided, and gave an eloquent address. The members were afterwards presented to the Lord Lieutenant, and an exhibition illustrative of the objects of the Congress was given at the Royal University. Rather strangely, the president and his lecture referred to phthisis as a "preventable disease." It is certain that it is a most malignant and prevalent scourge amongst linen manufacturing operatives, being a source of great mortality in Belfast. There has always been much confusion amongst the humbler classes as to what is hereditary and "brought on." If the former it is usually neglected, being referred to as the "act of God" and therefore invincible. Consumption and cancer are thus treated. Yet I knew of a man who "brought on" cancer of the lip, by putting, when drunk, a new clay pipe in his mouth, nor could the disease be eradicated by operation, proving ultimately fatal.

THE REGISTRAR-GENERAL (Dr. Grimshaw) gave an address on "Preventive Medicine and Vital Statistics," in reference to which Lord Iveagh uttered the fervent prayer that England would soon "take her place more worthily alongside France, Germany and America in the pursuit of the highest research in preventive medicine."

FOR THE ALLEGED INFRINGEMENT of a sulphuric acid concentration patent, Thomas Webb, of Manchester, sued Kynoch and Co., Cordite Works, Arklow, for damages. The Master of the Rolls gave judgment in favour of plaintiff. In the Court of Appeal four judges were equally divided, so the original decision stands pending a further appeal to the House of Lords.

THE SPREAD OF THE MORPHINE HABIT in America has given rise to some uneasiness. A writer commented that his countrymen were becoming much more nervous and excitable than the French. He viewed with satisfaction the introduction of milder medicines of the same class, such as phenacetin. I do not know if it is much resorted to in Ireland, but cases have come under my eyes which are illustrative of its incurable fascination. One gentleman consented to take a sea voyage of some months. During the latter part of the passage, however, he suffered agonies, and the ship had hardly been berthed before he went like a sprinter for the nearest chemist. On one occasion I remarked semi-jocosely to a periodic purchaser what would he do if I refused him. He did not say, but he told me that he had known such a case occurring where the victim of the habit being at the seaside had to walk three miles, but the chemist not only refused it but gave him a stinging lecture on his effeminacy. The poor fellow was so humiliated that he positively never touched morphine again! "If it had been me," said my customer, "I would have hauled that chemist over the counter and broken his shop to pieces with him."

THE SOCIETY FOR THE EXTENSION OF UNIVERSITY TEACHING IN BELFAST held an executive meeting lately. The results of examinations were submitted, and medals and certificates awarded. Professor Letts lectured during the session on the "Chemistry of Heat, Light, and Electricity," Mr. R. Lloyd Praeger, M.R.I.A., on "Plant Life as Illustrated by British Wild Flowers." With one exception, Professor Letts' lecture were the most popular, having an average attendance of 84, whilst the botanical lectures had 27.

THE IRISH FIELD NATURALISTS have completed their second triennial excursion, this time in the vicinity of Kenmare, County Kerry. The Club Union embraces the naturalists of Limerick, Cork, Dublin, and Belfast. Some English conchologists accompanied the party; archaeology, geology, and botany were all represented. The zoologists were in great expectation over the

"only home in Great Britain" of the spotted slug (*Geomalacus*). This was at Laugh Inchiquin, but alas! he had retired into the clefts of the rocks. The most agreeable occupation fell to the lot of botanists and geologists. The arbutus and juniper flourished on the banks of the Kenmare estuary, the Royal fern on the peninsulas of the island, whilst the pipewort, waterwort, and lobelia of great size grew abundantly in the lake. Some specimens of pennywort had spikes 31 inches long, the roof of one cottage being overgrown with it. Certain classes of the flora of the south and west of Ireland, which are characteristic of Southern Europe, as well as other species of American and Alpine origin, are not found elsewhere in the British Islands. This is a subject of investigation amongst naturalists. Irish spurge spreads itself along the south and west coast, flaming forth in bright green or orange red. It is also found in Devonshire and South-west Europe. *Saxifraga geum*, peculiar to the Pyrenees, grows here on the adjacent mountains.

THE PRESIDENT OF THE QUEEN'S COLLEGE has received a communication from Her Majesty's Commissioners for the Exhibition of 1851, in which the college is next session given the nomination to a science research scholarship of the annual value of £150, tenable for two years. The nominee to be an alumnus of the college.

THE BELFAST LIBRARY COMMITTEE has consented to receive, on behalf of the local pharmacists, the selection of volumes provided as a gift out of the "Bell and Hills Fund."

SELECTED FORMULÆ.

TONIC ASEPTIC HAIRWASH.

Mix acid tannic, 5, with formalin, 20, and add sulphuric acid, 5. The resulting reddish precipitate is washed with water until the sulphuric acid is quite removed, when it is dried. Five parts of this precipitate are dissolved in 100 parts alcohol, and perfumed. It forms a permanently red solution, which does not stain the skin or anything else.—*Pharm. Post*, xxxi., 247.

FLUID GLYCERIN SOAPS.

(a) Dissolve transparent soft soap, 2 (prepared without resin), in alcohol, 1, and water, 1, and filter; add glycerin, 1½, to the filtrate, also perfume as desired. (b) Dissolve soft soap, 1 (manufactured from elain), in glycerin, 1; add alcohol, 90 per cent., 6 to 8; and then perfume.—*Pharm. Post*, xxxi., 247.

COCAINE PREPARATIONS FOR DERMATOLOGICAL WORK.

Dusting Powder for Lupus, etc.—Cocaine hydrochloride, 0.5 to 1; magnesium carbonate to 50. *Cocaine Oil.*—Cocaine, 1; almond oil, 50. *Cocaine Soap.*—Cocaine, 1; superfatted soap to 50. Recommended by Unna for eczema.—*Pharm. Post*, xxxi., 247.

KLEEWAIN'S APERIENT PILLS.

Extract cascara, extr. rhei, rec., āā 3 Gm.; podophyllini, 0.5 Gm.; extr. belladonnae, 0.5 Gm.; pulv. cascara sagr. q.s. to make 50 pills.—*Deutsch. Amerik. Apoth. Ztg.*, xix., 31, through *Pharm. Centralh.*

FORMOFORM DUSTING POWDER.

Aufrecht states that the dusting powder known as formoform has the following percentage composition:—Formaldehyde, 0.13; thymol, 0.1; zinc oxide, 34.44; starch, 65.27.—*Pharm. Zeit.*

GAULTHERIA PROCUMBENS IN HORTICULTURE.

It will interest pharmacists to hear that *Gaultheria procumbens* is recommended in the *Garden* as being extremely valuable for bedding purposes in carpeting, being very effective at all seasons. It does well in most soils except those in which lime predominates, and is also useful in the rock-work. At Kew, a bed containing a few plants of the winter flowering *Hamamelis japonica* is carpeted with *Gaultheria*, and the effect produced is described as being very striking.

DISINFECTION OF DEJECTA.

Zinc sulphate, 100 grammes; sulphuric acid, 5 grammes; oil of mirbane, 2 C.c.; indigo blue, 0.5 gramme. Five grammes of this mixture to be used at a time.—*Pharm. Centralh.*, xxxix., 216.

PHOTOGRAPHIC NOTES.

A NOVEL FERROCYANIDE PROCESS possessing many points of photographic interest has been devised by F. Carter. The fabric is coated with the usual ferrocyanide and ferric ammonium-citrate mixture and exposed and developed in the usual manner. The fabric is then washed and treated after the manner of dycrs when adjective dyes are used. Briefly, the print is first washed in weak caustic soda solution till the blue is decomposed, then washed in hot water, then given three minutes' immersion in a hot solution of phosphate of soda, with the purpose of improving the colour of the finished picture. After washing for a short time in hot, then in cold, and again in hot, water it can be placed in the dye bath (at a temperature of 160° F.), to which gluc size has been added with the purpose of keeping the whites clear. When the print is thus placed, the dye is added and the heat raised to 180°; when the desired shade is reached, the print is withdrawn, passed through a bath of neutral soap to clear the whites, then rinsed in hot, and finally in cold, water. Resorcin green gives a green colour, gallo-cyanine a violet and blue, alizarine a purple; alizarine brown, sepia tones; or logwood or other naturally formed dyes may be used. It will be seen that, provided the paper would stand the treatment, there is no reason why ordinary blue prints should not be treated in this manner to obtain a variety of colours; in any case, the facilities offered for printing in various colours upon any cotton fabric should make the process valuable for many purposes to the possessors of suitable negatives.—*British Journal of Photography*.

FILM USERS can obtain from Messrs. Beck a handy means for the safe storage of films when on tour, or in cases where it is advisable to specially protect films from salt air or damp. For the sum of fivepence, including postage, they will supply a tin box, which (when filled with films, of which it holds forty 00 Frenas) is made air-tight by cementing with a strip of surgeon's plaster, which might also be utilised for re-sealing plate boxes, so often the victims of domestic curiosity.—M. C. F., in *Photo. News*.

ENLARGING FROM FILM NEGATIVES.—Dr. E. Vogel recommends the following procedure for obtaining good enlargements from film negatives that show imperfections in the celluloid. Strip the gelatin film from the support by Lainer's method with an alkaline solution of formalin in the following proportions:—Water, 200 C.c.; caustic potash, or caustic soda, of a solution 1:3, 15 C.c.; formalin, 4 C.c. After five to ten minutes' immersion in the above, the negative is transferred without washing to a five per cent. bath of hydrochloric acid. The negative should remain five to ten minutes in the acid bath, and may then be stripped. The stripping will be facilitated if the gelatin film has been cut through near the margin of each of the four sides before immersion in the formalin bath. The stripping should be done in the acid bath by rolling off the gelatin film with the fingers, and this should be done as soon as the film shows signs of leaving the support. Transfer the film to a dish of water, pass a glass plate beneath the film, and lift the two in contact from the bath. Shift the film to the edge of the plate and turn over a strip about a Mm. in width. This will keep the film in position whilst it is stood up on the opposite edge to dry. With ordinary care this method of stripping is almost free from danger to the film.—*British Journal of Photography*.

FLUID GELATIN.—The *Photographische Chronik* mentions that a German patent has been granted for the preparation of gelatin fluid at ordinary temperatures as follows:—Chloral hydrate, 250 Gm.; gelatin, 400 Gm.; water, 1000 Gm. After standing forty-eight hours the solution is ready for use, and, if necessary, it may be cleared by decantation. The solution may be used for photographs.—*British Journal of Photography*.

A NOVEL TONING AND FIXING PROCESS is due to A. E. Wade, who claims that it both improves the appearance or finish of photographic prints and their resisting capacity to time, in being exposed to vitiating atmospheric conditions in storage, etc., and under various other circumstances of ordinary contact. By the use of his combination solution for fixing and toning, and which, in addition, completes the photograph with greater effect, a considerable degree of economy is assured, and what is of immense importance in general photographic manipulation consists in the fact that the

employment of the dangerously poisonous sulphocyanide of ammonium becomes unnecessary by the application of his combination solution. The great active principle of the solution—as composed of appropriate proportions, varying for specific purposes, of chloride of gold, nitrate of lead, nitrate of potash, hyposulphite of soda, flowers of sulphur, and quicklime respectively—is secured by the employment of ordinary water treated by the following special process, viz., the water while in a boiling condition is saturated, or acted upon till saturated, with smoke obtained by the burning of ordinary bituminous coal, or the smoke may be obtained from anthracite or other carbonaceous fuel. After passing the smoke through the boiling water until it becomes thoroughly saturated with it, and then allowing it to cool, the above-named ingredients are incorporated with the fluid thus treated in requisite proportions. The mixture is now agitated, and, after allowing it to subside or clear, the insoluble sediment is filtered off, and the solution is now complete for its intended functions. The prints treated with it are absolutely permanent, whereas those treated with other existing solutions will fade in probably less than two years. Another of its great properties is that the whole of the solution, once prepared, can be entirely used up without adding to its strength, and at the same time the solution thus prepared will remain fit for use at any time during a number of years. Finally, one of its valuable qualities consists in the fact that no previous washing of the prints is required in using it, and besides, it absorbs silver from the paper, which, where previous washing is necessary, would produce a waste, whereas in this process it will help to enrich the solution and to considerably improve the tone of the picture treated with it.—*British Journal of Photography*.

A SUBSTITUTE FOR HYPO.—To those who object to the use of hypo for reducing negatives, in consequence of the long washing required after reduction, the following I can recommend:—Potassium ferridcyanide, 12 grains; sulphocyanide of ammonia, 24 grains; water, 2 ozs. By the use of this reducer a few minutes' washing under the tap is quite sufficient, and no fear need be entertained as to its permanency. If the negative wants but slight reduction, reduce the proportion of ferridcyanide accordingly.—P. R., in *Photographic News*.

CLEANING FILMS OFF OLD NEGATIVES.—The gelatin film is best removed from old negatives or lantern slides which are going to be used for opaline glasses or covers for slides, by allowing them to soak for a day or two in cold water, and then placing in hot water for a few minutes. In this latter the film will quickly dissolve. If the gelatin is wished to be removed in a hurry, soaking in a strong solution of acetic acid ("glacial" acid mixed with an equal volume of water) will enable you to rub it off with a rag.—G. E. B., in *Photographic News*.

TRANSPARENT SPOTS ON NEGATIVES.—It occasionally happens that drops of water are accidentally sprinkled on the films of unvarnished negatives. The result, after the second drying, is a series of spots of greater transparency than the surrounding film. To remove them, the entire negative should be re-wetted for some time, and on again drying the spots will not be so much in evidence. By alternately wetting and drying a negative its density can be reduced to some extent.—T. K., in *Amateur Photographer*.

P.O.P. ON PLATE GLASS.—It may not generally be known among "tyros" that an absolutely sure and never-failing safeguard against P.O.P. prints adhering to the glass support when dry is the following:—Clean your glass as you usually do, and when you think it is "quite clean," take a sponge or tuft of cotton, and rub vigorously with pure benzine. If this is done, and a final polishing is given with chamois or clean duster, the glass will be chemically clean, and the prints will almost "walk" off when dry.—LINO, in *Amateur Photographer*.

WARMING DEVELOPERS.—In cold weather the action of the developer may be greatly accelerated by warming it. Of course, if the developer is warmed, the fixing solution should also be warmed, as well as the washing water between development and fixation. If this is not done, the plates are liable to frill, caused by changing the plates from luke-warm developer to ice-cold water. By the time fixation is complete, the solution will have become cold, and the final washing can then be proceeded with in the ordinary way.—L. T., in *Amateur Photographer*.

DENTAL NOTES.

SILVER NITRATE IN SUPERFICIAL DECAY.

Dr. Cox, in the *Stomatological Gazette*, writes: There are many cases where patients will come—showing a little white streak just above the border line of the gum on the buccal surface of the molars and bicuspids. It is simply superficial. My advice in these cases is not to put on the rubber dam, but simply a napkin in the mouth to keep the moisture from the teeth, dissolve a little nitrate of silver, rub it on the streak, then play the hot air syringe on it and notice the result. Nitrate of silver is also recommended for applying to prepared cavities in molars before inserting the filling, care being taken not to use it too near the pulp. Ammonol is finding favour in the hands of many dentists for allaying pain in cases of pulpitis and periostitis. It is claimed that four ten-grain doses given at intervals of an hour will prove a sure remedy, giving relief in those distressing cases, and allowing the patient to obtain a good night's rest, after which the tooth can be treated in the usual way.

HOW TO TAKE IMPRESSION OF MOUTH WITH UNDERCUT TEETH.

In taking impressions of the mouth where teeth are undercut so much that a drag is likely to result, the following method answers perfectly. Syringe and cleanse the undercut tooth, mix some plaster of Paris thin, fill up the undercut with it, allow the plaster to harden, and then trim up. Smear over a little vaseline, then take impression, and afterwards remove plaster from undercut and place in model.—*Ohio Dental Journal*.

SPHEROIDING OF AMALGAMS.

Mr. Thos. Fletcher, whose name is so well and favourably known to dentists, states in *Ash's Quarterly*, in his review of Mr. Ernest A. Smith's recent manual of 'Dental Metallurgy,' that spheroiding of amalgams is not due to change of volume. A few experiments will prove that this is not so. When there is a decided change of volume, as with precipitated silver amalgams, packing in tubes will show that there is no spheroiding. The whole surface lifts the edges rising above the level of the tube to practically the same extent as the centre. Where true spheroiding occurs it will be found that as the centre rises the edges draw inwards and the plug becomes leaky; the space is easily seen with a magnifying glass. He also writes: "That the only method at present known for treating zinc that has become unworkable through continued use is to heat it to incipient redness, throw a small quantity of hydrochloric acid on the surface, and stir with a stick. About two tablespoonfuls will render a large ladleful of thick zinc perfectly fluid. This, however, does not remove iron, which can only be separated by redistilling the zinc, which, of course, is impracticable on a small scale.

WOOLLY ASBESTOS AS AN INVESTMENT MATERIAL.

Woolly asbestos well saturated with water forms an investing material which in many cases is superior to plaster and sand, and may be used without a moment's delay. It can be dried and the wax burnt out, solder applied, and completed in less time than it takes plaster and sand to set. It can be used over again and again, and is inexpensive.—*International Dental Journal*.

PAINLESS DENTISTRY.

Dr. Clyde Payne, writing on the above subject in the *American Journal of Dental Science*, recommends the following for obtunding sensitive dentine:—Potass. carb., glycerin, cocaine, and acid carbolic in a saturated solution. He considers it the next best thing to cataphoric medication. His directions are: Apply the rubber dam, dry out the cavity thoroughly, dry it out with alcohol; place a drop of the obtundent into the cavity, and throw a continuous blast of hot air on it. Keep it up for five minutes, when the cavity can be excavated painlessly. He uses the following for hypodermic injections in extractions and other operations in the mouth: Cocaine, 15 grains; glycerin, 5 drachms; nitro-glycerin, 1/10 of a grain; sulphate of morphia and atropia, 1 grain; carbolic acid, 3 drops; distilled water to make 2 ounces. He writes, there is sufficient glycerin to localise the cocaine, holding it in opposition to the parts a sufficient length of time to complete the operation, and not long enough to act as an irritant and cause swelling. In patients of poor circulation swelling sometimes occurs, but it is not accompanied with any pain and subsides as soon as

the anæsthetic has become absorbed. The nitro-glycerin stimulates the heart just in proportion as the cocaine depresses it. The sulphate of morphia and atropia overcome the after pain. The carbolic acid keeps the solution. Dr. Payne gives the names of some of the most prominent dentists in America who use this anæsthetic.

FILLING DECIDUOUS TEETH.

In the *American Dental Weekly*, Dr. Gilbert recommends the following method for overcoming the many difficulties experienced in filling children's teeth: Place some cement powder upon the slab, also a little of the fluid, and besides these a little chloro-stopping. Make a thin mixture of the cement, then add to it the chloro-stopping, mixing in more of the powder until a thick putty-like consistency is obtained. Now dry the mouth as well as possible, then immediately pack the place and finish with burnishers.

DEATH FROM PYÆMIA FOLLOWING ATTEMPT AT TOOTH EXTRACTION.

A chemist's assistant aged eighteen years endeavoured to extract some roots of a left upper molar by means of a sharpened wooden penholder. After these attempt he suffered severe pain in the neighbourhood of the roots and some swelling, which progressively increased in size, involving the adjacent cheek. Three days later a blackish slough commenced to form, and the patient applied for treatment to the Dental Hospital of London, where he was ordered a mouth wash. Two days later (April 27) he again went to the hospital, when a blackish slough was present, separated by a distinct line of demarcation from the surrounding tissues, which were much inflamed. The slough occupied the region of the upper left molar extending inwards towards the palate, involving it to an area about the size of a shilling. The temperature was 102.6, pulse 120, the tongue foul, and patient looked ill. He was sent to Charing Cross Hospital, where he was anæsthetised, and the slough was freely scraped away and the tissues freely cauterised with pure carbolic. In spite of this treatment, another slough formed, the adjacent teeth became loose, the bone was stripped and laid bare by burrowing pus, which could be freely squeezed out. The parts were again freely scraped. Owing to great respiratory embarrassment during anæsthesia, tracheotomy was performed. The edges of this wound also showed signs of sloughing; gradually the patient sank, and on May 16 he died. The post-mortem examination showed multiple visceral abscesses, etc.—*Dental Record*.

EUGENOL WITH ZINC OXIDE.

Some interesting remarks by Dr. S. Blair Luckie on the properties of eugenol mixed with zinc oxide are given in *Items*. If properly mixed, that is, as much of the oxide used as the fluid will take up without becoming crumbly, a filling may be inserted that will last as long as the best cement. In mixing, a condition will appear as though no more of the oxide could be added without producing the crumbling alluded to, but by patting the mass with the spatula, plasticity will return. It hardens more rapidly in the mouth than on the slab and will retain its quality as a filling material better in the tooth, the filling will present good margins and has comparatively good edge strength. Dr. Luckie has given it four years' trial and has not noticed any wasting in last than after one year's wear. It is most suitable for approximal cavities. It also forms an excellent material for deep or sensitive cavities to build other stoppings; is a good covering for dressings when avoidance of pressure is necessary, or where an antiseptic or thermal protector is required. Hubbock's zinc oxide is recommended.

FIXING THE RUBBER DAM.

In order to get the rubber dam well up on the neck of the tooth so as to obtain a clear view of the cervical margin of the cavity to be filled, wrap a piece of dental floss or thread twice round the tooth and push well up on the neck of the tooth, then tie. Let this remain for a couple of days, and then the application of the dam can be made with ease and little discomfort to the patient, and affords a perfect view of the parts to be operated on. The *Dental Office and Laboratory* says, "Care should be exercised that the patient does not wear the ligature too long, or disastrous effects may follow on account of its tendency to work upwards."

NOTICES TO CORRESPONDENTS.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ADVERTISEMENTS AND ORDERS for copies of the 'PHARMACEUTICAL JOURNAL' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers."

ARTICLES AND REPORTS sent for the Editor's approval should be accompanied by stamped directed envelopes, otherwise no guarantee can be given that they will be returned if not found suitable.

CORRESPONDENTS should write in ink, on one side of the paper only, and must authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

DRAWINGS FOR ILLUSTRATIONS should be executed twice the desired size; clean sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

NAMES AND FORMULÆ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

QUERIES addressed to the Editor will be replied to in the Journal as early as possible after receipt, though not necessarily in the next issue. Replies cannot be sent by post, even though stamped envelopes accompany the queries.

LETTERS TO THE EDITOR.

THE DISCUSSION ON THE B.P.

Sir,—In common, I think, with many others, I was disappointed at the premature collapse of the Pharmacopœia discussion at Belfast. With your permission I will therefore take this opportunity of replying to some of the criticisms on my paper. With regard to the separation of strychnine and brucine in the estimation process for nux vomica, I think my point was hardly understood. No amount of washing appears to free the precipitate absolutely from brucine, whilst the bitter taste persists in the filtrate. Prolonged washing, moreover, causes a considerable diminution in weight, with a probable loss of strychnine. Results, therefore, will differ in accordance with each analyst's idea as to the proper quantity of acidulated water to be used for washing the precipitate. Mr. Farr condemns the reprecipitation process, but will he tell us how we are to know when the strychnine precipitate is sufficiently free from brucine for all practical purposes?

Ext. Physostigmatis.—In the absence of any definite standard of weight for the finished product in the process for this preparation, there will undoubtedly be variance in the potency of samples from different sources.

Concentrated liquors.—Mr. Umney says that the B.P. process does exhaust the drugs. It may in some cases, but I have before me now a sample of liq. chirate conc. made strictly in accordance with the Pharmacopœia, and the residual marc is certainly not exhausted.

Syr. ferri phosphatis cum quinina et strychnina.—I have so far found the B.P. process satisfactory, as have others. Mr. Martindale's objection to the precipitation process is, however, worthy of consideration.

Tincture of Strophanthus.—On the strength of a journalistic note I made the tentative suggestion that this tincture did not differ so widely from the 1890 preparation as would appear from the formula. Mr. Farr says that there is practically no difference in the exhaustion of the drug, whether a strong or weak alcoholic menstruum be used; and as I have no experimental data to compare with this I accept his conclusions.

Ol. Lavand. Exot.—I hear from a distiller that "he doubts if it is at all possible to obtain an oil of the B.P. density, seeing that the average does not exceed 0.875".

Ung. Hydrarg. Nit.—The B.P. process may not be a perfect one, but I have obtained good results by its use. Two points are of importance, the quality of the olive oil used and the preparation of the mercury solution in an open vessel, so that the former may be rapidly carried away.

Ung. Staphisagrie.—It may be remembered that Mr. Balmanno Squire some time ago stated as the result of experiments that the activity of stavesacre was entirely due to the oil, and if that be so, it would be well if the present wasteful and troublesome process were modified as suggested in my paper. I wish to thank the members of the Conference for their kind reception of a hastily prepared paper, and you, sir, for allowing me to reply in your Journal.

Exeter, August 23, 1898.

H. WIPPELL GADD.

THE TESTING OF THYROID GLAND.

Sir,—In a paper read before the British Pharmaceutical Conference, at Belfast, August, 1898 (*P. J.*, lxi., p. 159), by Mr. McWalter, the following statement is made:—"Thyroid gland tablets should be suspected unless they show traces of iodine. Dissolve a tablet in water and add some drops of strong nitric acid, afterwards a few drops of chloroform, which ought to show, after agitation, the characteristic violet tint." We desire to call attention to the fact that this method of testing thyroid gland is impracticable and misleading. In the first place, thyroid glands are not soluble in water, and furthermore, any iodine which may be liberated by the above test would not be detected, owing to the precipitation of albuminous matters which form an emulsion with the chloroform. A recognised method of testing, which is both practicable and accurate, is conducted as follows: Powdered thyroid gland is thoroughly incorporated with a mixture of equal parts of dried sodium carbonate and potassium nitrate, and fused in a crucible. The white fused mass is then dissolved in a little water, the solution filtered, a few drops of chloroform added, and after acidifying with dilute sulphuric acid, the mixture is shaken. When even traces of iodine are present the chloroform will then show the characteristic violet tint. (Compare also Baumann, *Zeitschrift für Physiolog. Chemie*, xxii., 2). In corroboration of these remarks we may note the following observations:—1. By the method of testing which we have indicated a distinct iodine reaction was obtained with one thyroid gland "tablet," whereas by the method proposed by Mr. McWalter no reaction was obtained even when ten times this amount was used for the test. 2. Parallel experiments with such small amounts of free iodine as may readily be detected in a simple solution by the violet coloration imparted to chloroform have shown that it cannot be so detected in the presence of albuminous matters, etc., such as are contained in the thyroid gland, even when the amount of iodine is considerably increased.

London, August 19, 1898. BURROUGHS, WELLCOME AND Co.

LIQUORES CONCENTRATI.

Sir,—May I be allowed to ask Mr. J. C. Hyslop which part of his contradictory advice he expects dispensers to follow. That, to think and work in terms of the metric system instead of the Imperial, which the B.P. still terms the present system, or that conveyed in the sermon on wifely obedience to the B.P. commands? His ideas must surely be in a state of chronic confusion, a confusion further evidenced by the application of the text pointing clearly to military obedience of the "theirs not to reason why, theirs not to make reply" type; and yet again, by the assurance that, to all intents and purposes, the B.P. does not concern dispensers. On his own authority he states that the liquores concentrati are not introduced for the convenience of the dispenser, and but partly for that of the prescriber, thus leading to the conclusion that they may be prescribed, but not dispensed, and therefore dispensers need not bother about them any more. But as good wives are not dumb, driven cattle, they are apt to ask why their convenience is not consulted, as it is the duty of a husband to do so? Therefore, let Mr. J. C. H. find, if he can, an adequate answer to the question, Why are the "nine of the more successful" liquores concentrati (confessedly resembling the liquids which manufacturers call concentrated infusions) not made of such strength that one fluid drachm diluted to one fluid ounce may be prescribed and dispensed in place of the corresponding infusion? Of course, making the reservation as to minor respects, etc., already granted in the B.P. In conclusion, allow me to correct the erroneous idea, that in quoting doses which included the absurdity of fragments or recurrent decimals, I implied any lack of arithmetical capacity on the part of the compilers. On the contrary it was their superabundance of that same capacity which I credited with leading them to a too zealous pursuit of per cent. solutions or liquors. Indeed they deserve the

highest praise for tackling such a task as the B.P. arithmetic now is. But what is to be said of one who misreads the simple statement that "liquores concentrati B.P. are uniformly 1 to 9," as meaning ten liquores? To say the least of it, it does not show much gain in "brain"; one of the prospective gains to be got by thinking in terms of the metric system.

August 23, 1898.

FLUID-DRACHM (140/25).

THE "MAJOR" EXAMINATION AS AN ANALYTICAL QUALIFICATION.

Sir,—One of your contemporaries has recently published an article on the utilisation of the Major examination. It suggests raising the standard so as to make it a qualification for an analytical chemist. I think this an excellent idea. As the Major stands, it is for all business purposes useless. Why not then adopt this suggestion, add on a course of food and general analysis, and allow present Major men to sit for the additional part only? It need not attempt to supplant the F.I.C., but simply give to men who from their training are specially qualified for food and drugs analysis a recognised standing. From the stringency of the F.I.C. regulations they will never be able to supply the amount of analytical chemists required at the present day; and who are better qualified to supply the want than well-trained scientific Major men? A rearrangement of the syllabus is all that is required, sufficient mathematical, physiological, and chemical knowledge being ensured. This opens out an excellent subject for discussion at our provincial centres, their final resolutions being reported to the Council.

August 23, 1898.

ANALYST (140/26).

* * * Everyone who proposes to become an analytical chemist should, if possible, become connected with the Institute of Chemistry.—[Ed. P. J.]

ANSWERS TO QUERIES.

Special Notice.—Scientific, technical, legal, and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms, and the registered number added in each instance should be quoted in any subsequent communication on the same subject.

B.P. ALTERATIONS.—No such book has yet been published. [Reply to W. T.—15/15.]

BOTANICAL.—*Scutellaria galericulata* and *Gnaphalium uliginosum*. [Reply to D. S. N.—15/9.]

HOLMES' 'BOTANICAL NOTE-BOOK.'—The book is supplied by Dulau & Co., Soho Square, London, W. [Reply to STUDENT.—15/16.]

MEDICAL.—The matter is beyond our province. You should consult a medical man. [Reply to TROUBLED ONE.—15/22.]

ARSENICAL PASTE.—White arsenic, 4; air-slaked lime, 4; potassium carbonate, 12; camphor, 1/4; soft soap, 4; water, *q.s.* to make a stiff paste. It is not necessary to colour the arsenic. [Reply to AESTAS.—15/18.]

ANALYSIS.—If you require advanced practical instruction, beyond what can be obtained at the School of Pharmacy, your best plan is to work in some private laboratory for a time. There is no better all-round text-book than the latest edition of Valentin's 'Course of Practical Chemistry' (Churchill, 9s.). [Reply to M. P. S.—15/17.]

ANALYTICAL CHEMIST.—No legal qualification is required to enable anyone to practise as an analytical chemist, but it is desirable to be connected with the Institute of Chemistry. Write to the Secretary of the Institute, 30, Bloomsbury Square, London, W.C., for particulars. [Reply to G. R. T.—15/21.]

RAT POISON.—It appears to consist of oatmeal with a small proportion of arsenic, coloured with indigo and made into a paste with beef dripping or some similar fat. [Reply to E. W. H.—14/23.]

OIL FOR CRICKET BATS.—Linseed oil with or without the addition of a little oil of turpentine is what is generally used. During the winter the bats should be kept in a dry atmosphere. A good bat deserves as much care as a violin. [Reply to ATHLETICUS.—15/3.]

LINIMENTUM MYRISTICÆ.—The London Hospital formula is:—Volatile oil of nutmeg, 1; olive oil, 3. Guy's Hospital formula is:—Expressed oil of nutmeg, 1; olive oil, 3. The former should serve your purpose. [Reply to G. W.—15/10.]

CAPTOL.—You are not likely to find the word "captol" in "any dictionary or chemical work." If, however, you had referred to the index of the last volume of the *P. J.* you would have found all you want to know on page 163—of the issue for Feb. 19, 1898. It is a condensation product of tannin and chloral. You can obtain it from any wholesale house which deals in new remedies. [Reply to W. S.—15/4.]

LIQUOR BISMUTHI.—The opalescence you refer to may be removed by suspending a little finely powdered animal charcoal in the solution before filtering. The filtrate will then run through bright. Probably you did not test your bismuth oxynitrate before using it; if it gave the cloudiness you describe, it would not answer the B.P. test and therefore should not have been used for making the liquor. [Reply to A. E. M.—15/6.]

HARDENING ANIMAL TISSUES.—Chromic acid, in 0.2 to 0.5 per cent. solution, is most rapid and energetic in its action, but potassium bichromate (2 to 5 per cent.) is also largely used. In both cases begin with weak solutions and proceed gradually to stronger ones. Alcohol alone is inferior to chromic acid or its salts. Formaldehyde is extremely useful for hardening nervous tissue. Refer to Lee's 'Microtome's Vade-Mecum' or Squire's 'Methods and Formulæ' for details. [Reply to BIOLOGY.—15/11.]

FRENCH PREPARATIONS.—"Eau lactuc" is presumably the *eau distillée de laitue* or *hydrolatum lactucæ* of the French Codex. It is prepared by distilling bruised lettuce (*Lactuca capitata*, DC., and *L. virosa*, L.), with twice its weight of water and collecting a weight of product equal to that of the lettuce taken. *Sirope d'ether* of the Codex is prepared by mixing simple syrup, 70 Gm.; 90 per cent. alcohol, 5 Gm.; distilled water, 23 Gm.; and sulphuric ether, 2 Gm. *Coton hydrophile* is absorbent cotton-wool. [Reply to AJAX.—15/19.]

F.L.S. and F.C.S.—The letters "F.L.S." stand for "Fellow of the Linnean Society." To become a "Fellow of the Chemical Society" you must be elected after nomination by Fellows. Write to the Secretary of the Society, Burlington House, Piccadilly, London, W., for particulars. The examinations in science conducted under the auspices of the Science and Art Department are open to everyone without the necessity of previously passing an examination in arts. The degree of B.Sc. is granted by the London, Victoria, Durham, and most other Universities in the United Kingdom. Write to the Registrars for particulars of the examinations. [Reply to SUBSCRIBER.—15/20.]

INFORMATION WANTED.

AMERICAN MIXTURE.—A medical correspondent wishes to be informed what is the composition of this mixture. It was prescribed for him by another medical man, who admitted that he did not know what the mixture contained.

CORRECTION

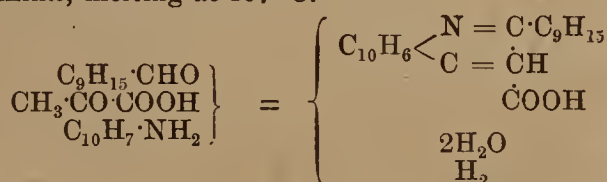
JOHN RADCLIFFE, M.D.—An obvious error occurs in the article on Dr. Radcliffe, published last week, James I., being referred to as having been king in Radcliffe's time instead of James II. The writer of the article had omitted to correct the error in the proof sent to him.



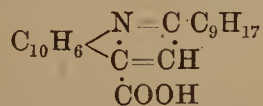
Pharmacy and the Allied Sciences.

REVIEW OF CURRENT WORK.

O. Doebner has applied the production of alkyl-naphto-cinchonic acids by the reaction of pyruvic acid ($C_3H_4H_3$) and β -naphthylamine with aldehydes for the determination of citral in essential oils. In that way he has confirmed the observation otherwise made by Schimmel and Co. and others that lemon-grass oil (*Andropogon citratus*) contains from 80 to 82 per cent. of citral, while the amount of citral in lemon oil (*Citrus limonum*) does not exceed 7 or 8 per cent., and is still less in other oils. When oil containing a considerable amount of citral is treated with pyruvic acid and β -naphthylamine in alcoholic solution, citryl-naphto-cinchonic acid separates in characteristic yellow crystalline laminae, melting at $197^\circ C$.



From oil containing less citral the citryl-naphto-cinchonic acid is accompanied by methyl-naphto-cinchonic acid melting at $310^\circ C$. and much less soluble in alcohol. When the oil operated upon contains other aldehydes besides citral, the corresponding alkyl naphto-cinchonic acids are produced—lemon oil, for instance, yielding some citronellyl naphto-cinchonic acid melting at $225^\circ C$.



Though citral has hitherto been known only in the optically inactive form, Doebner's observations point to the probability that aldehydes isomeric with citral would yield different compounds of the kind above referred to, and hence it was desirable to examine lemon-grass oil in that respect, but it was found that an acid melting at $197^\circ C$. was the only product, showing that citral was the only aldehyde present in any considerable amount. Citral being optically inactive the optical laevo-rotation of lemon-grass oil must therefore be due to terpenes or other bodies than aldehydes.

Assuming that citral is the only aldehyde present in lemon-grass oil, it would follow that by condensation with acetone and alkaline reagents by Claisen's method the same products would be obtainable as from pure citral, viz, pseudo ionone, $C_9H_{15} \cdot CH = CH \cdot CO \cdot CH_3$, and ionone, $C_{13}H_{20}O$. That conclusion is in accord with Tiemann's observation, that by condensation with acetone, lemon-grass oil yields a very pure pseudo-ionone.

In the specification of an English patent it is stated that the product of the action of chloride of lime upon a mixture of lemon-grass oil, acetone and alcohol differs from pseudo-ionone, and does not yield ionone when treated with sodium bisulphate, but is converted into one or more different ketones, having the formula $C_{13}H_{20}O$. Doebner disputes this statement, and brings forward evidence to show that lemon-grass oil does not contain isomers of citral, and that the product obtained by the action of chloride of lime is essentially identical with that obtained by acting upon citral. The only difference is that the product from lemon-grass oil has some rotatory power, which is due to an admixture of the

optically-active terpenes in lemon-grass oil, amounting to about 18 per cent.

In order to determine the citral in lemon-grass oil, and to establish its identity, comparative experiments were made with 40 grammes of citral and the same quantity of lemon-grass oil. By heating with 24 grammes pyruvic acid and 40 grammes β -naphthylamine dissolved in 200 C.c. absolute alcohol, citral yielded 40 grammes, or citryl-naphto-cinchonic acid, melting at $197^\circ C$., and from the mother liquor about 4 grammes of mixed acids melting at 140° - $160^\circ C$., which gave on fractional crystallisation, among other products, an acid melting at $225^\circ C$., and having the composition of citronellyl naphto-cinchonic acid. The lemon-grass oil yielded 32 grammes citryl naphto-cinchonic acid, corresponding to 82 per cent. citral, and 3 grammes of mixed acids melting at 240° - $260^\circ C$.

Pseudo-ionone was prepared by treating citral and acetone with barium hydrate, and compared with the product obtained by acting upon lemon-grass oil with chloride of lime and some cobalt nitrate, the boiling points of the crude products at 25 Mm. were between 160° and 175° , and in the latter case 140° to 170° at 22 Mm. After purification by treatment with sodium bisulphite, the respective boiling points were 158° - 164° and 157° - $163^\circ C$., at 22 Mm., the specific gravity was in the former case .900 at $18^\circ C$., in the latter .901, and the semi-carbazon compounds melted at 142° and 139° - $140^\circ C$., the only difference between the two products being the optical activity of the product from lemon-grass oil.

It was ascertained that in the treatment of an alcoholic solution of lemon-grass oil and acetone with chloride of lime and cobalt nitrate, the first action gives rise to the formation of chloroform and calcium hydrate, and at that stage no pseudo-ionone is produced, though by continued digestion the calcium hydrate effects condensation of the citral and acetone exactly as in Claisen's reaction.

Further comparative experiments showed that the ketone of violet odour obtained by treatment with chloride of lime is identical with the ionone obtained by acting upon pseudo-ionone obtained from citral. Like ordinary commercial ionone it contains, as Tiemann has shown, two stereo-isomeric modifications, ionone boiling at 123° - 124° at 11 Mm., and β -ionone boiling at 127° - $128^\circ \cdot 5$ at 10 Mm. The presence of the former was proved by the formation of the brom-phenyl-hydrazone melting at 142° - $143^\circ C$., and the latter by the semi-carbazon melting at 148° - $149^\circ C$. By treatment of the pseudo-ketone obtained from lemon-grass oil by the chloride of lime method with concentrated sulphuric acid it is chiefly converted into the β -ionone. On the ground of these results, Doebner concludes that the statement made in the above-mentioned specification as to the violet oil containing no ionone is incorrect. He considers that its identity with ionone is proved, as well as the fact that inactive citral is the only aldehyde present in lemon-grass oil to any considerable extent, and that the doubt which gave rise to the foregoing experiments has now been completely removed.—*Berichte*, 130, 1888.

Gabriel Bertrand communicates a lengthy Biochemical account of his researches on the formation of Production of Sorbose. Sorbose, a sugar which was first found by Pelouze in 1852. He concludes that sorbose does not exist as such in the juice of mountain ash berries, but is formed by oxidation from sorbite, contained in the juice, under the influence of a bacterium analogous to or identical with the *Bacterium xylinum* of Brown. On cultivating this bacterium in a suitable medium containing sorbite a yield of 80 per cent. of the theoretical yield of sorbose has been obtained.—*Ann. de l'Inst. Pasteur*, xii., 385.

PHOTO-MICROGRAPHY.—VI.

BY EDMUND J. SPITTA, L.R.C.P. LOND., M.R.C.S. ENG., F.R.A.S.

Underneath the condenser some arrangement always exists to reduce its aperture. This is done either by the use of the iris diaphragm or by a metallic plate perforated by several holes of different sizes. This plate revolves so truly that the centre of each hole is in the axis of the microscope; so, too, with the iris diaphragm, for when that is shut down its aperture should be central in the same manner. Some microscopists prefer the wheel diaphragm, as it is called, and others the iris; both have their advantage and disadvantage. The objection to the use of the iris diaphragm is the fact that in the older forms there was no means to show to what extent it had been closed, so that when using the specimen again the process of ascertaining what sized aperture gave the best results had to be repeated *de novo*; whereas, if the wheel diaphragm had been used the size of the hole giving the best definition could have been noted for future reference. In the Zeiss and other modern microscopes this is got over by graduating the arc through which the handle of the iris is made to turn. Underneath the diaphragm, or in some cases immediately above it, is some arrangement to carry coloured glasses; obliquely or otherwise cut diaphragms; and some suitable arrangement for obtaining annular light. This latter usually consists of a ring of brass having three radii passing from the periphery to the centre, such centre being rigid and of any size desired. Seeing, however, that the size of this stop has to be varied with each lens that is used it is very obvious a large number of these stop diaphragms must be employed by the microscopist, and inasmuch as they are rather expensive it becomes troublesome. It was to get over this difficulty I designed the arrangement shown in a previous article. Several sizes and several shapes are supplied with this little piece of apparatus, so that the microscopist can readily suit each lens as he thinks fit.

It should perhaps be mentioned here, as the most suitable place, that the method adopted by different makers to support the mirror varies very much. In Zeiss's microscopes the mirror is a fixture so far as relates to its movements from side to side about the axis of the microscope. But many makers fix it on an arm to enable the operator by pushing the mirror bodily on one side to send a very oblique beam on to the condenser. The object of this is to obtain very oblique light, and to further this object and shut off extraneous rays a diaphragm with a segmentally cut side—crescent moon fashion—drops into the receptacle for diaphragms underneath the condenser. In Messrs. Zeiss's microscopes the fixing of the mirror deprives the microscopist of obtaining oblique light in the manner just described, so the firm have added an ingenious arrangement, which is placed underneath the condenser and holds the iris diaphragm. To obtain oblique light all that the microscopist has to do is to close the iris to a sensible degree, and then by turning a handle displace its centrality to any given amount he may desire, and in any direction too, because the apparatus is capable of revolving on its axis about that of the microscope itself; so oblique light can be obtained in any azimuth desired. When finished with, the centrality of the iris diaphragm with the axis of the microscope is known to be re-obtained by turning the same handle backwards until a distinct click is heard, such click gently restraining any other movement. It is a subject of regret that the mirrors provided by many makers are made with too thick glass; such a fault is apt to give more than one image of the lamp-flame, which is very troublesome. One side of the mirror is flat and the other concave. I shall explain their several uses in dealing with different classes of specimens. Speaking generally,

the plane side is mostly used for high powers, but in photo-micrography the mirror is only employed when using a vertical apparatus.

The description of the microscope, although not entirely exhaustive, must here cease, and the means employed for holding coloured glasses or a small trough filled with a coloured fluid, which enables one to obtain monochromatic light, described. I have always employed a Bunsen holder for this purpose, and have no reason to find fault with it, except that to make it additionally steady it is safer to have a small leaden weight to place upon the base.

With respect to the selection and use of coloured glasses and light filters; they are employed for two distinct purposes: (1) Obtaining monochromatic light, by which is meant light of one colour, be it what it may; and (2) To obtain more colour contrast between objects and their surroundings.

Those who have given any attention to optics will readily acknowledge that colour is only an empirical name given to light of certain wave length. Thus red light consists of undulations of the luminiferous ether, amounting to about 40,000 to the inch, whereas with violet light, which appears at the other end of the spectrum, the pulsations reach the stupendous total of over 64,000 for the same space. In the theory of microscopical vision the wave length of the light used becomes an important factor, and lines that are so close as to be invisible in red light may become readily visible when seen in violet. Hence it is obvious the shorter the wave length of the light used, the greater the powers of resolution of the objective. This equally applies in photography, and is so well recognised that in the best text-books the number of lines capable of being seen with ordinary illumination are given in comparison to those capable of being photographed in the violet ray. Professor Abbe goes so far as to enunciate a law that the greatest number of lines per inch that can be resolved with any lens, using oblique light, which renders them more apparent still, is to be found by multiplying its numerical aperture by twice the number of the undulations of the colour of the illuminant per inch. This, with an objective of 1.40 N. A., and with violet light, amounts to about 180,880 per inch, but if with axial light, it might fall a few hundreds. These amounts here given are only approximations, for to be accurate, the exact, not the approximate, wave length of the colour used must be employed.

No glass is monochromatic, and hence light of one wave length cannot be obtained by its use; in fact, this can only be procured by the use of a prism of dense glass to break up white light into its component colours. This method gives colours of great purity and definite wave length, but is difficult to arrange, because the beam is too narrow to anything like fill the field of the microscope, and cannot in some cases be made to do so even with the paralysers. For that reason a more powerful set of prisms has to be employed, giving greater dispersion, but the illumination then is so feeble that, unless sunlight or electric light be used, the specimen cannot be seen with sufficient clearness to be properly focussed.

The next best arrangement to obtain monochromatic light is by the use of a trough made entirely of glass, the vessel having parallel sides, and being filled with solutions of certain strength and different substances, according to the result required. These are held *in situ* by the Bunsen holder. Zeiss makes excellent troughs for this purpose, but some that are sold by Mason, of Clapham, are much cheaper, and it is not easy in any way to detect their inferiority.

Coloured glasses are only used when it is required to increase the colour contrast between the object and its surroundings. Take, for instance, some bacilli of tuberculosis feebly stained red

on a blue ground. For this purpose a colour glass would be used to enrich the contrast. Some would employ a deep orange, but it has been my experience that better results are obtained with a not too deep green. If too deep, the bacillus might suffer in depiction by appearing clogged and dirty, failing to show the characteristic solution in its continuity, called segregation; but if a green glass of somewhat feeble density be employed, such errors are lost and the result required is obtained. The photographer has here, then, in the selection of his screen, much scope for individuality, and it takes some time and experience to produce the best photographic results; for, be it remembered, every change of glass means a different time of exposure, but of that we shall speak in the proper place.

The next subject is the means adopted for preventing the heat of the limelight acting upon the microscope itself. This may be done in two ways, the first of which is shown in the "elevation" of our table and its arrangements, and the second in the "plan." It has been already stated that very frequently I use my apparatus without any auxiliary condenser—or paralysed as it is sometimes called—thinking that the results at times are better and the field flatter without it than with it. Sometimes, however,

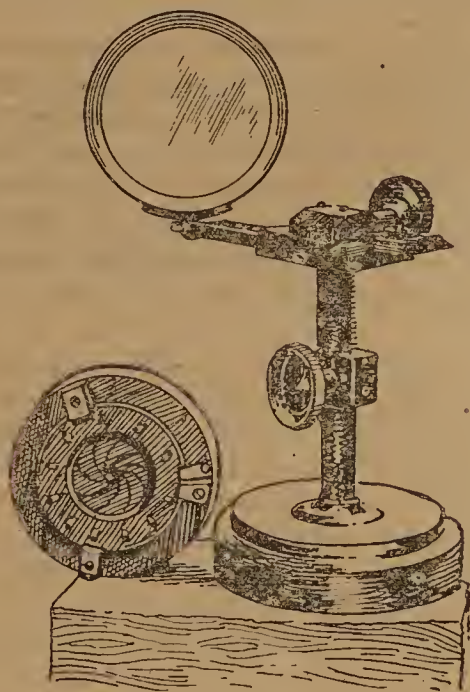


FIG. 1.

to illuminate equally in all parts, considerable difficulty is experienced, especially with high powers and occasionally with low ones. When this is the case the shield is removed from its foot, and a tray substituted which holds a water trough of some considerable size. (This water trough has been omitted in both diagrams for fear of rendering them too complicated, as it is obvious its position is shown by the brass foot, which as before explained is made to take either the protecting shield or the trough as may be required.) This trough should be about 2 inches in width and long enough—say 6 inches—to contain a plentiful supply of cold boiled water or glycerin, whichever be preferred. Boiled water is employed because it contains less air than fresh water and bubbles are not so readily formed.

The auxiliary condenser as shown in diagram (Fig. 1) is a wood-cut from a photograph of the original, and is seen to consist of a firm pedestal supporting a double rack work motion held in command by two milled headed screws. One raises the condenser and the other moves it laterally. With some manufacturers they make the condenser mounted on a pillar which can only be raised or lowered, the side to side motion being obtained by pushing the

whole stand. This I have found so objectionable that I devised the apparatus just spoken of, which was made by Mr. Mason, the optician I have previously referred to as residing in Clapham, and which enables the photographer to centre his condenser with the greatest of ease. This is best done by placing the iris diaphragm over the front of the condenser, and having closed it to a pin's point, to turn the light on. Removing the objective and opening the iris of the condenser, the eye is placed at the end of the microscope, which is covered by the top of a pill-box with a central hole pierced in it. Looking down this central aperture the nearly closed iris diaphragm can be distinctly seen, and has only to be moved by the two milled headed screws until in the centre of the field. The lenses of the condenser should be particularly loose in their cells—so that they rattle freely on shaking—for being of short focus they are necessarily in close approximation with the limelight, and are exposed to an intense heat.

As yet I have not spoken of the shutter shown in the elevation of the apparatus temporarily fixed in the air. This consists of a piece of zinc supported by an iron arm, perforated by a screw fixing into a vertical support attached below to a somewhat solid foot. It is moveable from the table, being easily lifted out of the way. When dealing with high powers it should be placed in the position shown in the diagram, namely, that the shutter falls quite close to

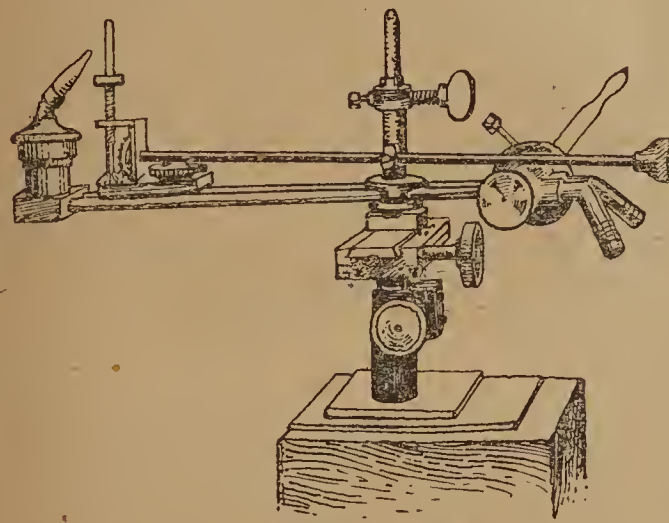


FIG. 2.

the iris diaphragm; whereas if low powers of over an inch be employed, it must be pushed further up the table so that it intercepts the light between the objective and the specimen, for if this is not done too much stray light passes into the objective and causes fogging of the plate after drawing the slide before commencing to photograph.

The limelight and its stand, Fig. 2, have yet to be described; I have already mentioned the jet I use with much satisfaction as the high pressure form of mixed gas jet designed and made by Mr. Beard. It slides on to the pin of the stand marked L S, just the same as other jets do on the pin in the limelight lantern. This is a convenience in one way because the jet can be used in an ordinary lantern for ordinary demonstration purposes, but it has the disadvantage of not being absolutely steady on the pin before referred to. To get over this difficulty an additional screw was made, and which is seen in the front of the apparatus fixing on the pin in the front just as the ordinary screw fits on it behind. By this means the jet is rigidly held. The ordinary arrangement for "turning" the lime is of course present, and in addition a handle for turning both gases down when not exposing technically known as the "cut off." Underneath the jet itself is seen the stand which Mr. Mason has made on the same lines as that of the

moveable condenser already described, one screw serves to shift the lime from side to side, the other raises it from below upwards, or *vice versa*, whereas the to and fro motion to push the lime nearer or further from the microscope is obtained by bevelling the wide foot of the stand itself so as it will pass evenly and smoothly through two guides fixed on to the baseboard of the apparatus itself. When using quite low powers there are those who prefer an ordinary, what is called "blow through" or safety jet, which is built on quite a different principle, and is used with the ordinary house gas from the main, a stream of oxygen being passed through it as it impinges on the lime. No accident can possibly happen with this form of jet so long as the oxygen is controlled by a regulator, for if too much oxygen be turned on at any given moment it will practically blow the light out, which is of no serious moment. With the mixed jet, however, which is far more powerful, it is very necessary that each gas bottle should have its own regulator, and it is good for them to be "matched" by Mr. Beard himself. On the tube side of each regulator there is an additional tap, which I find of great convenience, for there are times when one may want to shut off the gas temporarily, or even say in any emergency, and this can be done with far greater speed by these common taps than by shutting off the cylinders themselves. To start the light, having placed the lime upon the pin made for its support, the screws which regulate the amount of gas passing into each pipe of the jet are screwed completely down, both gases gently turned on at the cylinder, and if gauges are used as shown in the diagram, they can be watched to see when the taps are sufficiently turned. The "cut off" handle is then placed horizontal, which means both gases, if not controlled by the screw-down valves in the tube of the jet to which reference has been made, would rush on towards the lime. We undo first the red one, which permits the hydrogen or coal gas to pass to the jet and thus impinge on the lime.

It is then lighted. Still leaving the "cut off" untouched, slowly turn on the oxygen screw-down-tap on the jet until the light is quite bright. These two screws must now be slowly turned one against the other till the best light is obtained. If too much oxygen be put on, the light will fade and require more hydrogen, but I recommend anyone using the mixed light having a few lessons before attempting it. With Beard's jet very little "snapping" occurs, but in some forms made by other makers the slightest misproportion of oxygen will produce it. There is no danger in this snap in a well-appointed jet, but I venture to suggest to any of our readers who are contemplating buying this form of illumination only to go to best makers or to Mr. Beard himself. Cheap jets are always to be avoided. Different forms of "cut off" exist, most of which are very good, another excellent one being sold after the name of the illustrious photo-micrographer Mr. Pringle, and supplied by Messrs. Newton, of Fleet Street.

With respect to the regulators and gauges little need be said, save that the ones I have used have always been manufactured by Beard, at once a sufficient guarantee for their excellence. I must not omit to mention a few points concerning the gas bottles, seeing that they have to hold such enormous pressure, which, as a matter of fact, in a full-charged bottle is about eight times the amount employed in a modern locomotive. I strongly advise every purchaser of one of these cylinders to go to the headquarters of the leading gas compressors in England—I refer to Messrs. Brin's, of Horseferry Road, Vauxhall. Their cylinders may be considered absolutely safe, both for carriage and use, because the company have made the most careful and exhaustive tests and elaborate and costly experiments that can possibly be designed to

ensure perfect workmanship, perfect material, and perfect testing. No expense has been spared in this department, and whether the customer orders it or not his cylinder is periodically overhauled and tested, being destroyed if showing the least signs of weakness.

I regret to say that one London firm apparently does not feel bound by the recommendation following the careful and rigorous investigations of the Board of Trade, and has been known to lend out cylinders made of metal which is positively and absolutely condemned by the Board in question. This is a subject which should occupy the attention of every lanternist and user of the limelight, and they should avoid having anything to do with cylinders badly made. The only advice that can be given in the matter, seeing it is impossible for a customer to analyse the steel of the cylinder sent to him, is to have no compressed gas except from those who not only conform with the regulations of the Board of Trade in question, but who mainly were the investigators in the whole subject from the first. I refer to Brin's Oxygen Co., of whom I have already spoken; and in saying this it must be distinctly understood the writer has no interest directly or indirectly in the company, but merely makes this statement as a guide to those he is attempting by these notes to assist.

One more point also should not be overlooked, seeing that the greatest danger is caused by mixing oxygen and hydrogen unless in a properly appointed jet. So it is exceedingly dangerous to have interchangeable cylinders, that is to say, those that can be filled to-day with oxygen and to-morrow with hydrogen, for it is very obvious that an explosive mixture may thereby be readily formed which, the instant the unfortunate operator applies a light, causes an explosion hardly less terrific than that of dynamite or gunpowder.

Brin's Oxygen Co. have now for some years instituted a plan which utterly prevents any possible accident of this description, for the oxygen cylinders have a right-handed thread, and those for coal-gas a left-handed one. It is, therefore, impossible for any employé accidentally to fill a cylinder used for one gas with the other, for the screws will not fit, and cannot be made to do so. In closing these remarks I regret to say that firms still exist in London who sell both gases cheaper, and as a matter of fact not so pure, who still refuse to adopt these ingenious precautions, which leads us once more very obviously to select the same firm, even if it were for this reason alone.

With respect to electric light as an illuminant, I must confess to have had but little experience. A few photo-micrographers are said to employ it, but others, it is known, have relinquished its use. An excellent lamp has been quite lately brought out by the firm of Ross and Co., of Bond Street, which possesses all adjustments, and is most safely protected by very perfect insulation. The incandescent system of electric lighting does not seem to answer very well; its area of illumination is too diffuse, for be it known the theoretical ideal is always to have as near a point of light as possible.

PYRALOXINE.—Mielck gives the name of pyraloxine to a pyrogallol which has been subjected to oxidation. The preparation owes its origin to observations made by Unna in dermatological practice that the action of pyrogallol is merely due to its product of oxidation, a circumstance which seems to be confirmed by the fact that pyraloxine possesses all the healing action of pyrogallol, while it is free of the irritating properties of pyrogallol. Pyraloxine is a black powder sparingly soluble in water and quite insoluble in alcohol and ether. Its chemical nature has not yet been definitely ascertained.—*Zeit. d. allg. aest. Apoth. Ver.*, li., 549.

NOTE ON THE USE OF CLINICAL THERMOMETERS AND THEIR INDICATIONS.

BY B. S. PROCTOR.

Though the use of clinical thermometers is a medical rather than a pharmaceutical subject, it is quite desirable that pharmacists should be acquainted with the use of instruments now in such common sale in pharmacies, and be able to give some guidance to the customers who purchase them.

During my recent illness I had pretty constantly to keep watch upon my temperature, and observed several points which were to me unexpected, and, I think, of sufficient general interest to make them worthy of record.

At the commencement of my attack (influenza) the temperature was 102°·0, sufficiently high to be considered by my medical attendant as a notable symptom in a patient of my age, and after the subsidence of this pyrexia I began to experience subnormal temperatures, such as 96°·0 to 97°·0. At this stage the doctor advised my getting open-air exercise when weather was favourable and my temperature not below 97°·0 nor above 99°·0, directing me not to go out without fortifying myself with fl. ζ iss. of sherry and a biscuit or two. Thus were commenced the daily observations, which were continued at such times as my ailments prevented my attendance at my place of business, and thus was raised the question, What is the ordinary range of temperature in health and disease?

I found abundant records of the high temperatures of patients suffering from fevers, but very scanty notice of subnormal observations. The clearest statement I have met with, in the absence of a medical library, is the following by Dr. Robson Roos in his work entitled "Waste and Repair in Modern Life, 1897." He notes the temperature after a long fast was 96½°, remarking, "This temperature, if discovered in a sick person, would be regarded as that of collapse; and if the thermometer marked only 95° there would certainly be extreme danger."

My temperature was many times not only down to but below 95°·0, without my feeling conscious of any dangerous condition, and my medical attendant saw only cause for care but none for anxiety. Several other medical friends to whom I have mentioned my observation seemed to have little knowledge or experience of subnormal temperatures; some of them say that medical men habitually look for high temperatures when there is fever, but rarely think about the other end of the scale, and probably often miss the low indications from the habit of being satisfied with having the mercury shaken down to 98° or so, and only noting that the patient does not show any unusual feverish heat.

That the low temperatures are not commonly observed is also proved by the graduations on the ordinary clinicals only going down to 95°. My conviction is that more general observation of the low temperatures is desirable. Finding my own temperature fall below 95°, I was desirous to know how far below, and I looked over a stock of clinicals numbering six or seven dozen, and found only two graduated so low as 94°, with the exception of one very old instrument, which was inconvenient, as its date of manufacture was before the introduction of registering indices, thus making personal observations much more troublesome and less reliable.

One of the first points to take my attention was the constant fall of temperature consequent upon exercise. Taking a walk, half a mile or so and back, the reading would be a degree or two lower, and would rise again soon after a short interval of rest. I then observed that the temperature fell in a similar manner when my exercise was taken in the house, by walking about the rooms, up and down stairs, etc.; and having obtained leave I took my walk outside in fine weather, even when my temperature was low;

the effect being the same in either case, I concluded that it did not result from exposure to the wintry air, nor to a reaction after the stimulation of the sherry and biscuit which preceded the open air exercise, but which did not precede that taken in the house.

A.	Temperature observed was
On one occasion immediately before walking	95°·3
Immediately on return	94°·7
After quarter hour's rest	96°·4
After three hours' rest and food	98°·1

A great many observations were taken and not recorded, but simply reported to the doctor, the common range being about 97°·0 in the forenoon, and 98°·6 in the evening, though some days ranged from 94°·6 to 99°·0.

A few weeks later (during January, 1898), several readings were below 94°·0, probably as low as 93°·0, but as 94°·0 was the lowest graduation, the observations below this point could only be estimated by comparison with the scale above.

Cold sensation of hands and feet corresponded generally with low readings of the thermometer kept for five minutes under the tongue, though I could never predict with any certainty whether the indications would be high or low. The evening temperature would often rise to 99° or 100° without any febrile sensations or discomfort. The most certain way of combating a subnormal condition was rest, food, and external warmth, and the most constant causes of the low temperature were physical exercise (not violent), an empty stomach, and exposure to a cold atmosphere. Mental work did not produce the lowering effect which followed bodily exercise. The sherry and biscuit, though in small dose was always followed by prompt rise, and no subsequent fall of temperature was observed except with physical work or want of food. As in the above observation, a few hours in the easy chair by the fireside showed a steady rise till another meal was due. Take in illustration another day.

B.	Temperature found.
After breakfast of coffee and toast	97·8
„ after reading newspaper in an easy chair	97·5
„ lunch (of fl. ζ iss. sherry and biscuit)	98·9
„ short walk (? a mile)	95·6
„ dinner (invalids fare, fish or chicken with two teaspoonful of whiskey in half a tumbler of soda water)	98·7
„ three hours' rest	97·0
„ tea and toast	98·6
„ a game of Chantilly (requiring thought and attention but not hard study)	98·6
„ supper (a slice of cold chicken and bread, fl. ζ iii. of whiskey with hot water)	98·5

In this case the sherry and biscuit raised the temperature 1°·4; the dinner and whiskey 3°·1; and the tea 1°·6; in these three cases I was subnormal, probably wanting food, but at night when the temperature was normal, the food with whiskey had no notable effect upon it. The bodily exercise lowered it 3°·3, but the mental exercise produced no such result. The lowering effect of physical exercise strikes one as being contrary to general experience, as it is contrary to our sensations. If it be that this only occurs when the available vital energy is deficient, it looks plausible to conclude that a call upon the body for mechanical force may subtract energy which should otherwise take the form of heat, and that the subnormal temperature taken as an indication of vital debility would have that indication confirmed by the further reduction consequent upon moderate exertion. This, however, being a speculation founded upon the experience of one individual, should be regarded, not as a conclusion, but rather as the starting point for other observations.

At another time the pulse rate was compared with the temperature, thus:—

C

	November 21.		November 22.	
	Temp.	Pulse.	Temp.	Pulse.
Before breakfast.....	97.2	64		
After „	98.4	66	98.6	72
„ lunch	98.3	68	98.0	64
„ walk	97.6	64	96.7	68
„ dinner	98.0	68		
„ tea	98.8	72	98.0	66
„ supper	99.0	72	98.6	

The meals were of the same light character as those noted above. The observations were not so systematic as they should have been if I had contemplated publishing a note on the subject, but I give them for what they are worth, as I am not likely to go through another such illness and recover to tell my experiences.

As the most notable point is the fall of temperature with exercise, I tabulate some results:—

D.

	Nov. 15.	Nov. 16.	Nov. 18.	Nov. 19.	Dec. 12.
Thermometer before walk	97.0	97.3	98.2	97.8	95.3
„ after „	95.6	96.0	97.0	96.2	94.7
„ after rest	97.8	98.4	—	98.2	96.4
„ after rest and food....	—	—	—	—	98.1

With the idea that the fall of the thermometer during a walk might be partly due to exposure to a cold atmosphere, two observations are recorded with this point eliminated, the one (already noted) in which the exercise consisted in walking about the house, the staircase and passages being a few degrees colder than the room in which I had been sitting; in the other case an hour's work at wood carving, an occupation which I had adopted as a light physical employment capable of being undertaken in the sitting room involving no exposure to cold, but sufficient exercise to cause perspiration when continued for an hour or so. This was taken in the evening, the temperature before the work was 98°·8 and after it 97°·5; after an hour's rest 98°·4.

These imperfect notes will, I hope, be of some interest and possibly of some use to others, and I trust their many shortcomings will be excused on the ground of their being drawn up from mems. of observations made for the guidance of my doctor and myself while I was suffering from a complication of complaints.*

I should expect an observer in good bodily health would not experience the frequent and considerable variations which I have done from apparently trifling causes. And if invalids do find the same it suggests that the effect of food should have more attention in all cases, and that the effect of exercise should not be overlooked in such patients as are not confined to bed. Diarrhoea and vomiting appear to have lowering effects also, but I have not notes enough on these points to attempt a definite statement.

I may add in conclusion that since my partial recovery of health and my removal from Newcastle-on-Tyne to Bradford-on-Avon, my temperature continues generally subnormal, ranging between 94°·6 and 99°·0, usually low in the morning and normal in the evening. A set of observations taken at the present time to compare my experience in as nearly normal health as an old man is likely to attain to, with those indications jotted down when I was an invalid, gave me the figures in the table below. My condition was much as usual and my exercise was arranged to include a couple of hours' boating on the Avon, by way of a varia-

* Commencing with influenza a few years ago, followed by returns of the same each winter since; in each case accompanied by liver derangement, and in this last case with an inflammatory condition affecting the stomach, liver, and intestines.

tion from my more customary walk through the country roads and fields, and the thermometer was noted more systematically to show how it was affected by food, exercise, rest, etc.

The observations were as follows:—

E.

August 17, 1898.	Hour.	Temperature.
Before rising in the morning	7.15 a.m.	94.9
After dressing	8.0	95.6
After breakfast	9.45	96.0
After walking from dwelling-house to boathouse (½ mile)	11.0	94.5
After resting ¼ hour	11.25	95.6
After rowing ¼ hour	12.0	96.8
After fl. 3/8ss. sherry and biscuit	12.20 p.m.	98.4
After rowing 25 minutes, an oar in each hand and the thermometer under my tongue	12.45	98.4
After walking home (½ mile)	1.20	98.0
After dinner	2.30	98.2
After rest	5.0	98.0
After tea	6.35	98.5

In this case the day commenced subnormal, and only got up to healthy standard after noon.* The walk to the boathouse at the time heat was low reduced it by 1°·5, the walk back when the heat was normal only reduced it by 0°·4. Half an hour's rowing raised the temperature by 1°·2, i.e., from 95°·6 to 96°·8. Sherry and biscuit had their customary effect of raising the indication by 1°·6, i.e., from 96°·8 to 98°·4, and the temperature remained normal when the exercise was resumed, and continued for twenty-five minutes. It would appear that the temperature when once up to normal is less liable to fluctuation than when subnormal.

The points I wish to emphasise are:—

That clinicals should have their graduations continued down a few degrees lower, say to 92°.

That observations of low temperatures should be more systematically made.

That temperatures a few degrees below normal should not be stated to indicate a dangerous condition unless other circumstances also point to danger.

That records of observations similar to the above, undertaken by competent observers, both in good health and in bad, would be valuable.

That pharmacists must include many men who would be competent observers, with facilities for the task, and free from preconceived conclusions (such as total abstinence pledges, etc.), which so often vitiate results.

That pharmacists selling clinicals should be able to give some instructions for their use and some guidance regarding their indications.

To these I might add the questions, If the temperature were high from a febrile condition, would physical exertion reduce it, as found to be the case with subnormal temperatures, as noted in table D? Or would the exercise aggravate its supernormal condition?

When the temperature of a fever patient is taken by a nurse, professional or otherwise, is sufficient regard paid to the effect of food just taken or just wanted by the patient, or to other trifling circumstances which may temporarily influence the morning or the evening temperature? The difference between a quarter of an hour before and after a cup of tea might just make the difference between apparent improvement and an exacerbation of the fever.

* Next morning it commenced at 98.4 before rising, though I had no reason to anticipate a different indication from that of August 17, and after a little walking exercise it fell to 97.2.

JOHN RADCLIFFE, M.D.

FOUNDER OF THE RADCLIFFE LIBRARY, OXFORD.

(Continued from page 224.)

According to his biographers, after reading the prescriptions of the official physicians, Radcliffe pronounced the Queen "a dead woman." If he did, his prognosis proved to be as correct as his diagnosis had been.

A couple of years or so before the death of Queen Mary a financial disaster befell Radcliffe, the story of which is worth telling, partly because it throws some light on his average gains, and partly because the comment which he made on it has been ascribed to more than one other physician, but it undoubtedly first came from Radcliffe's lips. One of his intimates—for he had them of all kinds—was Betterton, the actor. In an evil hour Radcliffe allowed himself to be persuaded by him to join him in freighting a vessel with a cargo to be disposed of profitably abroad. Radcliffe's venture was to the tune of £5000, and it must be repeated that £5000 then would mean £15,000 or £20,000 now. It was wartime. The ship was captured by the French, and Betterton was ruined. When the news of his loss was brought, "Radcliffe was carousing, after his wont, with several boon companions of the first quality," at one of his favourite hostelrys—the Bull's Head, in Clare Market—about the last London locality where toppers of any "quality" could be found carousing now. On hearing the melancholy news the company ceased from their merriment and began to condole with the victim of misplaced confidence. But Radcliffe bade them go on with their toasts, and took the matter very lightly, saying that to recoup himself for his loss he had only to go up 250 pairs of stairs. If the words are to be taken literally, this would make his average fee to be £20 for every pair of stairs ascended. About the very time of this loss he was lavishing money in benefactions to his alma mater, more than £1000 on exhibitions alone.

In William's joy over Radcliffe's cure of his favourite, Albemarle, the King not only bestowed on the successful physician the money gift already mentioned, but offered him a baronetcy. Radcliffe declined it, on the plea, it is alleged, that he was unmarried and childless, and intended never to marry. But he had had then a narrow escape from matrimony, and under circumstances which turned him, at least for the time being, into a misogynist. He was forty-three when his first recorded proposal of marriage was made. The lady was twenty-four, beautiful, and the daughter of a rich citizen, who was well pleased to marry her to a famous physician, known to be worth £30,000. The father offered £15,000 with his daughter's hand, and after his death the rest of his fortune was to be his son-in-law's. Everything was settled, when Radcliffe (with his trained medical eye) discovered that the young lady was on the way to become a mother, having loved her father's book-keeper not wisely but too well. Of course, Radcliffe broke off the match. However, he advised that the young lady's hand should be given where she had already given her heart. The father consented, and endowed with suitable means the re-united pair, who lived happy and prosperous ever after.

The health of William III. had always been indifferent. Constitutionally he was asthmatic and consumptive. Macaulay says of him, as Pope said of himself, that his life was a long disease. As the century rolled on towards its close his maladies increased, and his life was more than once in danger. When he consulted Radcliffe in 1697 the latter spoke to him with his usual bluntness. If His Majesty would give up his visits to the Earl of Bradford, with whom he was in the habit of toying, and placed himself in Radcliffe's hands, his life might be protracted for three or four years, but not longer. Whether William followed Radcliffe's advice or not, he does not seem to have been offended by his physician's frankness. But when Radcliffe was sent for two years later, either his blunt familiarity overshot the mark or illness had made the King abnormally sensitive. His nether limbs were so dreadfully swollen as to provoke Radcliffe to make the imprudent remark, "I would not have your Majesty's two legs for your Majesty's three kingdoms." William was so offended by this plain-spokenness that he would never allow Radcliffe to be consulted again, and doubtless the King's physicians, while they continued to give their patient Radcliffe's "diet-drinks," were only too glad to be rid of the presence of so formidable a rival. In William's last illness, therefore, Radcliffe was not called in, and even he could not have protracted the King's span of life beyond the limit which he had years before assigned to it as the utmost possible. William died in the February of 1702, and Queen Anne reigned in his stead.

Radcliffe's sayings and doings in the new reign will be told subsequently.

The accession of Queen Anne found Radcliffe at the head of his profession, though many of his brethren regarded, and continued to regard him, as an ignorant pretender, who owed his advancement chiefly to loud self-assertion and, above all, to good luck. But the highest personages in the land, with one exception, delighted to have recourse to his proved medical skill. The exception was the Queen herself. She had never forgiven him for his refusal to come to her on one occasion when she fancied herself ill, and when, as recorded in Chapter I., he excused himself for not rushing to her side by declaring—how unlike the procedure of the courtly physicians of later times!—that she had nothing the matter with her but "the vapours." It was in vain that her Lord High Treasurer and virtual Prime Minister, the sagacious Godolphin, to whom the Queen's life was personally and politically important, tried to persuade her to reinstate Radcliffe in his former post as her principal physician. Anne was one of the most obstinate of women, and would not forgive or forget the slight put upon her by one of her "hired servants." The time came, as will be seen, when even this stubborn queen had to plead for the services of the arrogant and masterful physician. Even as it was, Radcliffe was found to be secretly indispensable. The Queen professed to pin her faith on the famous and witty Dr. Arbuthnot, who was the physician of her husband, Prince George of Denmark. But Arbuthnot appears all along to have recognised Radcliffe's rare medical insight. It was probably due to the unenvious Arbuthnot that Radcliffe was privately consulted whenever there was, or seemed to be, anything seriously the matter with the Queen. Radcliffe, his biographer says, "received large sums out of the secret service money"—how oddly the statement reads now!—"for the prescriptions behind the curtain."

In "The Epistle to Dr. Arbuthnot, being the Prologue to the Satires," one of the very finest of Pope's compositions, the poet apostrophises him as

Friend to my life! (which did not you prolong,
The world had wanted many an idle song).

But long before Arbuthnot became Pope's friend and physician Radcliffe had been the poet's medical preserver. Pope was in his sixteenth year, and Queen Anne had been only a year or two on the throne, when the young poet, in his father's house at Binfield in Windsor Forest, became a prey, through over-study, to a despondency which seemed to him a prelude to the grave. So serious was the attack that he wrote to his friends announcing that he had not long to live. Fortunately one of them, a certain Abbé Southcote, a member of an old Roman Catholic family, bethought him of consulting, on behalf of his young friend, the famous Dr. Radcliffe. Radcliffe saw at once what was amiss with the over-excited and over-studious youth. He prescribed not drugs but a careful regimen, less study and a daily ride in the Forest. His advice was followed. The youthful Pope recovered his health and spirits, and to Radcliffe primarily rather than to Arbuthnot we owe "the many an idle song" of the poet's grateful distich.

The story of Pope's cure affords one of the few glimpses which have been given of Radcliffe's methods of medical practice. In another of about the same date we have a view of his treatment of that then terrible scourge, the smallpox, for his skill in dealing with which he is said to have been more successful than the illustrious Sydenham himself. The great Duke of Marlborough's son and heir, the Marquis of Blandford, was struck down by smallpox at Cambridge, where he was an alumnus of the University. His anxious mother, the formidable Sarah, came to Radcliffe and begged him to proceed to Cambridge and do his best for her boy. Radcliffe declined on the plea that he had some serious cases of illness among aristocratic patients on hand which would not allow him to leave London, and the journey to Cambridge was not the light matter which it has become in these railway days. But he would be happy to lay down a plan of the operations to be followed by the Cambridge physicians in the treatment of their high-born patient. The difference between Radcliffe's method and that which in opposition to his advice was followed by the Cambridge physicians, resentful no doubt of the interference of the London doctor, is thus stated by his biographer in language not very elegant, but sufficiently intelligible.

"It was his practice to give his patients who were ill of that disease (the smallpox) as much air as could be well allowed them, and to set open their chamber-windows, instead of stifling them in the summer season, and also to set down strong broths

and rich cordials in his regimen that the pustules might be forced out and filled the sooner. This was contrary to the methods in vogue with the physicians at the University, who instead of keeping them (the patients) in full strength, that Nature might operate and take its proper course, weakened them by letting them blood and darkening their chambers for fear of their catching cold."

The youthful Marquis grew worse instead of better. Duchess Sarah then made a last appeal to Radcliffe to proceed to Cambridge and see her son. Having read the letter from her son's tutor, in which the treatment of him by the Cambridge physicians was described as diametrically opposite to that recommended by himself, Radcliffe is represented as giving the sorrowful mother the following extraordinary reply, one certainly characteristic of the strange man: "Madam, I should only put you to a great expense to no purpose, for you have nothing to do for his Lordship now but to send down an undertaker to take care of his funeral, for I can assure your Grace he is dead by this time of a disease called 'The Doctor,' and would have recovered of the smallpox without the intervention of that unfortunate malady" (his Cambridge treatment to wit). And, sure enough, according to the admiring and, it is to be hoped, the veracious Pittis, as soon as her Grace reached "St. James's House" there arrived a messenger with the news of her son's death.

This seems to have been Radcliffe's procedure always. He had to be called in as soon as a malady declared itself. If not, and medical advice was sought elsewhere, he professed himself powerless. The other physician or physicians had bungled the case. The patient had been treated for the wrong disease, or if for the right one, with the wrong remedies. The great Radcliffe had been called in too late; there was no hope of the patient's recovery if the disease was a dangerous one. The fame of Radcliffe's own success was enhanced by the result of his predictions of other physicians' failures. "Confide in thyself and others will confide in thee," said Mephistopheles to the young student in Faust's chamber who asked for advice as to his medical future, and on this principle Radcliffe acted, and found it answer. And he avenged himself on his professional brethren who called him an ignorant, if lucky, quack, by treating them with the contempt of which an illustration has just been given. Here is another. The child of an eminent London surgeon was taken ill of what Radcliffe's biographer calls "an empuesma in the side." The father had called in Dr. Gibbons, who, as an old rival of Oxford days, was Radcliffe's special aversion; "Nurse Gibbons" was his favourite name for him. The boy grew worse, and Radcliffe was sent for. Then the old story was repeated. "Nurse Gibbons" had quite mistaken the disease. The boy was already killed to all intents and purposes, and Radcliffe could do nothing for him. But stop! He could render him a posthumous service. He could suggest an appropriate design for his tomb, with an appropriate inscription. The father assented. Perhaps Radcliffe offered to pay for what would be a standing insult to his enemy Gibbons. Accordingly, so runs the story as told by Pittis, when the young victim of Gibbons' blundering was buried in Covent Garden churchyard, there was placed over his remains "a stone with the figure of a child laying one hand on his side; '*Hic dolor*, here's my pain,' and pointing with the other to a death's head, where was inscribed '*Ibi medicus*, there's my physician!'"

Radcliffe took dislikes to places as well as persons. At one time he cried up Bath and its waters to the great profit of the city of Prince Bladud. Then, for some unassigned reason, he fell foul of it, and transferred his patronage to Tunbridge Wells. There is still extant a pamphlet (dated 1705) in which a loyal "citizen of Bath" reproached in no unmeasured language the doctor's desertion of Bath, the freedom of which had been bestowed on Radcliffe, who had praised it, the pamphleteer said, "when sober." Had this sudden dislike of Bath anything to do with Radcliffe's attitude when in 1708 Queen Anne's husband, the stupid but amiable Prince George of Denmark, suffering from asthma and more particularly from dropsy, was sent to Bath to drink the waters? They revived considerably his health and spirits, and the Queen was delighted with the change for the better. But Radcliffe shook that wise head of his and predicted disaster. "It might be," he is said to have told the Queen, "a rule among surgeons to apply caustics to such as were burned or scalded,"—a glimpse of the surgical treatment of those old days—"but it is very irregular among physicians to drive out and expel watery humours from the body by draughts of the same element." We have said he "told the Queen," for there had been a relapse

since the Bath waters were drunk, and Prince George, being dangerously ill, Anne, sacrificing her old resentment, had called the infallible Radcliffe in at the eleventh hour, and pleaded hard with him to save her beloved husband's life. Radcliffe had now his revenge for past slights. The Prince's "watery humours" had been improperly dealt with, he declared. Radcliffe had been consulted too late in the day, and there was no hope for the royal patient. He is actually reported as speaking to his sovereign in the following strain, with something like brutal frankness. All that he could do for the Prince was to administer "such hypnotics and anodynes as should make him go out of the world with the greatest ease, since he had been so tampered with that nothing could keep the Prince alive more than six days." And of course, Pittis records that the poor Prince died punctually on the sixth day. Queen Anne, it is added, would never visit Bath again, and Radcliffe's spite at the pleasant city was doubtless gratified by the royal abstinence.

It is pleasant to turn from these illustrations of Radcliffe's occasional asperity and egotism to instances of his beneficence, if not of his munificence. When his life was ending, he accused himself of being too fond of money, and of too great reluctance to part with it. He kept his munificence for posthumous exhibition, but his benefactions during life were not inconsiderable. Early in Queen Anne's reign—and the reader must always remember that the value of money was then at least three or four times as great as now—he settled on the Society for the Propagation of the Gospel in Foreign Parts £50 a year for ever. His High Church and Jacobite zeal prompted his gift of £520 to the non-juring clergy, and £300 to the Scotch episcopal clergy in sympathy with their maltreatment by their established Presbyterian brethren. In making these gifts he insisted that the donor's name should remain unknown. Tory pamphleteers, especially when subjected to Whig persecution, were favourite objects of his bounty, and he helped Sacheverell at the time of his famous prosecution. To a lively boon-companion, fretted into ill-health by impecuniosity, he presented 500 guineas instead of a prescription, and it did him much more good. One kindly act to a distressed cleric, far more deserving than Sacheverell, ought to be held in remembrance for its result. Bingham was a fellow of University College, Oxford, and was driven from it by preaching a sermon which, very unjustly, it seems, was suspected of contravening the orthodox doctrine of of the Trinity. Radcliffe bought and presented to him a living in Hampshire. It was worth only £100 a year, but it was in the vicinity of Winchester and the fine Cathedral Library which Bishop Morley had founded there. Thus the frugal scholar was furnished not only with the means of living but with access to the material for his monumental work, the '*Origines Ecclesiasticæ, or Antiquities of the Christian Church*,' which never has been and probably never will be superseded. Bingham, it may be added, was, like Radcliffe, a Wakefield man. In 1707, the year before the inestimable boon to Bingham, Radcliffe is said to have been worth £80,000 in the money of that time, with a magnificent yearly income from his profession, and he invested much of his wealth in the purchase of estates in various parts of England. Yet rightly or wrongly, in spite of his wealth and his liberal donations to all and sundry, he is represented as parsimonious in small things. Of the stories told in illustration of this alleged tendency of his is that of the paviour who had to dun him for payment of some work performed in front of his house. Radcliffe resisted on the plea that the man had spoiled his pavement and then covered it with earth to hide the bad work. "Doctor," replied the man, "mine is not the only bad work the earth hides." The retort was one after Radcliffe's own heart, and the witty paviour was paid without more ado.

To 1709 belongs a curious episode in Radcliffe's career. Hitherto he had escaped the tender passion. His appearance as a wooer with matrimonial intentions, already chronicled in this article, seems to have been more commercial than amatory. Bacchus—not Venus—was the deity whom Radcliffe worshipped. But in his sixtieth year he was bewitched by the charms of a young and lovely lady whom he had cured of a long and dangerous fever. Her name is not given, and little more of the affair is known than that she did not encourage the advances of her elderly admirer, and that he made himself the talk of the town by his peculiar and public parade of his senile passion. Steele, who loved him not, as a Jacobite and for other reasons, seized the opportunity to ridicule in the *Tatler*, thus:—

"This day, passing through Covent Garden, I was stopped in the Piazza by Pacolet to observe what he called 'the triumph of love and youth.' I turned to the object he pointed out, and there

I saw a gay, gilt chariot drawn by fresh prancing horses, the coachman with a new cockade and the lacqueys with insolence and plenty in their countenances. I asked immediately, 'What young heir or lover owned that glittering equipage?' But my companion interrupted, 'Do not you see there's the mourning Æsculapius?' 'The mourning?' said I. 'Yes,' said Pacolet, 'he is in deep mourning, and is the languishing, hopeless lover of the divine Hebe, the emblem of youth and beauty.'" What follows is still better worth quoting, since it records the view of Radcliffe's professional career taken by such a man as Steele, familiar with the talk of the town. Pacolet continues:—

"You are not so ignorant as to be a stranger to the character of Æsculapius as the patron and most successful of all who profess the Art of Medicine. But as most of his operations are owing to a natural sagacity or impulse, he has very little troubled himself with the Doctrine of Drugs, but has always given Nature more room to help herself than any of her learned assistants, and consequently has done greater wonders than is in the power of Art to perform, for which reason he is half deified by the people and has even been courted by all the world."

Then comes an account of Radcliffe's medical attendance on and cure of the cruel fair one, who repelled Æsculapius's advances.

(To be continued.)

POWDERED DRUGS IN THE U.S. PHARMACOPŒIA, 1900.*

BY PROFESSOR H. H. RUSBY, M.D.

The application of the microscope to the examination of drugs may now be regarded as an established usage. It is true that a great majority of the practising pharmacists of the present time have not been properly trained for making such examinations, but this is equally true of all the higher processes of recent development, and will at all times be so. In every epoch it must be the expectation of pharmacists either to work up to the newer methods of work, or to employ assistants of more recent training to supplement their own more or less superannuated abilities; otherwise our profession could not be classed as a progressive one. These assistants, becoming proprietors in turn, will find themselves compelled to call in a still later class of graduates to perform for them a similar class of services.

All first-class pharmaceutical schools now train their students in microscopical work, and the manifest utilisation of this training is in the examination of drug-powders. The demand naturally existing in the work of the pharmacy for such examinations would in itself be powerful enough to bring them into employment, but if this were not so, they would still find so important use in special test-cases, that suitable provisions for them in the Pharmacopœia would be called for. From every point of view, therefore, the revision committee has been compelled to give its attention to this subject.

The form which this treatment should take, and the extent to which it should be carried, have been subjects for anxious thought to the committee. The following alternatives were considered: (1) Whether to extend microscopical treatment to all the official drugs, or to restrict it for the present to those concerning which special requirements were known to exist, and to extend the list hereafter as new requirements arose. (2) Whether, in the treatment of a particular drug, to present a full description of its anatomy or to restrict the description to the differentials which would suffice to meet the special uses for which the description was devised.

In discussing these alternatives, the decision of the first was found to depend upon that of the second. In discussing this, it was considered that no description, however carefully devised to secure completeness, would be likely to do so. Obscure characters would be certain to be missed, and these might prove to be the very ones most needed when the occasion arose. Furthermore, the attempt to escape this possibility could only result in extending the descriptions to a formidable length. Such extension would tend to prove repulsive to those for whom the work was intended, as well as to conceal the essential points from busy practitioners. Utility and economy thus appeared to unite in indicating the abbreviated form of description. Since this decision was reached by our own Committee the British Pharmacopœia has made its appearance, with more or less complete histological descriptions,

and this has been met by expressions of doubt in high circles as to the utility of the method.

It will be seen that this decision at once determined the limitation of the subjects to those in regard to which such necessities were known to exist. These necessities represented the following classes of cases:—

- (a) The detection of drugs used as adulterants or substitutes.
- (b) The selection of the variety, when more than one variety was in the market, as in the case of *Pilocarpus*, the *P. selloanus* having been determined since the Pharmacopœia was published to be practically worthless.
- (c) The differentiation of closely related and every similar drugs.
- (d) The detection of damaged goods.
- (e) The determination of the proper season of collection.

Acting along these lines, a list was made up, of which the more important articles are here given in the hope that its publication may lead to its extension.

Work upon these problems has already proceeded to a considerable extent. Many of them have been satisfactorily solved, while failure, apparently final, has resulted in one or two cases.

In performing this work, existing literature has been searched for the requisite characteristics. When such were found, the task was assigned to certain members of the committee of ascertaining their sufficiency, or of making selection when several tests were found recorded. When such records were not encountered the study was taken up as an original problem by some person to whom the work was assigned. All reports obtained in these ways were then submitted to test by the other members of the committee, and their final report, resulting from such tests, published for outside criticism.

Portions of the materials used by the committee, verified and preserved pure by the most scrupulous care, were supplied to any competent parties desiring to investigate the subjects. Some of this material has gone to foreign investigators.

As the amount of time and labour required for the study of these original problems was very great, the funds of the revision committee, to the extent of several hundred dollars, have been expended in making compensation.

The list of problems is here appended—

Aconitum.—To distinguish the Japanese.

Althæa.—To detect the addition of starches and starch-bearing articles.

Anisum.—To distinguish fennel.

Anthemis.—To distinguish various compositæ, as cotula and matricaria.

Apocynum.—To distinguish the other species.

Arnica Flores.—To distinguish the Mexican, so-called, and the well-known European adulterants.

Asclepias.—To distinguish the so-called *A. decumbens*.

Aspidium.—A complete description must be published to distinguish it from the large number of ferns which have been said, with probable truth, to be used to adulterate it.

Aspidosperma.—To distinguish the "red quebracho."

Belladonnæ Folia, Hyoscyamus and Stramonium.—To distinguish these three from one another and to distinguish the second from digitalis and from comfrey leaves, mullein leaves and inula leaves.

Belladonnæ Radix.—To distinguish from *Phytolacca* and from *Medicago*.

Buchu.—To detect the long buchu.

Calumba.—To detect bryony and gentian.

Cannabis Indica.—To distinguish the male from the female, and also the plant grown outside of the East Indies.

Capsicum.—A complete description required to detect the numerous and various adulterants.

Caryophyllus.—To distinguish the stalks and the fruit, as well as the exhausted cloves.

Cascarilla.—To detect the bark of other species of croton.

Castanea.—To distinguish the European chestnut and to detect the chestnut-oak, and to detect leaves collected at the wrong season.

Chirata.—To detect the false chirata.

Cimicifuga.—To distinguish the other species and to detect the *Actæas*.

Cinnamon.—To distinguish the different cinnamons from one another and to detect clove-bark.

Coca.—To distinguish the two varieties.

Colocynthis.—To detect the seeds.

* Read before the New York State Pharmaceutical Association, and reprinted from the *Druggists' Circular*.

- Conium.**—To detect the herbage.
- Convallaria.**—To distinguish the European and American, which are probably distinct species.
- Cubeba.**—A complete description is required, as the adulterants are so numerous and varied.
- Cusso.**—To distinguish the male.
- Cypripedium.**—To distinguish *Hydrastis*, *Caryophyllum*, and valerian.
- Digitalis.**—To detect the leaves of *Inula*, *Verbascum*, *Symphytum*, *Solanum nigrum*, and *Solanum tuberosum*.
- Dulcamara.**—To detect hop-stems.
- Eucalyptus.**—To detect the junior leaves. (Solved.)
- Euonymus.**—To distinguish the stem-bark, and to detect quillaja. (Solved.)
- Frangula.**—To distinguish the other rhamnus barks. (Solved.)
- Gelsemium.**—To detect the stem. (Solved.)
- Gentiana.**—To detect other species.
- Geranium.**—To detect tormentilla and bistorta.
- Glycyrrhiza.**—To distinguish between the Spanish and the Russian.
- Gossypii Radicis Cortex.**—To detect *Behmeria* and *Fagus* barks; also the bark of the stem and bark improperly collected.
- Granatum.**—To distinguish the barks of the root and stem and rind of the fruit.
- Guaiaci Lignum.**—To detect the sap-wood and to distinguish the two species. The entire subject of its adulteration, which seems to be very general, requires investigation.
- Hæmatoxylon.**—To detect wood which has been subjected to fermentation processes for dyeing purposes.
- Hamamelis.**—To detect leaves collected at the wrong season.
- Hedeoma.**—To distinguish *Mentha pulegium*.
- Humulus.**—To detect the removal of the lupulinum.
- Hydrastis.**—To distinguish *Caulophyllum*.
- Ipecacuanha.**—To detect the Carthagen variety.
- Juglans.**—To detect the stem-bark, bark collected at the wrong season and black walnut bark. (Solved.)
- Krameria.**—To distinguish the two official species and *Ceanothus*.
- Linum.**—To distinguish that deprived of oil.
- Macis.**—To distinguish nutmeg and wild or Bombay mace. (Solved.)
- Marrubium.**—To distinguish the *M. supinum*.
- Matico.**—To distinguish the other species, which are largely used to adulterate.
- Matricaria.**—(Same as *Anthemis*).
- Melissa.**—To distinguish patchouli leaves.
- Menispermum.**—To detect pareira and berberis roots.
- Mentha Piperita.**—To detect spearmint.
- Pareira.**—To detect the cissampelos and various other false varieties.
- Pilocarpus.**—To differentiate the several species.
- Prunus Virginiana.**—To distinguish the choke-cherry bark and bark collected at the wrong season. (Solved.)
- Quassia.**—To distinguish the two species. (Solved.)
- Rhamnus Purshiana.**—To distinguish the other species of *Rhamnus*. (Solved.)
- Rheum.**—A complete description of a good sample should be given, as the case of adulteration, though common, is not so frequent as the offering of an article of defective quality.
- Rhus Glabra.**—The substitution of fruits of other species.
- Rhus Toxicodendron.**—To distinguish ampelopsis.
- Rumex.**—To distinguish canaigre.
- Salvia.**—To detect the stems.
- Sambucus.**—To distinguish the European. This problem is solved as to substitution, but an admixture cannot be detected.
- Sanguinaria.**—To distinguish *Chelidonium*, and to detect *Sanguinaria* collected at the wrong season.
- Sassafras.**—To distinguish the stem-bark. (Solved.)

- Scutellaria.**—To distinguish the official from other marketed species.
- Senega.**—To distinguish the roots of *P. Alba*, *Cynanchum*, gentian and *Gillenia*.
- Senna.**—To distinguish the two varieties.
- Sinapis.**—A complete description is here also required.
- Spigelia.**—Phlox-root should be distinguished. In this connection we should discuss the advisability of endorsing the use of other tropical species, as the *S. marilandica* is growing so scarce.
- Stramonii Folia.**—If the *S. tatula* is not also to be accepted, the two should be distinguished.
- Stramonii Semen.**—The admixture of hyoscyamus seed should be detected.
- Strophanthus.**—To distinguish the *S. kombé* from the other species found in market.
- Triticum.**—To distinguish the stems of *Cynodon* and of species of *Carex*.
- Ulmus.**—To detect the European barks.
- Uva Ursi.**—To detect the leaves of the *A. alpina* and of species of *vaccinium*.
- Veratrum viride.**—To distinguish the *V. album*. (This attempt utterly failed.)
- Viburnum.**—To distinguish the two official barks, the stem-bark from the root-bark, and from the barks of various unofficial specimens.

AN AUTOMATIC WATER-MERCURY AIR-PUMP.

Babo's model of an automatic air-pump devised some years ago has been favourably mentioned by Kraft and Weilandt as giving excellent results with a small amount of mercury when used by them in their work on the temperature of sublimation of various organic substances in a vacuum of the cathode light. The pump consists essentially of a modified form of Sprengel's well-known apparatus connected with a water-pump, and is no larger in dimensions than an ordinary mercury barometer. The pump appeared as shown when made for the authors by C. Desaga, of Heidelberg. The apparatus is easily worked by those accustomed to automatic mercury pumps. It is first connected by a tube to the water pump at (c), and evacuated to 10 to 20 millimetres' pressure; the lower cock (e) is then cautiously opened to allow the passage of so much air, which has been dried and filtered through cotton wool, that in the left hand narrow tube globules of mercury rise at regular intervals. The pumped-up mercury passes by the two wider tubes, which form a U tube. It is of great importance in the continual working of the apparatus to have the second tap (g), by means of which the falling mercury is very readily regulated. The raised mercury passes through the four left-hand tubes which form the Sprengel pump, and is connected with the apparatus to be evacuated. The sucked-out air passes through the sixth tube (d) to the water pump. The fifth tube contains enough mercury in the wider part of it to seal the tube (f), so that entrance of air to the vacuum is rendered impossible. Should too much mercury be raised in the narrow left-hand tube it flows over into the next tube, and thus the mercury in the various parts of the pump remains always at the same level. The pump is one of the best for many purposes, and is well adapted for quickly drying hygroscopic substances in desiccators. The price of the apparatus is 45 marks.



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PHARMACY IN MODERN GERMANY.

THE belief that the position of the apotheker in Germany is as a rule better than that of the average chemist and druggist in this country has long since ceased to have the foundation that it once possessed. A comparative consideration of the conditions now affecting persons engaged in the practice of pharmacy leads to the conclusion that in both countries the changes brought about by increased facility of communication and other economic influences, have operated in like manner and have given rise to similar difficulties. In regard to the point in which difference has been most marked—the limitation of the number of pharmacies under the system of governmental concession—the tendency at the present time is to replace that system by one giving absolute freedom of action to all persons having the requisite qualification for carrying on business on their own account. The chief, if not the only obstacle, is to settle the mode in which existing concessions, constituting saleable property, are to be abolished with due compensation. In other respects there are to be found among German pharmacists the same forms of complaint that are met with here—the detrimental influences of trade competition and of the increased sale of proprietary medicines, an assumed disparity between the interests of pharmacists in town and country, as well as several other minor grievances, form the subject matter of arguments for reform as frequently in the pages of German pharmaceutical journals as in our own.

The analogy between the two countries in this respect is very distinctly shown by the proceedings at the general meeting of the German Apotheker Verein, which has just been held at Cologne. Among the subjects mentioned in the annual report of the Council as being of prominent importance, the regulation of the practice of pharmacy occupies the first place as demanding reform. Closely connected with this is the claim for State representation similar to that enjoyed by the medical profession, and here the comparison between Germany and our own country is in our favour, inasmuch as the Pharmaceutical Society of

Great Britain and that of Ireland occupy to some extent the position of governmental departments charged with the performance of public duties relating to the practice of pharmacy. The only ground for complaint as to want of representation is therefore the too frequent neglect of the opportunity afforded for being represented. Educational reform is also a subject that occupies much attention in Germany, and gives rise to much difference of opinion. The sale of medicinal preparations assumed to be of a harmless nature has recently been developed in Germany by certain firms who supply grocers, hairdressers, publicans, and general dealers with cabinets containing supplies of these articles for retail sale. This practice, together with the sale of secret remedies and the ready-made medicines put up in doses, is strongly opposed by the members of the Apotheker Verein as being a distinct infringement of the pharmacist's business.

In the motions brought forward for discussion at the general meeting in Cologne last week suggestions were made for reducing the annual subscription in the case of certain members of the Verein, and to give up the publication of the *Archiv der Pharmaci*, this latter step being advocated on the ground that the incomes of country pharmacists had been so much reduced by trade competition that they had no inclination to engage in scientific work, and did not find the *Archiv* of any practical value to them. The support given to these suggestions was but slender, and they were strenuously opposed by the majority. Dr. VOGT, speaking as a member of the Council, urged that although the pharmacist is naturally disposed to attach great value to small things, the general conduct of pharmaceutical affairs should not be directed by narrow-minded views. He contended that if good was to be done it would be not by separation into different classes but by unanimous co-operation for maintaining for all equal rights and equal obligations. Admitting the good intent of the suggestions, he protested against the proposal to distinguish between pharmacists by their ability to keep an assistant and, on that ground, to decide whether they could afford to pay the subscription to the Verein. Referring to the democratic constitution of the body, he argued that if a desirable delegate could not afford to attend the meetings it was for those who supported his opinions to provide the means by which he could represent them. In regard to the proposal to give up the *Archiv* several speakers objected that it would be a serious departure from one of the first principles of the Verein, to promote science and, at least, to prove that some of their body carried out research which claimed recognition outside their ranks. It was pointed out that the argument that the country apotheker had no time to read the *Archiv* or to carry out scientific work was inconsistent with the complaint that he had nothing to do. The President, Herr FROELICH, amidst great applause, expressed his conviction that the publication of the *Archiv* was a duty which the German Apotheker Verein owes to pharmacy generally—a duty which it could not on any account abandon without sacrificing its position and credit throughout the world. After some further remarks by the supporters of the motion, the result of the discussion was declared by the President to be decidedly in favour of the view that no useful purpose would be served by establishing two classes of pharmacists, on purely financial grounds, which would necessarily be the consequence of adopting the proposals brought forward.

THE COMING SESSION.

IN a few short weeks all the local pharmaceutical associations which are now dormant will have recommenced operations, and those responsible for the conduct of affairs are doubtless already considering their programmes for the coming winter session. It appears useful, therefore, to indicate how the activities of those local bodies can be usefully directed, for it is above all things desirable that on matters of importance in pharmaceutical politics the opinion of the whole country should as far as possible be expressed at one and the same time. This is one of the main ideas involved in the federation of local pharmaceutical associations, and in proportion as that idea can be realised will the value of federation be manifested. The foremost point for consideration at meetings to be held in the immediate future should, beyond question, be how to increase the strength and importance of the Pharmaceutical Society, now that the passing of the Pharmacy Acts Amendment Act has removed all obstacles in the way of chemists and druggists who desire to become members of the Society. For it will not suffice to assume that all those who have been deterred heretofore from joining the Society will at once rush into the ranks. Explanation and persuasion will often be required, and we can conceive of no better way of beginning the winter campaign than by holding a series of meetings all over the country, inviting the whole trade thereto, and then taking advantage of the opportunity to explain the new position and urge outsiders to come in. At present the Society includes half the chemists in business; let each one do his best to bring in a new member, and before another year has passed the Society will in reality be fully representative of the craft.

The most important result of such an influx of new members will naturally be the supply of greater means of defence, and local associations would do well, in the second place, to consider how those means of defence can best be organised. As a matter of fact, our existing organisation is far from perfect, so that improvement is possible and essentially desirable, whether there be a considerable influx of new members or not. A complete scheme implies a knowledge of all the registered chemists in each district, with facilities for calling them together at a moment's notice. It should also be known how many belong to the Pharmaceutical Society and why the rest do not. What is wanted, indeed, is a census of the trade, which should furnish all the information required on any and every point. A third matter requiring general consideration is the education and training of apprentices. The educational schemes followed in different parts of the country need to be rendered as far as possible uniform, so that similar results should be obtained wherever pharmaceutical students are employed. There should at least be agreement with regard to what pupils should study during the respective years of their engagement, so that a common basis of knowledge might be possessed by all pharmaceutical students at the expiration of their term of pupilage. Beyond this question, many other problems present themselves for attack. Several were suggested at the Belfast meeting of delegates of local associations (see *ante*, p. 225), and others will naturally arise from those in due course. But whatever they may be, the great thing is to have them discussed everywhere at or about the same time, for in that way alone can the maximum of good be effected.

ANNOTATIONS.

UNLIMITED LIMITED LIABILITY is the subject of an article in *Bluckwood's Magazine*, the writer of which points out that to such an extent has the rage for the company form of business pervaded all ranks of society, that there is scarcely a linendraper or oilman with a ten-year-old business but harbours the ambition of converting it into a limited liability concern; selling it to the public for a large capital sum, representing far more than the individual labour and intelligence of a lifetime could enable him to accumulate. On the least occasion of plausibility the breasts of respectable private citizens are fired with the possibilities of a company, and as a result lucky numbers, gambling systems, betting combinations, even plain swindling, have all suffered in reputation from the formidable allurements of limited liability. "Is it perhaps some private person who in ingenious despair tries the effect of some hitherto unsuspected substance on his rapidly falling hair, and by self-hypnotism persuades himself that the lamentable decay is arrested? Straightway you receive by post the prospectus of 'Brown's Κηπιτον Limited,' capital so much in one-pound shares, Board of Directors So-and-so, brokers, bankers, and all complete. Long before the first new hairs on the vendor's head have time to grow, the public are invited to participate in the boon offered, not in the form of a bottle of the composition to amend their beauty, but as proprietors at the rate of one pound per share. Does the public hesitate, and determine to buy a bottle and try the effect of the stuff before subscribing to its proprietorship? Never a bit of it. The public is a strange collection of whims, but it is a great buyer of shares. Many of its members are bald, but more hasten to be shorn. Moreover, there is a promoter at them who knows more of their ways than a collie dog does about sheep."

THE NEW JURY LISTS will be exhibited on the doors of the various chapels and churches throughout the country on Sunday next and the two following Sundays, and will include the names of all persons liable to serve as jurymen in England and Wales, probably with the addition of the names of some persons who are not so liable. Those lists can be inspected by anyone, and it should be noted that unless objection is made to the overseers during the above-mentioned time by persons who are exempted from serving, their names will be returned to the Clerks of the Peace, and they will be bound to serve as special and common jurymen for the coming year. Among those who are exempt are persons over sixty years of age and pharmaceutical chemists. *Verb. sap.*

THE PETROLEUM FLASH-POINT CONTROVERSY still continues in the *Times*, and the idea suggests itself that the warmth displayed in the verbal duel between Sir Frederick Abel and Dr. John Attfield may in some measure account for the long-continued high temperatures recently experienced in the metropolis. The gist of the whole matter is that Dr. Attfield has directed attention to the fact that the Abel-Letheby-Attfield report of June 4, 1868, recommended 100° as the flash-point for ordinary petroleum, but that Sir Frederick Abel subsequently gave way on the point and acquiesced in the fixing of the flash-point at 73°. Dr. Attfield's view of Sir Frederick's drop from 100° to 73° is that it was "an error of judgment," and in response to his opponent's somewhat weak disclaimer he speaks of Sir Frederick as "an adept in raising side issues to main positions, in trailing red herrings across good scents, and in escaping from his antagonists in a cuttlefish cloud of ink." Inasmuch as the facts of the case

appear to be in Dr. Attfield's favour, the attempt that has been made to dispute his position in the matter would certainly appear to justify him in the use of even stronger language than that quoted above. But, really, the temperature is much too high at present for this kind of thing to be maintained with safety.

POISONING CASES have been rife during the recent hot spell, suicides constituting the great majority, as may well be imagined. But two instances of death by misadventure single themselves out for special reference, by reason of the carelessness displayed. In one, a child appears to have gone to the kitchen tap to draw some water and, finding a bottle containing carbolic acid standing on the copper adjoining the sink, she swallowed a portion of the contents, with a fatal result. In explanation it was stated that the bottle was "usually" kept on a shelf out of the way of the children, but no one could say why that rule had been broken. The next case was even worse, for the landlord of a public-house had left a jar containing strong hydrochloric acid standing outside his premises, and a young child playing about in the vicinity very naturally drank some of the corrosive fluid, death occurring in a few hours.

SALICYLIC CORN SOLVENT is hardly likely to become a strong favourite amongst would-be suicides, but a case has recently been recorded where an attempt was made to terminate existence with such a fluid. The woman who took it is reported to have made three previous attempts on her life, and though her lips were blistered in the present case, no worse result appears to have followed. Successful suicides are reported to have taken hydrochloric acid, potassium cyanide, carbolic acid, laudanum, weed-killer, and hydrocyanic acid respectively. In the last-mentioned case, no evidence seems to have been given at the inquest with regard to the source of the poison, though that would appear to be a very essential point in a case of suicide by hydrocyanic acid.

ANOTHER GREGORY'S POWDER CASE is reported in the *Morning Advertiser*, according to which the Prosser Roberts Drug Company, of Walworth Road, London, was summoned at Lambeth Police Court by the Newington Vestry for selling to the prejudice of the purchaser Gregory's powder, which was not of the nature, substance, and quality of the article demanded by the purchaser. The sample of Gregory's powder purchased at the defendant's shop was certified by the public analyst to consist of rhubarb and ginger, 33 parts, and official magnesium carbonate, 67 parts. The British Pharmacopœia, of course, requires Gregory's powder to be made entirely with light or heavy magnesia. For the defence it was said that the assistant who mixed the powder was to blame, but Mr. Hopkins promptly ordered the defendants to pay a fine of 40s. and costs. It would almost appear as if the permission given in the Pharmacopœia to use heavy magnesia in place of light magnesia, when a less bulky powder is desired, has been widely misinterpreted of late, but the use of magnesium carbonate in this connection has never been officially recognised.

THE SAYINGS OF JOSEPHUS, referred to in last week's issue, have evoked a reply from a "Physician and Surgeon," who is seemingly a person of quite a superior sort. He asks the Editor of the *Daily Mail* to be permitted to say to "Josephus" that he, "now a qualified medical practitioner of no small experience (*sic*), was obliged to pass a more difficult examination in chemistry (practical and theoretical), materia medica, medical therapeutics, and physiology in relation to the action of drugs on the human

frame" than is, he learns, ever required from dispensing chemists. In addition, he was obliged to attend a practical (?) course of dispensing and to pass an examination in that subject also. He is careful, however, to abstain from explaining what the "practical course of dispensing" was like, and with regard to the examination in that subject he is equally reticent. That is perhaps as well under the circumstances. Regarding the last paragraph of the Josephus letter, wherein the question of death certificates is delicately referred to, "Physician and Surgeon" asks the honourable portion of the public to join with him in treating the "insult with the contempt it deserves."

AFTER-DINNER ORATORY is the subject of some gentle chaff by the editor of the *Practitioner*, in a note on the annual dinner of the British Medical Association, at Edinburgh. Why on earth, he asks, do gentlemen, conspicuously benevolent or, at any rate, inoffensive in private life, consider themselves bound to inflict on their fellow-creatures at public dinners tedious harangues containing "an infinite deal of nothing," and made still more dismal by faulty elocution? "It is not as if the exercise were pleasing to themselves; on the contrary, it is in most cases painfully evident that it causes them more or less acute suffering. But as the fakir swings himself up by hooks under his shoulder-blades, or stretches himself on a bed of sharp spikes, the ordinary Briton gets on his legs after dinner, and goes through the performance which the custom of his country demands of him." Continuing, the writer asks why the speaking after public dinners should not be done by hired orators, just as the singing is done by artistes engaged for the purpose? He feels sure this simple reform would prevent a vast amount of needless suffering which the present system inflicts on speakers, hearers, and reporters.

PUBLIC RESPECT FOR THE MEDICAL ART is increasing year by year according to Sir Thomas Grainger Stewart, in his presidential address to the British Medical Association, but the *Saturday Review* of the same week had occasion to observe that "belief in doctors seems to be diminishing." Referring to this curious coincidence, Mr. Malcolm Morris points out that, in another part of his address, Sir Thomas appears to agree with this opinion of the *Saturday Reviewer*. For, speaking of the anti-vaccination agitators, he says "to these a very considerable section of the English public has given heed rather than to the medical profession." It should be noted, by the way, that exemption from vaccination can now be secured in London at a charge of one shilling per child, that being the amount the Metropolitan magistrates have decided to charge for each certificate showing they are satisfied the applicant has a conscientious objection. The *Daily News* unkindly suggests that the charge should be one shilling plain, eighteenpence coloured.

"PHARMACISTS OR ANALYSTS?" is the heading of an article in the *Chemical Trades Journal*, in which it is remarked that the fact of the analytical profession having been more securely established—as a profession—during the last decade, by raising the standards of qualification, seems "to act on the brethren of the pestle and the pill machine like a red rag on a bull." This interesting statement is the result of a perusal by the editor of the Manchester organ of what he refers to as "some interesting and half-amusing correspondence in the pages of a pharmaceutical contemporary, in which great lamentation is made over the fact that passing the 'Major' examination only carries with it 'the empty title of pharmaceutical chemist,' instead of the 'more substantial

qualification of analytical chemist.” “The general tone of the correspondence,” observes the writer in the *Chemical Trades Journal*, “conveys the impression that since the passing of the Pharmacy Acts Amendment Act, the expenditure of time and trouble which is necessary in order to earn the title of ‘pharmaceutical chemist’ is not worth the candle,” and to him this seems peculiar, “because chemists are jealous enough of their ‘rights,’ and woe be to the unqualified person who endeavours to trade as a chemist. If the title be so empty, why guard so closely the vacuous realms of pharmacy?” These remarks should be carefully considered by those to whom they are intended as a reply, and they should pause to consider whether it is altogether wise to disparage the value of their own qualification.

THE TITLE “ANALYTICAL CHEMIST,” it is pointed out, means anything or nothing, for there is nothing to prevent anyone setting up as an analytical chemist. Any pharmacist doing so will, of course, have to depend for success upon having educated himself to be a skilful and trustworthy analyst; and his reputation will depend upon his merits, unaided by any factitious diploma purveyed for his special benefit by the Pharmaceutical Society. If he wants to pose as a fully qualified analyst, he must attain the standard expected by the public by registering himself as a Fellow of the Institute of Chemistry. We quite agree that to add on to the Major “such things as analyses of milk, water, urine, coal, coke, etc.,” will not make an analyst of the aspirant to pharmaceutical honours. “If he will study the syllabus of the Institute of Chemistry examinations, he will perhaps grasp this. At the same time, the fact that he feels the qualifications are beyond him affords no justification for making the Major a back-door entrance to the title of analytical chemist. Surely it is enough that he is not debarred from undertaking analytical work without official qualification. If so be that the newly-fledged ‘Major’ is not contented with pharmacy, he can practise as an analyst, when, if he has any merit, he will reap his reward, and if he has not, he will have learnt a lesson that will do him more good than money. There is no need for the Pharmaceutical Society to create a diploma behind which he may hide his incapacity.” This is quite to the point, and the remarks quoted should be taken to heart by pharmaceutical aspirants for analytical honours.

THE OUTBURST BY THE “MEDICAL PRESS,” to which we had occasion to refer last week, was attributed by us to the probable absence on a holiday of those responsible for the proper conduct of the paper. In this week’s issue of the *Medical Press* such is acknowledged to have been the case, for in an apologetic note, the Editor states that certain “strong and . . . indefensible language . . . would not have been published by us but that in consequence of the absence of some of our editorial staff on holiday, it was overlooked.” Inasmuch, however, as this apology is not directly addressed to chemists and dentists, who, it will be remembered, were referred to as “holders of sham diplomas,” our readers should continue to bear the matter in mind.

THE STUDENTS’ NUMBER of the *Pharmaceutical Journal* will be published next week, and secretaries and principals of educational institutions, who have not yet sent in particulars of courses of study suitable for pharmaceutical students, are requested to do so at once. Several articles written especially for Minor and Major students will be published in that issue, and it is believed that it will prove to be at least as useful for the intended purpose as any former number mainly addressed to students.

THE TSAR’S RESCRIPT does not appear to have any direct interest to pharmacists as such, but the *Daily Chronicle*, in a reminiscence of English Quakerism, shows that the ideas on which the rescript is based may, in part at least, have been suggested many years ago by an English pharmacist—William Allen, first president of the Pharmaceutical Society. Whilst, in the words of the Imperial rescript, “the humanitarian ideas” of the Tsar Nicholas II. “have been won over” to the Gospel of Peace, it is not made known by whom that amazing conversion has been effected. But the Tsars of all the Russias, though the most august and isolated of mortals, have always, by a strange paradox, been easily accessible to visitors with a “mission,” and the official head of rigid Greek Orthodoxy has, on more than one occasion, been under the influence of religious revivalists. This was notably so in the case of the Tsar Alexander I., who visited England in 1814, and on that occasion was approached in the cause of peace by a little group of members of the Society of Friends.

THE CHIEF OF THESE, as the *Daily Chronicle* points out, was William Allen, “a man whose name is honourably connected with the anti-slavery and every good cause, and whose financial assistance was often invoked by the father of Queen Victoria.” Not only Alexander I. of Russia, but the King of Prussia also, was in London in 1814, and Friend Allen decided to proclaim Quaker principles to both of them. “The interview with the King of Prussia could not be called encouraging, for after arriving by appointment at St. James’s Palace the good Friends were told that the King had been up all night and was much hurried, and that their only chance of seeing him was as he passed along the corridor on his way to his carriage. Undismayed they waited. One of the Friends began a little address to the King, but he, ‘without waiting for the conclusion of the sentence, said war was necessary to procure peace.’”

THE RUSSIAN MONARCH, however, received the peace overtures more favourably. “He was quite alone when he received Friend Allen and two others at the Pulteney Hotel, talking partly in English, partly in French. The Emperor said that ‘the Lord had made him acquainted with spiritual religion,’ and he inquired into the tenets of Quakers, adding that if any of them should visit St. Petersburg they were to come direct to him without any further introduction. This is what, four years later, Friend Allen did, and he had other later interviews at Vienna in 1822, when the Tsar was on his way to the Congress of Verona. The talk between them was intimately religious, with interludes of prayer, as Allen in his diary records.” A year later, however, Allen, writing to the Tsar in a tone of some disappointment, says: “It seems due to the affection I have so long cherished for thee to produce a candid statement of reports currently circulated and universally believed. It is said that the Emperor of Russia, who has patronised the societies, in England and America, for the promotion of universal peace, has now become the secret and open abettor of war.” He acknowledges that he does not believe the evil speakers, but tells them, on the contrary, that it is his “firm belief that the first wish of the Emperor’s heart is to be made instrumental in preserving the peace of Europe.” In 1825 the Emperor died, three-quarters of a century before the world was ready for the peace programme which his successor has now promulgated, but not, it would seem, before Friend Allen’s ideas had become firmly implanted in his mind, to be transmitted later to his successor, Nicholas II.

PHOTOGRAPHIC NOTES.

RED STAINS ON PRINTS.—Having a batch of prints which were of a reddish hue when dry, W. T. was at a loss to find out where the discoloration came from until he had been developing with pyro one day, and had some toning to do afterwards, which let him into the trouble. He thoroughly believes in the maxim, "Cleanliness is next to godliness," and has everything clean and well washed both before and after using. His solutions were new and clean, but he had a pyro stain on his fingers which would not give way to soap and water, and that caused all the mischief, for, after finishing toning, he found the sulphocyanide had removed the pyro from his fingers and deposited it on the prints, turning them pink.—*Amateur Photographer.*

SUBSTITUTES.—It is a very good thing to know that, should a certain chemical, or portion of our photographic kit, suddenly go astray; we have only to go into another room, or some other part of the house, to find something which will take its place. That, of course, we cannot always do, but there are, nevertheless, several things used below stairs which, in case of accident, come in wonderfully handy. For instance, Brunswick black, usually kept in the housemaid's cupboard, and periodically used on the grates, is a fine thing for blocking out skies or any other portion of a negative. Apply the black as thin as possible, and, if in good condition, it will dry in a few minutes.—T. P., in *Amateur Photographer.*

TO CLEAN OLD NEGATIVE GLASS FOR ENAMELLING.—The usual method is to soak in strong soda solution, when the film will sometimes come off in one piece, but with soft gelatin (or when the negative has not been alumed) it comes away in fragments, or forms a soft, sticky mass, very difficult to remove. After soaking the negative in the soda solution, stand it up to dry without washing, then at any time afterwards, by simply placing it in warm water, the film will float off in one piece.—C. A. M., in *Amateur Photographer.*

A FEW DARK ROOM HINTS.—Many amateurs do not pay sufficient attention to their dark rooms. One frequently requires to change plates in the daytime. If one can obtain a small room for this purpose, a good method of converting it into a dark room is to have a frame made so that, with indiarubber packing round the edge, it will tightly fit the window. The frame, can of course, be made to any depth, and prepared ruby cloth (sold at all photographic dealers) tacked across it, shutting out all light. Such a frame could be taken down when desired. A bench or table is a requisite article of furniture, and a few shelves. A periodical clearance of old bottles is desirable. Some amateurs seem to highly value their old empty bottles. But you need not throw them away, for your photographic dealer would doubtless be pleased to send his boy round and collect them. Your bench or table should be fitted with one or two drawers, in such a position where liquids would not be likely to come in contact with anything placed in the drawers, which would serve as a receptacle for plates, paper, etc. Be tidy, and always keep a few cloths in a handy place in case of any upset of liquids.—J. A. R., in *Amateur Photographer.*

DEVELOPING LARGE PLATES.—Fasten a hook-screw into the roof of dark room, then drive a nail into each of the four corners of a square board of a size to suit plate to be developed; attach board to hook by string, and adjust to a suitable height. Place dish with plates upon this arrangement, pour on developer, and commence gently swinging it to and from you, from side to side, and from corner to corner, or any way that might suggest itself, and you will greatly lessen the aching of arms after developing a 12 by 10 or 15 by 12 plate. Of course, this method can be used with advantage for smaller size plates.—H. J. F., in *Amateur Photographer.*

MOUNTING GLOSSY P.O.P.—Cut out a piece of cardboard measuring $\frac{1}{4}$ in. less all round than print to be mounted. Place this on the back of the print (which is, of course, face downwards), and then apply paste to the $\frac{1}{4}$ -in. margins of print thus obtained. Then take print, and squeegee firmly to mount. Even if gloss is removed to some extent by the application of paste, it will only be noticeable along the margin applied, and this margin will add to rather than detract from the effectiveness of the print thus mounted.—H. P. E., in *Amateur Photographer.*

THE CERTIFICATION OF OPTICIANS.

The optical trade of this country is entering upon a new era, and we appear to be within measurable distance of the time when no optician of repute will sell spectacles until he has first proved by examination his knowledge of optics. This is as it should be, for so-called opticians have so far, to a very great extent, been in utter darkness as regards the subjects they treat and the articles they deal in. No one, who gives the matter a moment's thought, can doubt that, up to now, the optical trade has been conducted almost entirely in a manner opposed to the interests of the spectacle wearing public, and entirely contrary to the interests of the trade itself. The initiative of the new movement has at length been taken by the Worshipful Company of Spectacle Makers who, by their recent action of instituting examinations in optics, show themselves determined to be, not only in name but in fact, the head of the optical industry of this country.

It would be difficult to conceive any movement of much greater or more far-reaching importance to the public than the supervision of the manner in which its optical needs are catered for, and it is the aim of the Spectacle Makers' Company to provide a class of men competent to supply visual aids to the mutual benefit of both the public and the trade. Hundreds of chemists and druggists throughout the country handle optical goods, and they are taking a laudable interest in the new movement. All, but especially those who have conducted this branch of their business on intelligent and scientific lines, have invariably found it extremely profitable.

In a matter which treats of the eyesight of the community, there can be no doubt of the necessity of certification before a person is to be allowed to practise, so that the public may be guaranteed against incompetence or quackery, and not the least important is the knowledge needed to enable the optician to discriminate between cases for which he can supply glasses and those that require treatment by an oculist.

The scope for the development of the trade may be considered practically illimitable, when it is judged by the fact that not more than 4 per cent. of the population have truly emmetropic or normal eyes, and that, of the remaining 96 per cent. who are ametropic, more than a half could be using glasses with advantage to their health and working capacities. Moreover, after forty years of age every one must become presbyopic, and therefore, a wearer of glasses. Those who conduct the optical business on the high plane commensurate with its importance must reap a reward hardly realisable by those who to-day deal in spectacles and eye-glasses as if they were articles of ordinary merchandise.

The knowledge of their visual needs, and the means of properly supplying them should be within easy reach of the public, and this can only be achieved by there being in every city, town, and village in the kingdom a sufficiency of intelligent and competent opticians.

It is quite clear that the S.M.C. scheme will eventually have the effect of closing the trade to all except those who possess the diploma, the possession of which, in the eyes of the public, means optical competence, and we sincerely trust that the chemists and druggists of Great Britain are alive to the possibilities that can accrue from its possession.

The effort required to secure the diploma should be well within the capacity of chemists and druggists, but in this connection attention must be directed to the fact that after July, 1899, the ull syllabus, as hereafter described, will be compulsory to all candidates, whilst previous to that date examinations for those who have been in the trade as principals or assistants for seven years will be held on the modified syllabus hereafter given.

The official prospectus issued to the trade states that it is the object of the Spectacle Makers' Company to advance the status and knowledge of the optician and to re-associate with the Guild all who possess the necessary technical ability. As it would be exceedingly difficult, and even invidious, to define how far the scheme of the Company should go in including those who deal in other things as well as spectacles, it has been arranged that all those—whether principals or assistants—who can conform to the regulations will be admitted to the Guild and be granted a diploma of membership. The Guild, therefore, offers its diploma to every one who can prove, by examination, his possession of the necessary technical knowledge. The syllabus is certainly excellent; while sufficiently comprehensive it is not too difficult, and will, we think, meet with general approval.

The regulations of the S.M.C. as regards the granting of the diplomas stipulate that a theoretical and practical examination must be passed by candidates approved by the Optical Committee of the Company on the recommendation of two well-known members of the craft. It has been the general practice at the inauguration of similar schemes to make some easement in favour of masters and assistants of old experience. The Committee, however, considers that even such persons should be examined and approved in the subjects specially relating to spectacles, and which are given at length in the following syllabus. Seven years must have been spent in the optical business to qualify for the modified examination. After July 1, 1899, these exceptions will cease and the full syllabus must form the basis of the examination.

Modified Syllabus.

The modified syllabus is as follows:—

OPTICS RELATING TO VISION.—General anatomy of the human eye. The course of light passing through the media of the eye alone and modified by lenses, cylinders, and prisms. Hypermetropia; myopia; astigmatism; presbyopia. Instruments commonly used for determining the refraction of the eye:—Trial lenses, test types, astigmatic chart, the optometer. The principle of the ophthalmoscope. The theory of retinoscopy. The principle of and various forms of spectacles.

PRACTICAL WORK IN VISUAL OPTICS.—Testing a plane surface; measurement of focal length of spherical, cylindrical, and compound lenses; use of the spherometer; determination of the axis of a cylinder and the angle of deviation of a prism; analysing and neutralising simple and compound lenses and lenses combined with cylinders or prisms; transposing; centering and adjustment of spectacle lenses and frames; taking of face measurement for spectacles. Knowledge of the materials and of the workmanship employed in the manufacture of lenses and frames; use of pebble tester. Reading of oculists' prescriptions; writing of orders for lenses and frames. The 'Optician's Handbook.'

Full Syllabus.

The full syllabus includes the above and, in addition, the following:—

ARITHMETIC AND ALGEBRA.—Addition; subtraction; multiplication; division. Highest common factor; least common multiple; elementary fractions; simple equations; simultaneous equations. Elementary use of logarithms and reciprocals. Hall and Knight's "Elementary Algebra."

TRIGONOMETRY.—The measurement of angles; trigonometrical ratios of certain angles; simple problems connected with the above. Use of tables of natural sines, cosines, and tangents. Hamblin Smith's 'Elementary Trigonometry.'

HEAT.—A simple knowledge of the construction and uses of instruments for measuring temperature, atmospheric pressure, and moisture. D. E. Jones' 'Lessons in Heat and Light.'

LIGHT.—Elementary laws of light; simple laws of refraction; the index of refraction; refraction as applied to lenses and prisms; conjugate foci; formation of images; umbra and penumbra; conditions of achromatism. Simple laws of reflection; reflection as applied to mirrors. Photometry. D. E. Jones' 'Lessons in Heat and Light.'

OPTICAL INSTRUMENTS.—Their elementary theory and construction. The photographic camera. The optical lantern. Simple and compound microscopes. Refracting and reflecting telescopes; the opera glass. The stereoscope. The spectroscope. Nautical and surveying instruments. D. E. Jones' 'Lessons in Heat and Light.'

PRACTICAL WORK WITH OPTICAL INSTRUMENTS.—The photometer, determination of the brightness of light by the shadow and grease-spot-photometer.

OPTICAL LENSES.—Testing for focal length, conjugate foci, spherical and chromatic aberration, astigmatism, centering, magnifying power, field of view.

THE OPTICAL BENCH.—Simple experiments thereon with convex and concave lenses and mirrors. The Vernier and slide rule and their practical use. D. E. Jones' 'Lessons in Heat and Light.'

NOTE.—The Candidates will be examined in one and one only of the following subjects; the choice lying with the Candidate:—

A. THE CAMERA.—Experiments with lenses adapted to a photographic camera: the construction of various kinds of photographic lenses and the use and requirements of each; use and calculation of stops. Traill Taylor's 'The Optics of Photography and Photographic Lenses.'

B. THE MICROSCOPE.—Experiments with simple and compound microscopes; the use of water and oil immersion lenses; determination of their aperture and magnifying power; the use of the substage illuminator; the measurement of the index of refraction of a plate of glass or crystal by means of a microscope; the use of the eye-piece and stage micrometer. 'The Microscope and Microscopical Methods,' by Gage, Comstock Publishing Company, Ithaca, New York.

C. THE SEXTANT.—Its use; method of correction and adjustment, including tests—that arc and image are in the same plane—that horizon-glass is set—that axis of telescope is parallel to plane of arc—that the two mirrors are parallel with Vernier at zero. 'Practical Physics,' Glazebrook and Shaw.

Qualification for Examination.

All those entering for the examination must either be actual Freemen of the Spectacle Makers' Company or must undertake to become so when passed by the examiners and approved by the Committee. If not already paid, the amount of the admission fee and stamp duty, which will be payable when the Freedom of the Company is taken up, must be deposited with the Clerk of the Company at least fourteen days before the announced date of the examination. No examination fee will be charged, but the Examiners and the Committee will have power to recommend the Clerk to retain from the deposit an amount not exceeding £1, if the candidate has not acted with "bonâ fides." This amount will be added to the prize fund. With this exception, the deposit will always be returned in full to unsuccessful or unavoidably absent candidates.

Company's Fees.

The fee payable under the special scheme of the Company by those who take up the Freedom is £1 10s., to which must be added the Government stamp duty which has to be collected by the Company from new members, and which at present is fixed by the Fiscal Authorities at £1 or £3. The total amount to be deposited before examination and subsequently devoted to the admission fee and stamp will therefore be either £4 10s., or £2 10s. when formal apprenticeship can be shown. The only other necessary payment by Freemen is the subscription of 1s. per quarter (quarterage) paid by all members.

Committee.

The following constitute the present Optical Committee of the Company:—

Members of the Court of the Company.

The Master, The Right Honourable The Lord Mayor, Lieut.-Col. HORATIO D. DAVIES, V.D., M.P.

The Upper Warden, WILLIAM H. E. THORNTHWAITTE, Esq., F.R.A.S. (*Chairman*).
The Renter Warden, Colonel SIR REGINALD HANSON, Bart., M.A., LL.D., M.P., Alderman of the City of London.

SIR MARCUS SAMUEL, Alderman of the City of London.

Nominated by the above.

G. LINDSAY JOHNSON, Esq., M.A., M.D., F.R.C.S. (*Examiner*). W. A. DIXEY, Esq., THOMAS FIELD, Esq., H. TRENTHAM MAW, Esq., M.D. A. A. WOOD, Esq., A.K.C., F.C.S., C.C.

Nominated by the Astronomer Royal.

Professor SILVANUS P. THOMPSON, F.R.S. (*Examiner*).

Elected Members.

JAMES AITCHISON, Esq. JOHN BROWNING, Esq., F.R.A.S. (*President B.O.A.*).
HENRY HARRIS, Esq. HENRY C. KEMP, Esq. GEORGE PAXTON, Esq. (*Examiner*).
R. F. W. SCHMIDT, Esq., F.R.G.S., B.O.A.

Courses of Instruction.

For those who need optical instruction in order to pass the examination, arrangements have been made by the S.M.C. to hold classes at the Northampton Institute, Clerkenwell. Lectures on applied optics and heat will be given from 7 to 8 and on visual optics from 8 to 10 every Monday evening, commencing September 26. The course will continue during the educational year. There will also be classes in optical laboratory work, practical calculations, and advanced work on the principal optical instruments. Full particulars as to fees, etc., can be obtained at the Institute.

In addition to the classes mentioned, Mr. Lionel Laurance, who is the Instructor of Visual Optics at the official classes, holds private classes at his rooms, No. 1, Vernon Place, Bloomsbury, London, for those who may find the official classes not suitable. For gentlemen residing in the provinces who would find a lengthy stay in London impossible, Mr. Laurance offers to conduct instruction partly by correspondence and partly by personal tuition in London and some of the larger provincial centres.

The Spectacle Makers' Company also intends having occasional lectures, meetings, and exhibitions for the craft. Dr. Lindsay Johnson gave at the Mansion House a lecture on "The Development of Optics During the Present Century," and at the same place, by permission of the Lord Mayor, who is Master of the Company, there will be held in October an exhibition of optical instruments and goods, which promises to be a great success. Colonel T. Davies Sewell, Clerk of the Company, Guildhall, London, can be addressed for a full prospectus of the regulations, syllabus, etc., or for any further information in connection therewith. The promoters of the scheme show a most earnest desire to induce the best class of men to compete for the diplomas. They give every reasonable facility for their acquirement as regards fees, methods of examination, and arrangements made for technical instruction, and there is but little doubt that in the near future the public will seek the certificated optician in preference to the mere unqualified retailer of spectacles.

BRITISH PHARMACEUTICAL CONFERENCE, 1898.

MEETING OF THE ULSTER EXECUTIVE.

A meeting of the Ulster Executive Committee was held at 10, Garfield Chambers, Royal Avenue, on Tuesday, August 23, Mr. J. C. C. PAYNE, J.P., presiding. The Honorary Local Secretary (Mr. R. W. McKnight) having read the minutes of the previous meeting, which were passed, and the routine business having been transacted, the following resolution was unanimously passed:—"That the best thanks of the members of the Ulster Executive Committee of the British Pharmaceutical Conference be accorded to the Lord Mayor and the Lady Mayoress for their great kindness and consideration in delaying the date of their garden party so that invitations to it might be extended to the members of the Conference. The garden party in a marked degree contributed to the social success of the meeting. The Executive Committee also wishes to thank Mr. David Henderson for the trouble he took on behalf of the Conference. It was also agreed "That the best thanks of the members of the Ulster Executive Committee of the British Pharmaceutical Conference be accorded the President of the Queen's College, Belfast, for his great kindness in granting the use of the College buildings, which proved so appropriate for the holding of the meetings, as well as for his kindness in giving a welcome to the delegates on the opening day." The Honorary Secretary was instructed to write to the following firms thanking them on behalf of the Committee for their kindness in allowing the members of the Conference and their friends over their works, and for the attention shown them:—The York Street Flax Spinning Company; the Belfast Ropeworks Company; Messrs. William Ewart and Sons; Gallaher, Ltd.; Messrs. Robinson and Cleaver; Ulster Spinning Company; Messrs. Marcus Ward and Co.; and Messrs. Harland and Wolff, Ltd.

A hearty vote of thanks was also passed to the *Pharmaceutical Journal* for its admirable report of the Conference proceedings.

DINNER AT BELFAST.

On Thursday evening, August 25, Mr. J. C. C. PAYNE, J.P. (President-elect of the B.P.C.), gave a dinner to the members of the Ulster Executive Committee. After justice had been done to the good things provided, the host gave the first toast, viz., "The Health of the Secretaries," coupled with the names of Mr. R. W. McKnight, Mr. Rankin, Dr. Fielden, and Mr. J. Guiler.

Mr. McKnight, Hon. Local Secretary, said that although he responded to this toast he did not deserve to have his name coupled with it. He always made it a rule, which he thought was thoroughly Irish, "never to participate in anything that would not give him fun." It had been a great source of pleasure to him to act as Secretary to the Executive Committee and Local Secretary for the Conference, and if in gaining amusement by it he had done any solid work that merited approval he was doubly pleased. Mr. Payne and he took the credit of inducing so many bachelors and

unmarried ladies to Belfast for the Conference. Two years ago, at Liverpool, Mr. Payne informed the Conference that the prettiest girls in the world were to be found in Ireland, and as he (the speaker) did not wish all the beauty to be on one side, as he was then unmarried, he told the English and Scotch ladies that Ireland was also famous for its handsome men. Accordingly, they came and saw, and he hoped they did not go away disappointed.

Dr. FIELDEN, Secretary of the Conversazione Committee, said it gave him very much pleasure to respond to the toast. He was glad to know that the function with which he had something to do turned out so successfully. He had been connected with many functions in the Queen's College, but he had never been associated with any that gave him more pleasure.

Mr. GUILER, Secretary of the Drives Committee, also responded in a neat speech. The toast of our "Musical Friends" was responded to by Mr. ISAAC NICHOLL, M.P.S.I., in a happy manner. The "Health of the Treasurer" (Mr. S. Gibson) was enthusiastically drunk, who responded in his usual vigorous and happy style. He said that his duties were very light indeed, as the money flowed in upon him freely. The guarantee fund would more than cover expenses.

The toast of the "Chairman (Mrs. Clotworthy), and the Hon. Secretary (Miss Watson) of the Ladies Committee" was responded to by Mr. JOHN WATSON in appropriate terms, who also proposed the toast of the evening, the "Health of the B.P.C." coupled with the name of the Host, Mr. J. C. C. Payne the President-elect." Mr. PAYNE thanked Mr. Watson and the company for the toast, and assured them that he appreciated the honour that had been conferred on him by his election as President of the Conference. He would do his best to fill the position with credit to himself and the Conference over which he would preside. He thanked the Committee for the very great assistance which they had given him in carrying out the arrangements of the Belfast meeting, which seemed to give so much all-round satisfaction to the delegates and members of the Conference. He was delighted to have them present that evening as his guests.

The "Health of the United States of America," coupled with the name of Mr. McMann, an American gentleman present, was drunk enthusiastically, and responded to by Mr. McMann in a characteristic and racy manner, who, before sitting down, gave "The Queen," which was drunk in good old British style. The party then withdrew to the drawing-room, where they were entertained by Mrs. Payne, Miss Payne, and Miss Houston, Mr. J. Nicholl, Dr. Fielden, and others to a fine musical programme. Thus concluded the B.P.C. meeting in Belfast. The Ulster Committee are prepared on no very distant date to offer another invitation, which, if accepted, will be even more successful than the last.

PHARMACY IN IRELAND.

[From our Dublin Correspondent.]

PHARMACY IN DUBLIN during the past week has had what one of our Scotch councillors describes as an "unco guid time." Between papers by the President and the "professor," flattering notices thereon in the local newspapers, and a general look in at the pleasures as well as the profits accruing, the star of Mount Street, Lower, was never more in the ascendant. The utmost gratification is felt at the very full account of the Health Congress given in last Saturday's *Pharmaceutical Journal*, and it is thought the lessons to be drawn from Messrs. Downes and Tichborne's contributions to the Conference will be far-reaching.

LAST WEEK'S EXHIBIT OF DRUGS AND CHEMICALS at the annual Horse Show in Ball's Bridge was very far ahead of previous similar displays. There were samples of linseed meal and oil from Messrs. Paul and Vincent, Caledonian sheep dip, linseed of all kinds from Messrs. H. M. Leask and Co. Messrs. Hayes, Conyngham and Robinson had at Stand 42 a large collection of their pharmaceutical products, which looked to advantage. A not less attractive turn-out was seen at Stand 82, which the "Vinolia" people occupied with a choice variety of their specialties in powders, creams, soups, etc. The Bovine Company had on view samples of their world-famed wares, and the "Dargi Dash," a new preparation of therapeutic qualities, attracted much attention. Up to August 27, when the show closed, the daily attendance steadily increased, and those who were so fortunate as to secure space for

exhibition purposes are congratulating themselves on the result of the publicity obtained.

WHAT, IS BEING ASKED, has become of the newly-started P. A. T. A. in Dublin? Two months ago, at a meeting held in the Pharmaceutical Society's house in Mount Street, those present resolved to form a permanent branch of the Association, and to hold meetings monthly in future under the presidency of Dr. Walsh, proprietor of Messrs. Graham's State pharmacy, in Westmoreland Street, but since then nothing has been heard of the matter. As Dr. Walsh is anything but a figurehead, and takes a keen interest in things pharmaceutical, the suspension of meetings is somewhat curious, and gives rise to some inquiries.

MANY READERS WILL LEARN with regret of the death of Mr. Robert Ferrall, father of Mr. Ferrall, the courteous Registrar to the Pharmaceutical Society of Ireland. The deceased gentleman was well known and widely respected, and the news of his demise is heard with general sorrow, whilst to Mr. Ferrall, his son, are tendered numerous expressions of condolence.

DR. ROCHE, OF KINGSTOWN, is responsible for the very important statement made at Dublin last week that not a few of the deaths which occur in our midst are due to the accidental or the deliberate use of poisonous drugs. He stated that he has already been in communication with the criminal authorities in the matter, but found some difficulty in advancing his views. Judging from Dr. Roche's remarks, he feels strongly on the point and seems to have a clear line of argument in connection. Prejudice, however, is hard to break down, and coroner's juries are proverbially conservative in their verdicts. It is to be hoped Dr. Roche will not weary in well doing, and that he will continue his efforts to awaken the authorities to a proper sense of their duty to the public. Already he has the support of the medical and pharmaceutical bodies, and it is only a matter of perseverance to bring about the inquiry sought by the learned gentleman.

THE LOCAL GOVERNMENT BOARD in their time have issued some strange circular orders, observes a correspondent of the *Irish Times*, but few are so ill-timed as one just at present going the rounds of the Irish Poor Law Unions, which deals with the supply of medicines and directs the Guardians to notify their respective contractors that all drugs must in future be supplied according to the latest edition of the British Pharmacopœia. As most contractors have entered into bonds from the end of last March to a corresponding date in 1899, and have tendered at prices in accordance with the B. P. of 1885, it would seem to press hardly on the contractors that they should now be directed to supply medicines according to a standard which was not in existence at the time they tendered.

CHANGES AND TRANSFERS IN DUBLIN have of late been frequent. A new medical hall is in course of opening by Dr. Laird, of Limerick, at the corner of Henry Street and Sackville Street. Another temple of Galen is about to be erected in the neighbourhood of Leeson Street. Mr. Harry Harris, of Johnston's pharmacy, has forsaken the retail for the wholesale trade, and now represents Messrs. Thacker and Hoffe, druggists. Mr. Carrol has left Hamilton, Long and Co.'s State Pharmacy, and is now at Kiloh's, of Cork. Mr. J. B. Alister has become a director of Hamilton, Long and Co.'s concern, and Dr. Merrin, Councillor of the Pharmaceutical Society, has taken a new house in Harcourt Street.

PHARMACISTS IN DUBLIN are beginning to talk about the re-opening of the Pharmaceutical Society's evening meetings, which were so successful last year. It is understood that the popular president has in view several new features for the ensuing Session, but like a wise man he is waiting to mature them before declaring his "policy." It may, however, be stated that due regard to the social aspect of the question will be had by Mr. Downes, who on the principle of "all work and no play making Jack a dull boy" will not forget his duty in this respect.

DR. MCWALTER, in the course of his remarks last week at the Health Congress on President Downes' able paper on legislations regarding the sale of poisons, struck a responsive chord when he condemned so strongly the growing fondness of the poor for methylated spirit as a cheap intoxicant. He stated that in a

quarter of a pint of the spirit, which could be purchased for three-halfpence from any grocer or huxter who paid the excise licence of ten shillings a year, was as much alcohol as was contained in a half-pint of whisky, and that the "blending" by water was known by the wretched consumers to lessen the evil smell and taste so dear to their nostrils and palate, as well as to "stretch" the beverage. His plea to have s.v.m. put on the Poison Schedule will, it is hoped, be soon brought under the notice of the Privy Council, and the assurance of Dr. Moore that any recommendation in the matter made by the Pharmaceutical Society would receive the anxious attention and support of the President and Fellows of the Royal College of Surgeons in Ireland will no doubt have due weight with the representatives of the Government.

RECENTLY THE POOR LAW GUARDIANS at Listowel, County Limerick, resolved to appoint as their drug contractor a Mrs. English, proprietress of a local medical hall, notwithstanding that her tender was considerably in excess of other tenders received. Irish chivalry was aroused, and for once in the century Ireland and the English went hand in hand. The Local Government Board refused to see it in the same light, and insisted on the lowest tender being accepted. The guardians manfully stood by their guns, and declined to appoint anyone else but the lady. Quietly the Local Government Board stated that they "regretted" the selection, and as a result the guardians have meekly informed that body they are now receiving medicine from their former contractor (a Dublin firm), and suffer no inconvenience. As things go, the lady bids fair to be left in the lurch by her quondam supporters.

MR. EDWARD EDWIN GLANVILLE, a promising young Dublin chemist, who assisted Signor Marconi in his experiments with wireless telegraphy, was last week killed by falling from the edge of a cliff on Rathlin Island into the sea underneath, a distance of over 300 ft. When the body was recovered it was literally in pieces, the limbs, neck, and back being broken, and the trunk a mass of bruised flesh. It is supposed that Mr. Glanville, while using a narrow goat path, missed his footing and fell.

SELECTED FORMULÆ.

REMEDIES FOR FRECKLES AND SUNBURN.

(1) Poppy seed oil, 1, emulsify with solution of lead subacetate, 2; mix with benzoin tincture, 1; tincture of quillaya, 5; spirit of nitrous ether, 1; rose water, 95. (2) Dilute nitric acid, 7; eau de Cologne, 115; neroli oil, $\frac{1}{2}$; peroxide of hydrogen, 60; glycerin, 100; cochineal solution, $3\frac{1}{2}$, mix and dilute to 325 with water. After fourteen days filter the solution. To be applied with a linen rag and allowed to dry. (3) Rose water, 25; zinc sulphocarb. 2; glycerin, 25; eau de Cologne, 5. Misc. (4) Bismuth subnit., 2; powdered gum arabic, 4; mix and gradually add to a mixture of rose water, 30; glycerin, 20; tincture of benzoin, 10. To be shaken before use, and painted on the freckles.—*Pharm. Post*, xxxi., 247, after *Pharm. Ztg.*

GARFIELD TEA.

Herb. tritici. herb. hepaticæ, āā 15, fol. sennæ, 225.—*Pharm. Post*, xxxi., 247.

CEMENT FOR RUBBER TYRES.

(a) Caoutchouc, 30; chloroform, 600. (b) Caoutchouc, 30; resin, 12; tereb. venet, $5\frac{1}{2}$; ol. terebinth., 110. The caoutchouc is cut up fine, melted with the resin, and the oil of turpentine added. For use mix a and b. Another recipe is caoutchouc, 9, dissolved in chloroform, 60, and finely-powdered mastich, 15, is added.—*Pharm. Post*, xxxi., 247.

VERMIFUGE FOR CHILDREN.

Benzonaphthol, 30 grains; santonin, 30 grains; sacchar alb., 120 grains. Divide into 20 powders. Two to five powders to be taken daily.—*Med. News.*

OINTMENT FOR BOILS.

L. Duncan Bulkley, in the *Clinical Review*, recommends the following application for boils:—Phenol, 5 to 10 grains; fluid extract of ergot. 1 to 2 drachms; powdered starch, 2 drachms;

zinc oxide, 2 drachms; rose water ointment, 8 drachms. This ointment is to be spread thickly on a piece of absorbent cotton, and laid over the boil; it may remain on for twelve hours or more. If there is any discharge, gentle cleansing of the surface may be practised, but squeezing should be avoided. Frequently the boil aborts under this treatment, but if not, it ruptures spontaneously, and quickly heals.—*Intern. Med. Mag.*, vii., 64.

PRESERVING ANATOMICAL SPECIMENS.

Slices of organs from 3 to 5 Cm. thick are placed for three to five days in the following mixture:—Formalin, 200; water, 1000; potassium nitrate, 15; potassium acetate, 30. They are then removed, the fluid drained off, and the specimens placed in alcohol 80 per cent. for six hours. After this they are kept permanently in a mixture of water, 2000; glycerin, 400; potassium acetate, 200; and kept in a dark place. By this means the natural aspect and the colours are well preserved. As some shrinking naturally takes place, cavities should be packed with absorbent cotton, which should be removed when the process is complete.—*Bost. Med. Surg. Journ.*, Dec. 16, 1897.

PHENOSALYL.

According to Sibut, this is composed of phenol, 80; salicylic acid, 10; lactic acid, 20; menthol, 1. Mix the phenol with the acids, heat until melted, then add the menthol.—*Bullet. de la Soc. Roy. de Pharm. de Brux.*

NAPHTHOL CAMPHOR.

Naphthol in fine powder, 1; camphor, 2. Warm gently together until melted. Filter and preserve the liquid in well-covered yellow glass bottles.—*Bull. de la Soc. Pharm. de Sud-ouest*, xx., 133.

HÆMORRHOIDAL OINTMENT.

Cocaine hydrochloride, 1·20; morphine hydrochloride, 0·30; atropine sulphate, 0·24; tannic acid, 1·20; vaseline, 30·00; rose oil, q.s. Mix.—*Pharm. Post*, xxxi., 30.

ELECTRO-PLATING FOR ALUMINIUM.

Before plating, the article should be dipped in a bath of dilute soda or potash, or in hydrochloric acid, diluted 1 to 10, and then scrubbed in pure water. According to Lanseigne and Leblanc, the following baths will give good results: *Gold*: Gold chloride, 40 grammes; potassium cyanide, 40 grammes; sodium phosphate, 40 grammes; distilled water, 2 litres. *Silver*: Silver nitrate, 20 grammes; potassium cyanide, 40 grammes; sodium phosphate, 40 grammes; distilled water, 1 litre. *Copper*: Copper chloride, 300 grammes; potassium cyanide, 450 grammes; sodium phosphate, 450 grammes; distilled water, 5 litres. *Nickel*: Nickel chloride, 70 grammes; sodium phosphate, 70 grammes; distilled water, 1 litre. These baths should be warmed to between 60° and 70° C. during the whole operation. The anodes of the batteries should be of the same metal as is in solution in the bath.—*Journ. de Pharm.* [6], ix., 77, after *Rev. de Chim. Indust.*

LINIMENT FOR PERSPIRING HANDS.

Borax, salicylic acid, of each 15; boric acid, 5; glycerin and alcohol, of each 60. Apply with friction three times a day. If desired, eau de Cologne may be substituted for a portion of the alcohol.—*Bullet. de Pharm. de Sud-ouest*, iii., June, 1898, 309.

DENTAL POWDER.

Calcium carbonate, 60 grammes; magnesia carbonate, 4 grammes; powdered orris root, 2 grammes; oil of peppermint, 6 drops.—*Zahnt. Ref. org.*, xviii., 130.

DENTAL WASH AND TOOTH POWDER.

Eau de Botot.—Fructus anisi stellati, 100; caryophyll, 25; cortex cinnam., 25; coccus cacti, 5; vanilla, 1·5; aqua rosæ, 300; spiritus, 1000. Filter and add tinct. ambergris, 1·5; ol. menthæ piper., 5.

OINTMENT FOR MUMPS.

The following ointment is said to be useful in mumps: ℞ ichthyol, plumbi iodidi, āā gr. 48; ammon. chloridi, gr. 30; vaselini, ʒi. M. ft. ung. Sig., Apply with friction over swollen glands three times daily.—*Practitioner*, lxi., 109.

NOTICES TO CORRESPONDENTS.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ADVERTISEMENTS AND ORDERS for copies of the 'PHARMACEUTICAL JOURNAL' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers."

ARTICLES AND REPORTS sent for the Editor's approval should be accompanied by stamped directed envelopes, otherwise no guarantee can be given that they will be returned if not found suitable.

CORRESPONDENTS should write in ink, on one side of the paper only, and must authenticate the matter sent with their names and addresses—of course no necessarily for publication. No notice can be taken of anonymous communications.

DRAWINGS FOR ILLUSTRATIONS should be executed twice the desired size; clean sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

NAMES AND FORMULÆ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

QUERIES addressed to the Editor will be replied to in the Journal as early as possible after receipt, though not necessarily in the next issue. Replies cannot be sent by post, even though stamped envelopes accompany the queries.

LETTERS TO THE EDITOR.

A YELLOW FEVER REMEDY.

Sir,—Fortunately during the six years I have lived in British Honduras there has been no yellow fever, so that I cannot speak from experience, but the remedy (oil and lime juice) mentioned some weeks ago by the *Standard* correspondent is a very favourite one among the old-fashioned Creoles. Several people have told me that they were cured by it.

Belip, British Honduras, July 28, 1898.

J. H. TWEEDY.

THE TESTING OF THYROID GLAND.

Sir,—Messrs. Burroughs, Wellcome and Co. take exception to a test for thyroid tablets which I suggested at the recent meeting of the B.P.C., and which is that of the International Pharmaceutical Congress. I freely confess that their preparations do not readily answer the test, but require a much more delicate one: yet most active preparations will be found, I think, to do so, if allowance be made for the modification of colour which the presence of albuminoids entails.

Dublin, August 27, 1898.

J. C. McWALTER.

FRENCH LAVENDER OIL AND THE BRITISH PHARMACOPŒIA, 1898.

Sir,—Mr. H. Wippell Gadd, in his paper on the galenicals of the new Pharmacopœia, read at the Belfast meeting of the British Pharmaceutical Conference (see *P. J.*, August 13, 1898, page 178), stated "with regard to the compound tincture of lavender and also to spirit of lavender, it has been noted that foreign oils are not now excluded from the Pharmacopœia, but as it is difficult to meet with an ol. lavand. exot. which conforms to the official tests, the concession does not appear to amount to much." In the short discussion which followed the reading of this paper I stated that I had no knowledge of any difficulty in obtaining French lavender oil corresponding to the characters of the Pharmacopœia. Time did not permit of Mr. Gadd further explaining his statement at Belfast, and in the printed reply published in your paper last week (see page 259, August 27), he states that "he hears from a distiller" that "he (the distiller) doubts if it is at all possible to obtain oil of the B.P. density, seeing that the average does not exceed 0·875." Having had very many opportunities of examining lavender oils obtained from the south of France from almost every district and from the leading distillers and distributors, I think it well to state that I have not found on any one occasion a pure oil of lavender that did not correspond to the pharmacopœial requirements for specific gravity—that is to say,

not below 0.885. Mr. Gadd gives no results of his own examinations of French oils, but it would be interesting to know the other characters, such as optical rotation and ester percentage of the oils referred to by him as having a specific gravity of about 0.875. The following results of the examination of 15 samples carried out during the last 12 months taken without selection, show in my opinion the true characters, specific gravity, optical rotation, and ester percentage of pure French oils. It should be noted also that those oils which consist of a mixture of true lavender (*Lavandula vera*) with spike lavender (*Lavandula spica*) have a still higher specific gravity, due to the presence of borncol and other alcohols.

Characters of French Lavender Oils (Lavandula Vera).

No.	Sp. gr. at 15° C.	Optical rotation in a tube of 100 Mm.	Ester percentage.
1	.8889	-5	31.2 per cent.
2	.8860	-7.5	31.15 "
3	.8908	-8	33.25 "
4	.8856	-7.5	38.7 "
5	.8874	-5.5	33.75 "
6	.8878	-6.5	39.5 "
7	.8864	-7.5	38.2 "
8	.8880	-8	35.2 "
9	.8930	-6.5	38.2 "
10	.8870	-5	32.2 "
11	.8870	-6	38.7 "
12	.8884	-7	36.1 "
13	.8892	-7.5	35.1 "
14	.8856	-8	35.3 "
15	.8887	-7	41.6 "

It will be evident from the above that there can be no difficulty in obtaining lavender oils answering the Pharmacopœial requirements, and I should view with the very greatest suspicion an oil having so low a specific gravity as 0.875, and should expect to find its other characters (optical rotation, ester percentage) differ widely from pure French lavender oil. Adulteration with turpentine would be indicated by increase in optical rotation and decrease in specific gravity and ester percentage.

London, S.E., August 30, 1898.

JOHN C. UMNEY.

AQUA SPIRÆA ULMARIÆ.

Sir,—I shall be obliged if you will permit me to correct an error in my communication on "Meadowsweet" (*ante*, p. 239). The crystalline substance collected inside the condenser, not on the cone. My quondam coadjutor in Manchester writes: "I imagine the substance deposited in distilling meadowsweet would be something like we used to get in distilling elder flowers—a sort of otto, seems worthy of notice."

Kew, August 27, 1898.

R. G. MUMBRAY.

CORRECTIONS.

Sir,—Kindly allow me to correct two printers' errors in my letter of last week. Under syr. ferri phosphatis cum quinina et strychnina, the word "satisfactory" should have been "unsatisfactory." Under ung. hydrarg nit, the last clause of the second sentence should read, "so that the 'fumes' may be rapidly carried away."

Exeter, August 29, 1898.

H. WIPPELL GADD.

A DISCLAIMER.

Sir,—Your annotation upon the Gregory's powder case heard at the Lambeth Police Court on the 18th inst., and contained in your current issue, is, to say the least, eminently misleading, and calculated to do me considerable damage professionally. Taking the points *seriatim* as they appear in your Journal: First, that which I said was that calcined magnesia exposed to a moist atmosphere charged with carbonic acid would eventually be converted into hydrate-carbonate of magnesia; secondly, in reply to the magistrate, I stated that a medical man would expect to get calcined magnesia in Gregory's powder, but in commercial samples of this preparation I had found an average of 15 per cent. of carbonate; thirdly, I remarked the calcined magnesia may have been exposed too long prior to making the Gregory's powder. I

also stated that in supposed calcined magnesia of commercial quality 10 per cent. of carbonate is frequently present.

London, August 29, 1898.

FREDERICK DAVIS.

** Our remarks, which we see no reason to modify, were based on the report published in the *Standard*, a daily paper of some repute, to the editor of which the above letter would more appropriately have been addressed.—[Ed., P.J.]

THE BRITISH PHARMACOPŒIA, 1898.

Sir,—If the following error in B.P., 1898, has not been anticipated, perhaps I may be permitted a niche in your columns. In the assay of opium—page 237, line 30—the 1 C.c. of decinormal volumetric solution equivalent is not 0.0285 gramme, but 0.028305. It is evident that the designer of the assay process has calculated the molecular weight of morphine (anhydrous), $C_{17}H_{19}NO_3$, but has used the atomic weights of the 1885 B.P.

Royal Dispensary, Edinburgh, August 31, 1898. G. SIMPSON.

CORRECTION.

SYNTHESIS OF ALBUMIN.—In Mr. A. H. Allen's paper, printed last week, page 243, column 1, for "Lüberküln" read "Lieberkühn."

ANSWERS TO QUERIES.

PUBLISHERS OF BOOKS.—Maisch's 'Organic Materia Medica' is published by Henry Kimpton, London; and Collin's 'Détermination des Poudres Officinales,' by Octave Doin, 8, Place de l'Odéon, Paris. [Reply to L. R.—15/25.]

SALE OF STRYCHNINE.—Yes, if the purchaser is known to you or introduced by some person known to you. See the Society's Calendar, page 40. [Reply to RODINAL.—15/32.]

TANK SPECIMENS.—Write to the Director of the Biological Laboratory, Plymouth, or to Mr. James Hornell, Biological Station, Jersey. [Reply to SOCIUS.—15/31.]

PRACTICAL BOTANY.—We understand that when the sections are not already cut, they are to be cut "by hand" by the candidates. [Reply to H. E. E.—15/30.]

HOLMES' 'BOTANICAL NOTE-BOOK.'—It is recommended because it enables students to describe plants for themselves, and is the most practical book for that purpose. [Reply to H. E. E.—15/29.]

DECOLORISING HONEY.—This is not at all easy. Dilution and digesting with animal charcoal will remove the colour, but it reappears on evaporating off the added water. Possibly the addition of a little peroxide of hydrogen and then exposing to strong sunlight will bleach it; or, if this does not answer, try allowing it to percolate slowly through a long column of granular animal charcoal. We note that most of this year's honey is very dark. Of course when the honey crystallises it will appear much lighter in colour than it is in the liquid state. [Reply to MEL ANG.—15/28.]

SHAVING CREAM.—White castile soap, 1 ounce; rose water, 4 ounces; oil of theobroma, 2 drachms; oil of sweet almonds, 2 drachms; tincture of benzoin, 1 drachm; tincture of quillaia, 1 drachm; oil of myrcia acris, 5 minims; oil of neroli, 5 minims; glycerin, *q.s.* Shred the soap, dissolve it in the water, add the oil of theobroma and the almond oil previously melted, also the quillaia tincture. Then transfer to a mortar and stir until cold, adding enough glycerin to bring the paste to the required consistency. Lastly, add the essential oils and the benzoin tincture. [Reply to JEANETTE.—15/12.]

MINOR EXAMINATION.—1. You will find a list of suitable books in next week's Journal. 2. The standard of the two examinations is the same. 3. You must pass the First examination or its equivalent and submit a certified declaration that for three years you have been practically engaged in the translation and dispensing of prescriptions. [Reply to J. G.—16/1.]

OUR BLOOMSBURY SCHOOL.

BY H. J. HENDERSON
Pharmaceutical Chemist.

The completion of the Major course at the "Square" places the Pharmaceutical Council in a position to judge whether the curriculum, as extended a year ago, has been a success. Undoubtedly it has from an examination point of view. I venture to think that a brief review of the work done, and the manner in which it was done, may be interesting to those who take an interest in our School of Pharmacy. I would have it plainly understood that these remarks of mine are made in no disparaging spirit. They are written in the hope that, by pointing out the difficulties which I and others encountered, the way may be smoothed for those students who will follow after us, and help to improve our School in some slight degree. The extension of the course was a step in the right direction, and in the near future I hope to see it again extended.

One year for the Minor and one year for the Major would enable students to do the work to their own satisfaction, which, in my opinion, is far better than satisfying any Board of Examiners. The class of men who attend the "Square" would welcome the change. Parents who seek primarily an institution in which their sons may be trained, not to pass an examination merely, but to be a credit to our ancient and honourable calling, naturally gravitate towards Bloomsbury Square. They take it for granted that the Pharmaceutical Council understands the subject better than they do themselves, and they prefer to trust to their judgment. It is a matter of small moment to them whether the course is for fifteen months or two years. A two years' course would do much to minimise the chances of failure, indeed under the existing regulations, and this assertion applies with special force to the advanced course, the chances of failure are very great indeed. The student finds it impossible to complete his work, and I will endeavour to show why.

Botany.

The advanced botany course extends from October to the end of March. It is admitted by all who understand the subject that systematic botany to be studied successfully must be studied in the field and from fresh specimens. It is very evident that from October to March is the very worst time of the year to do this, flowers are scarce and difficult to obtain, the student is pressed for time, and has not the leisure to make a botanical excursion into the country, indeed, he can scarcely find time to visit the Botanic Gardens in Regent's Park. To do the latter he must neglect his practical work in the chemical laboratory, which he hardly cares to do. The only course open to him is to cram it up from books and illustrations, which is a pitiable state of things. The professor does his best to meet the difficulty by providing spirit specimens which are but a poor substitute, the smell of the spirit is extremely offensive, and the flowers are in many cases macerated out of all recognition, moreover, the spirit has extracted all their colours, so that they are absolutely useless from a recognition point of view. A gloom settles over the class whilst working with these, which the fog which seems to perpetually turn up on botany morning does not tend to disperse. The microscopical work in this subject is good, but more time is needed to do it thoroughly. To cut, mount, and sketch the sections which are set is impossible in the four hours which are at our disposal every week. The lectures by Professor Green are everything that one could wish for, speaking easily and fluently, he makes the subject very interesting, moreover, he has a very encouraging manner when one becomes disheartened with

the work. His kindness to me when I was wildly floundering in that delightful little story concerning the life history of the gametophyte, and its equally exasperating neighbour the sporophyte, I shall never forget.

Chemistry.

In this subject I think it would be advantageous to students entirely ignorant of the rudiments of analysis if one or two lectures were given at the beginning of the elementary course, treating of the methods usually adopted in the analysis of simple salts, the treatment of soluble and insoluble substances, etc. The Council would do well to include an elementary text-book on analysis in the list of books recommended by them, such as Professor Tilden's 'Practical Chemistry' (Longmans, Green and Co.), or Briggs and Stewart's 'Analysis of a Simple Salt' (University Correspondence College Press). The latter I consider most suitable for a beginner. Having read carefully through this little work, which can easily be done in one evening, the student should then perform each experiment described in the text twice, for he will often find that he obtains by chance the first time the effect which he should obtain, but on repeating the experiment he is astonished to find that the test has failed.

I well remember performing the test for quinine by the formation of the iodo-sulphate for the first time. I obtained that very beautiful precipitate. Shortly afterwards a friend of mine informed me that he could not obtain those golden black scales. I attempted to show him how easy it was, but to my chagrin and his intense amusement that precipitate refused to form. That experiment taught me a lesson which I have never forgotten, therefore I advise the young analyst to perform each experiment twice, by so doing he becomes familiar with the conditions under which precipitates will not form. Dry tests are given a prominent place in Briggs and Stewart's little work; these, I regret to say, are often neglected by the student, or are performed in such a hasty and slovenly manner as to be worthless. I wonder how many times a trace of manganese has been missed because the student has neglected to fuse his salt on platinum foil with sodium carbonate and potassium nitrate? Much valuable information may be derived from an article on "flame tests" which appeared in the *Pharmaceutical Journal* some time ago. This article first opened my eyes to the possibilities of flame testing and served to introduce me to this delightful and beautiful realm in qualitative analysis. It is a mistake to commence analytical chemistry with an advanced work; the student becomes bewildered with the multitude of tests given, and his lack of knowledge prevents him from picking out the important ones. Practical chemistry is well taught at the "Square," there is no stint of material, and every facility is offered to a man who works, for obtaining a good knowledge of the subject.

Dr. J. Norman Collie makes a journey periodically round the laboratory, taking notes of each student's work and assisting them by his counsel and advice. His courteous old-world manner, coupled with a patience Job might well envy, commands the respect and esteem of all who come in contact with him. At the end of the Major course, a general desire was evinced by the men to possess a portrait of him. On being approached he signified his willingness to sit; the students then subscribed and the necessary arrangements were made. He then expressed a wish to be allowed to present each subscriber with a copy, in such a graceful and diplomatic manner that to refuse would have been impossible. His action was warmly appreciated and will never be forgotten. I left the laboratory with regret, for my life there was a very happy one.

To stroll into the laboratories in the morning, and after clearing up, to have a smoke and a gossip with a chum, to hear the old joke of the candidate who tried to varnish his pills in a lemon-squeezer (fact), then to settle down to work at one of the most interesting subjects extant, all go to make up an ideal existence.

Pharmacy and Materia Medica.

These subjects were treated in a most masterly manner, and nothing that I could say would do justice to the careful and systematic way in which they were taught. The way in which the barks, seeds, etc., were prepared for cutting displayed the extreme care which was taken in attending to the most minute details. Professor Greenish makes his work a labour of love, and I feel sure that every student who had the pleasure of working under him warmly appreciated his efforts. The materia medica syllabus for the Major is a very unsatisfactory one. For instance, it says that the microscope will be introduced for the examination of certain drugs. Surely it is not asking too much to have these certain drugs specified, and why a candidate should be expected to cram up the assay of such galenicals as extract. cinchonæ liquidum I fail to understand. No one ever attempts to remember them after the examination; it would be far better if students were required to show that they possessed a practical knowledge of those processes in the laboratory and the principles upon which they are based. The syllabus is too delightfully vague altogether.

Physics.

This is the unsatisfactory subject. The apparatus is totally inadequate for lecture experiments and more fit to amuse and astonish children than for educational purposes. The lantern was never once used in the lectures on light, because the lecture theatre could not be darkened. There is no excuse for this, blinds could be easily fitted for a small outlay. Lectures on light without lantern demonstrations are about as useful as a steamship with a broken screw shaft. The lecturer is handicapped by apparatus that has a most exasperating habit of refusing to work at critical moments, and by a course which is far too short. He struggled bravely along, however, and did his very best under the circumstances, and he shares in the honour of our splendid percentage of passes. The remedy that I would suggest to alter the existing state of affairs is a simple one, and its great charm is it would cost nothing. Instead of the physical apparatus being kept locked up, let it be placed in a spare room to which the students may always have access. They would then be able to perform any experiments, and by so doing would discover the faults in the apparatus, and could repair it under the supervision of the lecturer, to their own advantage and to the advantage of those who may follow after them.

Many little inexpensive pieces of apparatus could be constructed with which many interesting and instructive experiments could be performed, which the students would willingly present to the School. We are not inconsistent, we thoroughly appreciate the generosity of the Council and their action in carrying on the School at a loss, and I firmly believe that if the Council were to make an appeal to those men who have in the past been educated in our School to subscribe towards a small physical laboratory, £500 could be easily raised, if every man subscribed a sovereign. I should like to see the question discussed in the correspondence columns, for I believe that opinions would be expressed which would show that the chemist is not the selfish apathetic creature that he is supposed to be.

PRESCRIPTION READING.

BY JOSEPH INCE.

A grateful change has come over the art of teaching which has influenced every branch of instruction. One looks back with regret on the dreary methods once in vogue of conveying the smallest knowledge of French and German in the longest period of time, when these two living languages were thought to be best imparted by means of unconnected sentences, lists of genders with innumerable exceptions, followed by the monotonous repetition of irregular verbs. The regret is converted into sorrow, on the recollection how Latin—a dead language—was made unnecessarily defunct. There still lingers in the minds of the youth of pharmacy a repulsion to this last-mentioned study, partly, perhaps, because their teacher has not loved his occupation, and in consequence taught mechanically; but chiefly because in many cases they have been removed too soon from school, when the drudgery, inseparable from all commencements, had scarcely been surmounted and before they could realise the advantage or the pleasure such knowledge could bestow. It would be idle to discuss the bearing of Latin upon pharmacy; our examination system has made a certain amount of scholarship imperative.

Thus far at least an aspirant to pharmaceutical qualification must have gone: when a physician writes a prescription for a patient in the well-known semi-classical manner the intending dispenser must be able to understand what has been written before he can rightly fulfil the intentions of the prescriber. These intentions are expressed in technical contracted Latin, definite and perfectly intelligible when once mastered—far more definite than instructions conveyed in English and less liable to be misunderstood. How thoroughly technical are these professional documents may be seen in witnessing the surprise of a strictly classical student on his first introduction to this branch of medicine. Clearly the practice of the Romans did not antedate that of the B.P. Still more curious are his conscientious efforts to render stock medical directions into elegant Ciceronian. He soon learns that he must adapt himself to circumstances, and accept the traditional phraseology in which they are couched.

Seeing, then, that we have a distinct study before us, an acquaintance with which is indispensable to every pharmacist, how shall the tyro enter upon the task? It is presumed and taken for granted that enough progress has been made in Latin as has been sufficient to satisfy the claims of the Preliminary examination. That must come first—that minimum of knowledge must be in the possession of an apprentice or assistant, else these remarks will be of no practical service, and the position is hopeless.

Just as the young botanist collects specimens of plants and flowers, let the young pharmacist collect autograph prescriptions—originals if possible, or failing that, copies made by a competent and friendly hand. Specially note—and let it be an encouragement to an inexperienced student—that the simple act of collecting does not imply nor demand practical knowledge of the subject; it relates, in the first instance, to the getting together of materials for subsequent use. It is preferable to mount each prescription singly, and not to arrange in book or album form, in which latter case they speedily get damaged, dog-eared, and to some extent illegible. The collection (one hundred being a fair serviceable number) should be mounted on thick cardboard, faced with white demy, and backed by thin dark-brown paper.

One uniform size should be preserved; $7\frac{1}{4}$ by $4\frac{3}{4}$ inches will be found convenient. Thin starch paste answers better for this class of work than that sold by stationers or made from flour. Blots

(ink in the wrong place) and stains may be removed by damping the part affected, and carefully erasing by means of the sharp edge of a razor. Give mounted autographs an annual spring cleaning with a soft sponge and distilled water; dry with a clean, very soft, smooth cloth. It is wonderful what a restoration in general appearance may be thus effected.

Continuing the work of collecting at your leisure and as opportunity occurs, leave the reading of autographs alone at first and turn your attention to printed formulæ and medical directions. Begin, that is, with some good reference text-book and try to write out, with proper terminations, the series of printed prescriptions there given in contracted Latin, and compare what you have done with those printed in full in another section, generally towards the end. More than a little courage is required not to refer to the correctly printed copy until you have personally done your best.

However tedious this may appear it will be found an admirable method of preparation—most helpful and a distinct gain of time.

Having done with these printed exercises, get hold of six autograph prescriptions, more are not necessary, and turn them into a grammar lesson, thus:—

(a) Find out by the aid of a dictionary the nominative case of each noun: its gender and declension.

(b) Ascertain the conjugation to which the verbs belong, and their four principal parts, present, perfect, supine and infinitive.

(c) Learn the proper declension of the adjectives, and note the noun with which they agree.

(d) Class the remaining words under their grammatical headings, as adverbs, pronouns, prepositions, and the like.

All this an apprentice or junior assistant can do perfectly by himself, and he is advised to do it, for such preparation will save him from that painful hesitancy and uncertainty which tracks many pharmacists through life.

May the writer be allowed to say that he advances no theory but speaks from personal experience.

At this stage, the general arrangement and construction of Latin prescriptions should be studied. Any good manual will describe their almost invariable character. *R.*, meaning recipe, take thou, being at the heading, all the quantities mentioned as grains, scruples, drachms, ounces, or drops, must be put in the accusative case, according to the rule, that an active transitive verb governs that case. The ingredients mentioned, solid and liquid, must be put in the genitive. Frequently there is a second genitive depending on, and therefore governed by the first, as:—

R. Linimenti Saponis, unciam. [3i].

Consult any good vocabulary for words of unusual occurrence, and note that the government of recipe ends with the last line of the prescription proper—generally before the words *Misce fiat*. Directions begin a new independent sentence, thus—“Twentydrops in a wineglass of water” should be translated

Guttæ viginti (not guttas) ex aquæ.
Cyatho vinoso sumendæ. [Not sumendas.]

Practice will soon make clear sundry other peculiarities. By way of example, here is one prescription worked out for a beginner's use:—

R. Chlorat. Potass. ʒj.
-Syr. Simpl. ʒj.
Aquæ. ʒiij.
M. ft. mist. Sumat coch. j. parv. ter in die.

R. Pulv. Doveri gr. vii.
Hydr. c. Cret. gr. iv.
In pil. duas stat. sumend.

R. Magnes. Ust. ʒss.
P. Rhei gr. xv.
Syr. Zingib. ʒss.
Tr. Ejud. ℥xx.
Acid. Hydroc. dil. ℥v.
Aq. ad ʒij.

Haust. p. horas duas S.

Recipe, Chloratis Potassæ, drachmam.
Syrupi Simplicis, unciam.
Aquæ, uncias tres.

Misce fiat mistura. Sumat cochleare unum parvum ter in die.

Recipe, Pulveris Doveri, grana sex.
Hydrargyri cum Cretâ, grana quatuor.
In pilulas duas statim sumendas.

Recipe, Magnesiæ ustæ, drachmam dimidiam.
Pulveris Rhei, grana quindecim.
Syrupi Zingiberis, semi-drachmam.
Tincturæ Ejudem, minima viginti.
Acidi Hydrocyanici diluti, minima v.
Aquæ ad, ʒij.

Haustus post horas duas sumendus.

Note the unfortunate contraction—

Acid. Hydroc. dil.

which may be mistaken for—

Acidum Hydrochloricum dilutum.

Take thou of—

Potassium Chlorate 1 drachm.
Simple syrup 1 ounce.
Water 3 ounces.

Mix and make a mixture (or) let a mixture be made.
Let (the patient) take one teaspoonful three times a day.

Take thou of—

Dover's powder 6 grains.
Mercury with Chalk 4 grains.

(Divide) into two pills to be taken immediately.

Take thou of—

Calcined Magnesia ½ drachm.
Powdered Rhubarb 15 grains.
Syrup of Ginger ½ drachm.
Tincture of the same 20 minims.
Dilute Hydrocyanic Acid 5 minims.

Water sufficient to make two ounces.
The draught to be taken in (after) two hours.

Nouns.

Acidum, i, n. subs., 2nd decl.
Aqua, æ, f. subs., 1st.
Chloras, atis, m. subs., 3rd.
Cochleare, is, plur. cochlearia, n. subs., 3rd.
Creta, æ, f. subs., 1st.
Dies, ei, m. subs., 5th.
Doverus, i, m. subs., 2nd (latinised).
Haustus, ūs, m, subs., 4th.
Hora, æ, f. subs., 1st.
Hydrargyrum, i, n. subs., 2nd.
Magnesia, æ, f. subs., 1st.
Mistura, æ, f. subs., 1st.
Pilula, æ, f. subs., 1st.
Potassa, æ, f. subs., 1st.
Pulvis, eris, m. subs., 3rd.
Rheum, ei, n. subs., 2nd.
Syrupus, i, m. subs., 2nd.
Tinctura, æ, f. subs., 1st.
Zingiber, eris, n. subs., 3rd.

Verbs.

Diluo, ui, utum, ere, 3rd conjug.; dilutus, a, um, part. past.
Fio, factus sum, fieri, neut. pass. irregular; fiat, fiant, let it or them be made [literally].
Misceo, ui, ixtum and istum, ēre, 2nd.

Misce, imperat. 2nd person sing.
 Recipio, cēpi, ceptum, cipere, 3rd.
 Recipe, imperat., 2nd person sing.
 Sumo, sumpsi, sumptum, ere, 3rd.
 Sumat, let (*the patient take*), 3rd pers. sing. subjunctive.
 Sumendus, a, um (to be taken), gerundive.
 Uro, ussi, ustum, ere, 3rd, to burn.
 Ustus, a, um, part. *calcined* in pharmacy.

Adjectives.

Duo, æ, o, numeral adj.
 Hydrocyanicus, a, um.
 Parvus, a, um.
 Simplex, icis.
 Unus, a, um, gen. unius.

Various.

Ad, prep., governing accusative, distinguish from add, for adde.
 Cum, prep., ablative.
 Idem, eadem, idem., gen. ejusdem, pron.
 In, prep., in die, ablative, in pilulas, accus. (*meaning into*).
 Post, prep. accusative, *after*; frequently "in," as *in two hours*.
 Statim, adv.
 Ter, adv. of time.

Signs of Quantity.

Drachma, æ, f. subs., 1st decl.
 D. dimidia, or semi-drachma.
 Granum, i, n. subs., 2nd.
 Grana quatuor, sex, quindecim.
 Minimum, i, n. subs., 2nd.
 Minima quinque, viginti.
 Uncia, æ, f. subs., 1st.
 Unciæ duæ, tres.

All the above quantities to be put in the accusative case, being governed by Recipe.

From these preliminaries and initial work we may turn to the direct study of manuscript prescriptions. An autograph should never be read with the finger drawn across the lines—the invariable habit of the beginner. Leave that mode to the blind man reading the Bible by the wayside. Nothing injures a manuscript so much as that nervous trick. Never underline or mark the formula with a pencil, or smear the corners by constant holding between the finger and thumb. Treated as they should be, mounted recipes may be kept for years in very fair preservation. The handwriting will in too many instances form a serious difficulty. For this reason, the general superintendence and help of a competent adviser are invaluable, if, indeed, not indispensable. No youth at the outset can unaided decipher the strange caligraphy in which medical formulæ are presented; to accomplish this, varied experience and constant observation are required.

Surely, now that so many thoroughly trained men adorn our ranks, there are few centres where such an adviser would not willingly lend his services. If any apprentice or assistant, or associated number, will collect and mount no less than one hundred autograph prescriptions, and send them to me, I will gladly write them out in an uncontracted form and translate the English directions contained, in full technical Latin. From this offer I exclude collections I have forwarded to various Associations, for the work must be the students' own, in the execution of which aid from every possible source may be obtained.

These suggestions are meant only for those who have not the privilege of attending a public course; beyond doubt, class teaching under the guidance of an efficient demonstrator is of paramount advantage.

MATHEMATICS FOR PHARMACEUTICAL STUDENTS.

The importance of the study of mathematics as a mental training can scarcely be overstated. In particular, it is of the greatest value as a preparation for the study of physics and chemistry; it is not too much to say that for anything like advanced studies in these subjects, a fair degree of familiarity with mathematics is quite indispensable. Here, however, we are only concerned with the place that should be occupied by the study of mathematics in the preliminary acquirements of the pharmaceutical student; and it is a subject of far more importance to such students than has commonly been recognised in the past.

It is a matter for congratulation that, after August, 1900, the present "First" examination, in which there is no more mathematics than is included in elementary arithmetic, will come to an end, and be replaced by an examination in which elementary algebra and Euclid are necessary subjects. It is clear, however, that if a certain amount of mathematical knowledge will be a good thing for students then it is equally so now. Anyone who has been concerned with teaching chemistry and physics to pharmaceutical students is well aware that much more difficulty is encountered by those who have no knowledge of elementary algebra and Euclid than by those who have some little acquaintance with these subjects; and it cannot be too emphatically urged on students that they will be well repaid for the time and labour expended in mastering the elements of these two branches of mathematics.

The student who intends later to work for the Minor examination cannot be recommended to content himself with less mathematics than the first book of Euclid, with a due proportion of "riders," or problems to be solved by himself and depending on those proved in the text; and algebra up to and including simple equations. We may here note that almost all of the usual school books dealing with these subjects are about equally suitable; but Collins's 'Euclid' can be recommended as containing a good collection of riders, while Todhunter's smaller 'Algebra' may be mentioned as following a good arrangement of the subject. If the student intends also to work for the Major, he should carry his mathematical studies beyond the limits just named; but we shall return to this point below.

The study of Euclid will make the student acquainted with the process of logical proof of a proposition; it is most important that, whether he has done much or little of this subject, he should have studied what he has done so thoroughly as to be perfectly familiar with it; to have thoroughly mastered and to understand the first ten propositions is of far more value than to have a superficial acquaintance with the whole book. In the study of an experimental science such as chemistry, it is essential to a proper knowledge of the subject that the learner should not accept deductions and conclusions drawn from experiments merely because they have the authority of general acceptance, but he should be able to check them for himself. As an example we may take the proof of the composition of water. The student can make experiments similar to those on which our knowledge of the matter rests; he cannot at first, however, perform them with the accuracy that is necessary for an actual investigation of the subject, and he may quite legitimately accept the statements of more experienced workers as to what experiments they have performed and what the results of those experiments have been. But he must not accept in the same way their theoretical conclusions from their experiments; he must follow the reasoning and be himself convinced by it; he should not only know what is the composition of water, but he should know that he knows it, and in order that he may have due confidence in his conviction of the correctness of the reasoning, he

must have some familiarity with processes of reasoning such as are employed in proving the propositions of Euclid, and in the working of riders.

The study of algebra is also of value as mental training; but its more immediate use to the student of chemistry and physics is that it gives him methods of working many of the problems that arise in these subjects by far simpler methods than he must otherwise employ. It familiarises him with the idea of a number of separate phenomena being all special instances of the working of a general principle; he learns to express the various quantities that are concerned in these phenomena by general formulæ, and by the use of such formulæ to at once arrive at other facts which could only be found by far more cumbersome methods if algebraical processes were not employed. As an instance we may take the application of the laws of Boyle and Charles. According to the former law, at any constant temperature, the volume of a gas varies inversely as the pressure, or in other words, the product of the pressure and the volume is always the same. This is expressed algebraically by saying that $p_v = a$ constant, where p stands for the numerical value of the pressure, and v similarly for the volume. In the often-occurring problem, where we know the volume that a gas occupies (say v_1) under a given pressure (p_1), and it is required to know what volume it will occupy under another pressure (p_2), the temperature being unchanged, we proceed as follows:—Calling the required volume v_2 , we know that $p_2 v_2 = p_1 v_1$; therefore by simple algebra $v_2 = \frac{p_1 v_1}{p_2}$, and by substituting the

given values in the general expression $\frac{p_1 v_1}{p_2}$, we have the answer

at once. According to Charles's law, if a given volume of a gas at 0° C. is heated, it expands by $1/273$ of its volume at 0° C. for every degree C. through which it is heated; or if it is cooled, it contracts $1/273$ of its volume at 0° C. for every degree C. through which it is cooled, if the pressure remains the same. Denoting its volume at 0° by V_0 , the number of degrees through which it is heated or cooled by t , and its volume at the new temperature by V_t , we can put $V_t = V_0 + 1/273 V_0 t$. Instead of the vulgar fraction $1/273$, it is more convenient to employ the equivalent decimal fraction 0.00367 , and we put $V_t = V_0 + 0.00367 V_0 t$; or $V_t = V_0 (1 + 0.00367t)$: and by transposing this we have $V_0 = \frac{V_t}{1 + 0.00367t}$. It is to be noted that if the gas is cooled,

t has the negative sign, and this case is included in the general formulæ just given. These two formulæ enable us at once to find the volume occupied by a gas at any temperature when we know its volume at 0° , and *vice versa*. But these formulæ can be easily combined with the one given above for Boyle's law, and we can solve such a problem as the following:—If we have a known volume of a gas at any known temperature and pressure, what volume will it occupy at 0° C., and under normal atmospheric pressure (760 Mm. of mercury)? Call its present temperature t° C., its pressure (in Mm. of mercury) p , its present volume V_{pt} , and the required volume V_0 . By the formula for Boyle's law, $V_t = \frac{p \cdot V_{pt}}{760}$, where V_t is the volume it would acquire

if the pressure were changed to 760 Mm., the temperature remaining the same. Then if the temperature is brought to 0° while the pressure remains at 760 Mm., $V_0 = \frac{V_t}{1 + 0.00367t}$, but since $V_t = \frac{p \cdot V_{pt}}{760}$,

we can put $V_0 = \frac{p \cdot V_{pt}}{760(1 + 0.00367t)}$. Substituting the given values

in this general formula, we obtain the required volume at once.

Various other problems can be at once solved by this formula, but it is not necessary to stop to point them out.

There are many other questions connected with the early stages of chemistry and physics, for dealing with which algebraical methods are the best. But enough has probably been said on this matter, and we pass on to consider the requirements of the Major student. Anyone who purposes to go on to the further study of chemistry and physics that is necessary for the higher examination should carry his knowledge of algebra up to the solving of quadratic equations of one unknown quantity and simple equations of two unknown quantities. As regards Euclid no definite point need be fixed, but the further he has gone in this subject the better; in addition he should have at least sufficient knowledge of trigonometry to understand such common terms as sine, cosine, etc.

The instances are simply innumerable in which the use of formulæ is advantageous or necessary in the study of light, heat, magnetism, and electricity. Experimental physics consists almost entirely of measuring certain quantities, and from these calculating others which do not themselves admit of direct measurement. No one can properly learn physics who does not perform some of these experiments, or at the least, see them performed on the lecture table; and in working out the results, the use of symbols and formulæ greatly simplifies the process. It will be sufficient to indicate two or three instances; thus, to find the focal length of a convex lens, we measure the distances from it of an object and its image formed by the lens, and employ the formula $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$

u and v being respectively the distances measured, and f the focal length; the same formula holds good for other focal lengths besides those of convex lenses. For such simple experiments as measuring the angle of a prism, or finding the refractive index of a block of glass by means of pins and a sheet of paper, both geometry and the rudiments of trigonometry are necessary; in the more delicate method of finding a refractive index by means of the spectrometer, the results are worked out by means of a general formula, and the sines of certain angles are used in the calculation. Turning to electricity and magnetism, Ohm's law is usually expressed by symbols in the form $C = \frac{E}{R}$, where C represents

the numerical value of the current, E the electromotive force, and R the resistance. Joule's law, again, connecting the heat evolved in a circuit with the current and the resistance, takes the form $H = C^2 R$; by the use of these formulæ many new facts are easily deduced, and have received independent proof. It would be easy to multiply indefinitely instances of this kind; but enough has been said to show the necessity of a pharmaceutical student having some acquaintance with elementary mathematics.

ARISTOL FOR BURNS.—For superficial burns aristol dusted on the surface is an excellent remedy. For more extensive and deeper lesions the following ointment should be applied: Aristol, 1; olive oil, 2; dissolve and add vaseline, 8. The wound should first be rendered perfectly aseptic by washing with a weak solution of boric acid or phenol, and all blisters should be emptied of their contents. After drying with absorbent cotton the powder or ointment of aristol should be applied. When the latter is used the edges of the parts dressed should also be dusted with powdered aristol. The whole should be covered with aseptic gauze coated with the ointment, and then bandaged up with plain sterilised gauze and wool. The dressings should be renewed every three days.—*Therap. Gaz.* [3], 13, 476.

THE STUDY OF POWDERED DRUGS.

The rapid advances which have been made in chemical knowledge, as exhibited in the large number of synthetic remedies which from time to time are put upon the market, appeal so strongly to the imagination of some pharmacists as to cause them to think that, because chemistry increases in importance, botany must necessarily decrease. A little consideration of the great number of remedies derived from the vegetable kingdom, and of the varying uses to which they are put in the practice of medicine, will at once convince the most sceptical that there is little fear that they will be displaced by synthetic products for many years to come. One need only allude to coca leaves, cascara sagrada, strophanthus, eucalyptus oil, and araroba, all remedies introduced into medical use during this generation, to show that there is no reason to doubt that many valuable medicaments still remain to be discovered for the healing of mankind. A more general study of plant analysis is likely to lead to much more fruitful and more immediate results, so far as remedial agents is concerned, than is the prosecution of synthetic chemistry. In saying this it is not intended to depreciate the latter, but there is reason to think that it is claiming so much attention as to interfere with the pursuit of systematic plant analysis.

In order to be properly equipped for the pursuit of plant analysis and for the control of the supply of crude drugs, as well as for the manufacture of efficient liquid and solid preparations from them, the pharmacist must possess a knowledge of botanical histology. Otherwise he will either have to rely upon the dealer from whom he obtains his materials or place his faith in external characteristics which are not infrequently modified by methods of collection and preparation for the market, as well as by the influence of varying soils and climates. And there is always a danger, as experience has shown, that a substance somewhat similar in appearance may be inadvertently collected in place of the genuine article. Above all it is desirable that the pharmacist should be able to judge of the purity of the powders which he almost invariably obtains from the manufacturing druggist. If the current of wholesale manufacturing pharmacy is not to entirely swamp the true art and craft of pharmacy, the technical training of the pharmacist must rest upon the assured rock of science, and it must be acquired in a manner which will permit of him becoming interested in it beyond the mere desire to pass his examinations. This can be done if means are taken to provide a proper progression of his studies.

In the case of vegetable histology as applied to drugs it generally happens that the student—the examinee of the immediate future—devotes at most a few hours to the subject, trusting to the chance of being able to satisfy the examiner, and is careless of any thought of the possible use of the knowledge in his future work. But even if desirous of conscientiously mastering the subject to the utmost of his opportunities, he too frequently becomes bored by the number of details of structure, the respective significance of which he is unable to appreciate because of the lack of that previous knowledge of general botanical histology which alone can bring them into proper perspective.

There can be no doubt that a pretty good acquaintance with the anatomy of flowering plants obtained by practical work with the microscope is an essential to the acquisition of a sound knowledge of the histology of drugs. In order to obtain this the student should first make himself thoroughly familiar with the various kinds of cells and vessels and the tissues which they form—epidermis, cork, fundamental parenchyma, endodermis, pericycle, phloem, xylem, medullary rays and pith as well as the varieties of stereom.

He should then make himself acquainted with the anatomical characteristics of roots, stems, leaves, flowers, fruits and seeds as exhibited in the types found in the usual biological text-books, at the same time learning to recognise with ease the different tissue systems both by means of their elements and the reactions the elements give with reagents. Then he should pass on to study in detail the various peculiarities of the different cells; the varieties of thickening of epidermal cells, and the appearance of their walls in surface view; the forms and sculpturing of lignified elements, stone-cells, vessels, fibres; the frequency, characters, and disposition of hairs and glands; the nature and disposition of cell contents, crystals and their composition, starch and its size and form of granules, inulin, tannin, resins, and oils. This is beyond what is required for educational work in biology. It is to be remembered that in the use of anatomy as applied to the recognition of plants every detail is of value, just as every reaction in the identification of a chemical is of value, but in the latter case the knowledge is so well tabulated, because the subject has been so well worked, that it often suffices to apply a few crucial tests while the others are ignored. In the anatomy of plants, however, so much remains unknown that the anatomist dare not overlook a single character without running the risk of falling into error. It is not sufficient to learn a few distinctive features to be sure of recognising a particular drug, for unless it agrees in every particular in accordance with botanical principles, there is every reason to conclude that it is derived from some other plant.

Following on, it is advisable, as far as time will allow, that as many plant structures as possible should be submitted to examination in order that some of the many abnormalities of plant structure should come under observation. This is of considerable importance because subsequently it will be found that the anatomy of many drugs does not at all conform to the type specimens of the ordinary biological class, and unless the student is prepared by a course such as is suggested, he will fall into the error of ascribing undue significance to characters which may be ordinal or generic, and he may overlook specific characters. Another reason why he should proceed beyond the study of type specimens is that he may learn something of the mortification that plant members undergo by secondary growth. Roots and stems when mature depart in the arrangement and character of their tissues very considerably from the typical structure of the first year. Cells are lignified, the epidermis disappears and is replaced by cork, deposits are formed, roots assume the apparent arrangements of stems, and other changes take place.

While pursuing these studies the use of the microscope and micro-chemical reagents and stains will become familiar. Comparatively few reagents are really requisite, but the action of each of them upon all kinds of tissue should be well understood. It will be found that some of them greatly assist in bringing into prominence other features than those for which they are specifically used. The most generally useful book for those who intend subsequently to follow up the study of the histology of drugs, is Strasburger's 'Practical Botany,' translated by Hillhouse. A much more useful work in some respects is Gérard's 'Traité Pratique de Micrographie,' of which, unfortunately, there is no English translation. A somewhat smaller and a little more systematic English work on similar lines is a desideratum.

LACTOPHENINE IN INFANTILE BRONCHO-PNEUMONIA.—Lactophenine combined with benzoic acid may be prescribed thus: Lactophenine, 15 centigrammes; benzoic acid, 5 centigrammes. One such powder to be given every four hours in tea.—*Pediat.*, v., 93.

BRITISH ASSOCIATION.

MEETING AT BRISTOL.



THE British Association met at Bristol this week, for the third time in the history of that city, and on Wednesday last

The Presidential Address

was delivered by Sir William Crookes, F.R.S., V.P.C.S., who, after a few brief introductory remarks, proceeded to deal with the question of

FOOD SUPPLY.

He said: Many of my statements you may think are of the alarmist order; certainly they are depressing, but they are founded on stubborn facts. They show that England and all civilised nations stand in deadly peril of not having enough to eat. As mouths multiply, food resources dwindle. Land is a limited quantity, and the land that will grow wheat is absolutely dependent on difficult and capricious natural phenomena. I am constrained to show that our wheat-producing soil is totally unequal to the strain put upon it. After wearying you with a survey of the universal dearth to be expected, I hope to point a way out of the colossal dilemma. It is the chemist who must come to the rescue of the threatened communities. It is through the laboratory that starvation may ultimately be turned into plenty.

The food supply of the kingdom is of peculiar interest to this meeting, considering that the grain trade has always been, and still is, an important feature in the imports of Bristol. The imports of grain to this city amount to about 25,000,000 bushels per annum—8,000,000 of which consist of wheat.

What are our home requirements in the way of wheat? The consumption of wheat per head of the population (unit consumption) is over 6 bushels per annum; and taking the population at 40,000,000, we require no less than 240,000,000 bushels of wheat, increasing annually by 2,000,000 bushels, to supply the increase of population. Of the total amount of wheat consumed in the United Kingdom we grow 25 and import 75 per cent.

So important is the question of wheat supply that it has attracted the attention of Parliament, and the question of national granaries has been mooted. It is certain that, in case of war with any of the great Powers, wheat would be contraband, as if it were cannon or powder, liable to capture even under a neutral flag. We must therefore accept the situation and treat wheat as munitions of war, and grow, accumulate, or store it as such. It has been shown that at the best our stock of wheat and flour amounts only to 64,000,000 bushels—fourteen weeks' supply—while last April our stock was equal to only 10,000,000 bushels, the smallest ever recorded by "Beerbohm" for the period of the season. Similarly, the stocks held in Europe, the United States, and Canada, called "the world's visible supply," amounted to only 54,000,000 bushels, or 10,000,000 less than last year's sum total, and nearly 82,000,000 less than that of 1893 or 1894 at the corresponding period. To arrest this impending danger, it has been proposed that an amount of 64,000,000 bushels of wheat should be purchased by the State and stored in national granaries, not to be opened, except to remedy deterioration of grain, or in view of national disaster rendering starvation imminent. This 64,000,000 bushels would add another fourteen weeks' life to the population; assuming that the ordinary stock had not been drawn on, the wheat in the country would only then be enough to feed the population for twenty-eight weeks.

I do not venture to speak authoritatively on national granaries. The subject has been discussed in the daily press, and the recently published Report from the Agricultural Committee on National Wheat Stores brings together all the arguments in favour of this important scheme, together with the difficulties to be faced if it be carried out with necessary completeness.

More hopeful, although difficult and costly, would be the alternative of growing most, if not all our own wheat supply here at home in the British Isles. The average yield over the United Kingdom last year was 29·07 bushels per acre, the average for the

last eleven years being 29·46. For twelve months we need 240,000,000 bushels of wheat, requiring about 8,250,000 acres of good wheat-growing land, or nearly 13,000 square miles, increasing at the rate of 100 square miles per annum, to render us self-supporting as to bread food. This area is about one-fourth the size of England.

A total area of land in the United Kingdom equal to a plot 110 miles square, of quality and climate sufficient to grow wheat to the extent of 29 bushels per acre, does not seem a hopeless demand. The total area of the United Kingdom is 120,979 square miles; therefore, the required land is about a tenth part of the total. It is doubtful, however, if this amount of land could be kept under wheat, and the necessary expense of high farming faced, except under the imperious pressure of impending starvation, or the stimulus of a national subsidy or permanent high prices. Certainly these 13,000 square miles would not be available under ordinary economic conditions, for much, perhaps all, the land now under barley and oats would not be suitable for wheat. In any case, owing to our cold, damp climate and capricious weather, the wheat crop is hazardous, and for the present our annual deficit of 180,000,000 bushels must be imported. A permanently higher price for wheat is, I fear, a calamity that ere long must be faced. At enhanced prices, land now under wheat will be better farmed, and therefore will yield better, thus giving increased production without increased area.

The burning question of to-day is, What can the United Kingdom do to be reasonably safe from starvation in presence of two successive failures of the world's wheat harvest, or against a hostile combination of European nations? We eagerly spend millions to protect our coasts and commerce; and millions more on ships, explosives, guns, and men; but we omit to take necessary precautions to supply ourselves with the very first and supremely important munition of war—food.

To take up the question of food supply in its scientific aspect, I must not confine myself exclusively to our own national requirements. The problem is not restricted to the British Isles—the bread-eaters of the whole world share the perilous prospect—and I do not think it out of place if on this occasion I ask you to take with me a wide, general survey of the wheat supply of the whole world.

Wheat is the most sustaining food grain of the great Caucasian race, which includes the peoples of Europe, United States, British America, the white inhabitants of South Africa, Australasia, parts of South America, and the white population of the European colonies. Of late years the individual consumption of wheat has almost universally increased. In Scandinavia it has risen 100 per cent. in twenty-five years; in Austro-Hungary, 80 per cent.; in France, 20 per cent.; while in Belgium it has increased 50 per cent. Only in Russia and Italy, and possibly Turkey, has the consumption of wheat per head declined.

In 1871 the bread-eaters of the world numbered 371,000,000. In 1881 the numbers rose to 416,000,000; in 1891, to 472,600,000, and at the present time they number 516,500,000. The augmentation of the world's bread-eating population in a geometrical ratio is evidenced by the fact that the yearly aggregates grow progressively larger. In the early seventies they rose 4,300,000 per annum, while in the eighties they increased by more than 6,000,000 per annum, necessitating annual additions to the bread supply nearly one-half greater than sufficed twenty-five years ago.

How much wheat will be required to supply all these hungry mouths with bread? At the present moment it is not possible to get accurate estimates of this year's wheat crops of the world, but an adequate idea may be gained from the realised crops of some countries and the promise of others. To supply 516,500,000 bread-eaters, if each bread-eating unit is to have his usual ration, will require a total of 2,324,000,000 bushels for seed and food. What are our prospects of obtaining this amount?

According to the best authorities, the total supplies from the 1897-98 harvest are 1,921,000,000 bushels. The requirement of the

516,500,000 bread-eaters for seed and food are 2,324,000,000 bushels; there is thus a deficit of 403,000,000 bushels, which has not been urgently apparent owing to a surplus of 300,000,000 bushels carried over from the last harvest. Respecting the prospects of the harvest year just beginning, it must be borne in mind that there are no remainders to bring over from last harvest. We start with a deficit of 103,000,000 bushels, and have 6,500,000 more mouths to feed. It follows, therefore, that one-sixth of the required bread will be lacking, unless larger drafts than now seem possible can be made upon early produce from the next harvest.

The majority of the wheat crops between 1882 and 1896 were in excess of current needs, and thus considerable reserves of wheat were available for supplementing small deficits from the four deficient harvests. But bread-eaters have also eaten up the reserves of wheat, and the 1897 harvest being under average, the conditions become serious. That scarcity and high prices have not prevailed in recent years is due to the fact that since 1889 we have had seven world crops of wheat and six of rye abundantly in excess of the average. These generous crops increased accumulations to such an extent as to obscure the fact that the harvests of 1895 and 1896 were each much below current requirements. Practically speaking, reserves are now exhausted, and bread-eaters must be fed from current harvests—accumulation under present conditions being almost impossible. This is obvious from the fact that a harvest equal to that of 1894 (the greatest crop on record, both in acre-yield and in the aggregate) would yield less than current needs.

It is clear we are confronted with a colossal problem that must tax the wits of the wisest. When the bread-eaters have exhausted all possible supplies from the 1897-98 harvest, there will be a deficit of 103,000,000 bushels of wheat, with no substitution possible unless Europeans can be induced to eat Indian corn or rye bread. Up to recent years the growth of wheat has kept pace with demands. As wheat-eaters increased, the acreage under wheat expanded. The world has become so familiarised with the orderly sequence of demand and supply, so accustomed to look upon the vast plains of other wheat-growing countries as inexhaustible granaries, that, in a light-hearted way it is taken for granted that so many additional acres can be added year after year to the wheat-growing area of the world. We forget that the wheat-growing area is of strictly limited extent, and that a few million acres regularly absorbed, soon mount to a formidable number.

The present position being so gloomy, let us consider future prospects. What are the capabilities as regards available area, economic conditions, and acreage yield of the wheat-growing countries from whence we now draw our supply?

For the last thirty years the United States have been the dominant factor in the foreign supply of wheat, exporting no less than 145,000,000 bushels. This shows how the bread-eating world has depended, and still depends, on the United States for the means of subsistence. The entire world's contributions to the food-bearing area have averaged but 4,000,000 acres yearly since 1869. It is scarcely possible that such an average, under existing conditions, can be doubled for the coming twenty-five years. Almost yearly, since 1885, additions to the wheat-growing area have diminished, while the requirements of the increasing population of the States have advanced, so that the needed American supplies have been drawn from the acreage hitherto used for exportation. Practically there remains no uncultivated prairie land in the United States suitable for wheat-growing. The virgin land has been rapidly absorbed, until at present there is no land left for wheat without reducing the area for maize, hay, and other necessary crops.

It is almost certain that within a generation the ever increasing population of the United States will consume all the wheat grown within its borders, and will be driven to import, and, like ourselves, will scramble for a lion's share of the wheat crop of the world. This being the outlook, exports of wheat from the United States are only of present interest, and will gradually diminish to a vanishing point. The inquiry may be restricted to such countries as probably will continue to feed bread-eaters who annually derive a considerable part of their wheat from extraneous sources.

But if the United States, which grow about one-fifth of the world's wheat, and contribute one third of all wheat exportations, are even now dropping out of the race, and likely soon to enter the list of wheat-importing countries, what prospect is there that other wheat-growing countries will be able to fill the gap, and by enlarging their acreage under wheat, replace the supply which the

States have so long contributed to the world's record? The withdrawal of 145,000,000 bushels will cause a serious gap in the food supply of wheat-importing countries, and unless this deficit can be met by increased supplies from other countries there will be a dearth for the rest of the world after the British Isles are sufficiently supplied.

Next to the United States, Russia is the greatest wheat exporter, supplying nearly 95,000,000 bushels.

Although Russia at present exports so lavishly, this excess is merely provisional and precarious. The Russian peasant population increases more rapidly than any other in Europe. The yield per acre over European Russia is meagre—not more than 8.6 bushels to the acre—while some authorities consider it as low as 4.6 bushels. The cost of production is low—lower even than on the virgin soils of the United States. The development of the fertile though somewhat over-rated, "black earth," which extends across the southern portion of the empire and beyond the Ural Mountains into Siberia, progresses rapidly. But, as we have indicated, the consumption of bread in Russia has been reduced to danger point. The peasants starve and fall victims to "hunger typhus," whilst the wheat growers export grain that ought to be consumed at home.

Considering Siberia as a wheat grower, climate is the first consideration. Summers are short—as they are in all regions with continental climates north of the 45th parallel—and the ripening of wheat requires a temperature averaging at least 65° Fahr. for fifty-five to sixty-five days. As all Siberia lies north of the summer isotherm of 65° it follows that such region is ill adapted to wheat culture unless some compensating climatic condition exists. As a fact, the conditions are exceptionally unfavourable in all but very limited districts in the two westernmost governments. The cultivable lands of Western Siberia adapted to grain bearing neither equal in extent nor in potential productive powers those of Iowa, Minnesota, and Nebraska. There are limited tracts of fair productiveness in Central Siberia and in the valleys of the southern affluents of the Amoor, but these are only just capable of supporting a meagre population.

Prince Hilkoﬀ, Russian Minister of Ways and Communications, declared in 1896 that "Siberia never had produced, and never would produce, wheat and rye enough to feed the Siberian population." And a year later Prince Krapotkin backed the statement as substantially correct.

Those who attended the meeting of the British Association last year in Canada must have been struck with the extent and marvellous capacity of the fertile plains of Manitoba and the North-West provinces. Here were to be seen 1,290,000 acres of fine wheat-growing land yielding 18,261,950 bushels, one-fifth of which comes to hungry England. Expectations have been cherished that the Canadian North-West would easily supply the world with wheat, and exaggerated estimates are drawn as to the amount of surplus land on which wheat can be grown. Thus far performance has lagged behind promise, the wheat-bearing area of all Canada having increased less than 500,000 acres since 1884, while the exports have not increased in greater proportion. As the wheat area of Manitoba and the North-West has increased the wheat area of Ontario and the Eastern provinces has decreased, the added acres being little more than sufficient to meet the growing requirements of population. We have seen calculations showing that Canada contains 500,000,000 acres of profitable wheat land. The impossibility of such an estimate ever being fulfilled will be apparent when it is remembered that the whole area employed in both temperate zones for growing all the staple food crops is not more than 580,000,000 acres, and that in no country has more than 9 per cent. of the area been devoted to wheat culture.

The fertility of the North-west Provinces of the Dominion is due to an exceptional and curious circumstance. In winter the ground freezes to a considerable depth. Wheat is sown in the spring, generally April, when the frozen ground has been thawed to a depth of three inches. Under the hot sun of the short summer the grain sprouts with surprising rapidity, partly because the roots are supplied with water from the thawing depths. The summer is too short to thaw the ground thoroughly, and gate-posts or other dead wood extracted in the autumn are found still frozen at their lower ends.

Australasia, as a potential contributor to the world's supply of wheat, affords another fertile field for speculation. Climatic conditions limit the Australian wheat area to a small portion of the southern littoral belt. Professor Shelton considers there are still

50,000,000 acres in Queensland suitable for wheat, but hitherto it has never had more than 150,000 acres under cultivation. Crops in former days were liable to rust, but since the Rust in Wheat conferences and the dissemination of instruction to farmers, rust no longer has any terrors. I am informed by the Queensland Department of Agriculture that of late years they practically have bred wheat vigorous enough to resist this plague. For the second season in succession the wheat crop last year was destroyed over large areas in Victoria; and in South Australia the harvest averaged not more than about $3\frac{3}{4}$ bushels per acre after meeting Colonial requirements for food and seed, leaving only 684,000 bushels for export. In most other districts the yield falls to such an extent as to cause Europeans to wonder why the pursuit of wheat-raising is continued.

New Zealand has a moist climate resembling that of central and southern England, while South Australia is semi-arid, resembling western Kansas. Only two countries in the world yield as much wheat per acre as New Zealand—these are Denmark and the United Kingdom. Notwithstanding the great yield of wheat, due to an equable climate, New Zealand finds fruit and dairy farming still more profitable. The climatic conditions favourable to wheat are also conducive to luxuriant growths of nutritious grasses. Thus the New Zealander ships his butter more than half-way round the world, and competes successfully with western Europe.

During the last twenty-seven years the Austro-Hungarian population has increased 21.8 per cent., as against an increase of 54.6 per cent. in the acreage of wheat. Notwithstanding this disparity in the rates of increase, exports have practically ceased by reason of an advance of nearly 80 per cent. in unit consumption. There can be little doubt that Austro-Hungary is about to enter the ranks of importing nations, although in Hungary a considerable area of wheat land remains to be brought under cultivation.

Roumania is an important wheat-growing country. In 1896 it produced 69,000,000 bushels, and exported 34,000,000 bushels. It has a considerable amount of surplus land which can be used for wheat, although for many years the wheat area is not likely to exceed home requirements.

France comes next to the United States as a producer of wheat; but for our purpose she counts but little, being dependent on supplies from abroad for an average quantity of 14 per cent. of her own production. There is practically no spare land in France that can be put under wheat in sufficient quantity to enable her to do more than provide for increase of population.

Germany is a gigantic importer of wheat, her imports rising 700 per cent. in the last twenty-five years, and now averaging 35,000,000 bushels. Other nations of Europe, also importers, do not require detailed mention, as under no conceivable conditions would they be able to do more than supply wheat for the increasing requirements of their local population, and, instead of replenishing, would probably diminish, the world's stores.

The prospective supply of wheat from Argentina and Uruguay has been greatly overrated. The agricultural area includes less than 100,000,000 acres of good, bad, and indifferent land, much of which is best adapted for pastoral purposes. There is no prospect of Argentina ever being able to devote more than 30,000,000 acres to wheat; the present wheat area is about 6,000,000 acres, an area that may be doubled in the next twelve years. But the whole arable region is subject to great climatic vicissitudes, and to frosts that ravage the fields south of the 37th parallel. Years of systematised energy are frustrated in a few days—perhaps hours—by a single cruelty of nature, such as a plague of locusts, a tropical rain, or a devastating hail storm. It will take years to bring the surplus lands of Argentina into cultivation, and the population is even now insufficient to supply labour at seed time and harvest.

During the next twelve years, Uruguay may add a million acres to the world's wheat fields; but social, political, and economic conditions seriously interfere with the agricultural development.

At the present time South Africa is an importer of wheat, and the regions suitable to cereals do not exceed a few million acres. Great expectations have been formed as to the fertility of Mashonaland, the Shire Highlands, and the Kikuyu plateau, and as to the adaptation of these regions to the growth of wheat. But wheat culture fails where the banana ripens, and the banana flourishes throughout Central Africa, except in limited areas of great elevation. In many parts of Africa insect pests render it impossible to store grain, and without grain-stores there can be little hope of large exports.

North Africa, formerly the granary of Rome, now exports less than 5,000,000 bushels of wheat annually, and these exports are on the decline, owing to increased home demands. With scientific irrigation, Egypt could supply three times her present amount of wheat, although no increase is likely unless the cotton fields of the Delta are diverted to grain growing. In Algeria and Tunis nearly all reclaimed lands are devoted to the production of wine, for which a brisk demand exists. Were this land devoted to the growth of wheat, an additional 5,000,000 bushels might be obtained.

The enormous acreage devoted to wheat in India has been declining for some years, and in 1895 over 20,000,000 acres yielded 185,000,000 bushels. Seven-eighths of this harvest is required for native consumption, and only one-eighth on an average is available for export. The annual increase of population is more than 3,000,000, demanding an addition to the food-bearing lands of not less than 1,800,000 acres annually. In recent years the increase has been less than one-fourth of this amount.

In surveying the limitations and vicissitudes of wheat crops, I have endeavoured to keep free from exaggeration, and have avoided insistence on doubtful points. I have done my best to get trustworthy facts and figures, but from the nature of the case it is impossible to attain complete accuracy. Great caution is required in sifting the numerous varying current statements respecting the estimated areas and total produce of wheat throughout the world. The more closely official estimates are examined, the more defective are they found, and comparatively few figures are sufficiently well established to bear the deductions often drawn. In doubtful cases I have applied to the highest authorities in each country, and in the case of conflicting accounts have taken data the least favourable to sensational or panic-engendering statements. In a few instances of accurate statistics their value is impaired by age; but for 95 per cent. of my figures I quote good authorities, while for the remaining 5 per cent. I rely on the best commercial estimates derived from the appearance of the growing crops, the acreage under cultivation, and the yield last year. The maximum probable error would make no appreciable difference in my argument.

The facts and figures I have set before you are easily interpreted. Since 1871 unit consumption of wheat, including seed, has slowly increased in the United Kingdom to the present amount of six bushels per head per annum; while the rate of consumption for seed and food by the whole world of bread-eaters was 4.15 bushels per unit per annum for the eight years ending 1878, and at the present time is 4.5 bushels. Under present conditions of low acre yield, wheat cannot long retain its dominant position among the food-stuffs of the civilised world. The details of the impending catastrophe no one can predict, but its general direction is obvious enough. Should all the wheat-growing countries add to their area to the utmost capacity, on the most careful calculation the yield would give us only an addition of some 100,000,000 acres, supplying at the average world-yield of 12.7 bushels to the acre, 1,270,000,000 bushels, just enough to supply the increase of population among bread-eaters till the year 1931.

At the present time there exists a deficit in the wheat area of 31,000 square miles—a deficit masked by the fact that the ten world crops of wheat harvested in the ten years ending 1896 were more than 5 per cent. above the average of the previous twenty-six years.

When provision shall have been made, if possible, to feed 230,000,000 units likely to be added to the bread-eating populations by 1931—by the complete occupancy of the arable areas of the temperate zone now partially occupied—where can be grown the additional 330,000,000 bushels of wheat required ten years later by a hungry world? What is to happen if the present rate of population be maintained, and if arable areas of sufficient extent cannot be adapted and made contributory to the subsistence of so great a host?

Are we to go hungry and to know the trial of scarcity? That is the poignant question. Thirty years is but a day in the life of a nation. Those present who may attend the meeting of the British Association thirty years hence will judge how far my forecasts are justified.

If bread fails—not only us, but all the bread-eaters of the world—what are we to do? We are born wheat-eaters. Other races, vastly superior to us in numbers, but differing widely in material and intellectual progress, are eaters of Indian corn, rice, millet, and other grains; but none of these grains have the food value, the concentrated health-sustaining power of wheat, and it is on

this account that the accumulated experience of civilised mankind has set wheat apart as the fit and proper food for the development of muscle and brains.

It is said that when other wheat exporting countries realise that the State can no longer keep pace with the demand, these countries will extend their area of cultivation, and struggle to keep up the supply *puri passu* with the falling-off in other quarters. But will this comfortable and cherished doctrine bear the test of examination?

Cheap production of wheat depends on a variety of causes, varying greatly in different countries. Taking the cost of producing a given quantity of wheat in the United Kingdom at 100s., the cost for the same amount in the United States is 67s., in India 66s., and in Russia 54s. We require cheap labour, fertile soil, easy transportation to market, low taxation and rent, and no export or import duties. Labour will rise in price, and fertility diminish as the requisite manurial constituents in the virgin soil become exhausted. Facility of transportation to market will be aided by railways, but these are slow and costly to construct, and it will not pay to carry wheat by rail beyond a certain distance. These considerations show that the price of wheat tends to increase. On the other hand, the artificial impediments of taxation and customs duties tend to diminish as demand increases and prices rise.

I have said that starvation may be averted through the laboratory. Before we are in the grip of actual dearth the chemist will step in and postpone the day of famine to so distant a period that we, and our sons and grandsons, may legitimately live without undue solicitude for the future.

It is now recognised that all crops require what is called a "dominant" manure. Some need nitrogen, some potash, others phosphates. Wheat pre-eminently demands nitrogen, fixed in the form of ammonia or nitric acid. All other necessary constituents exist in the soil, but nitrogen is mainly of atmospheric origin, and is rendered "fixed" by a slow and precarious process which requires a combination of rare meteorological and geographical conditions to enable it to advance at a sufficiently rapid rate to become of commercial importance.

There are several sources of available nitrogen. The distillation of coal in the process of gas-making yields a certain amount of its nitrogen in the form of ammonia, and this product, as sulphate of ammonia, is a substance of considerable commercial value to gas companies. But the quantity produced is comparatively small; all Europe does not yield more than 400,000 annual tons, and, in view of the unlimited nitrogen required to substantially increase the world's wheat crop, this slight amount of coal ammonia is not of much significance. For a long time guano has been one of the most important sources of nitrogenous manures, but guano deposits are so near exhaustion that they may be dismissed from consideration.

Much has been said of late years, and many hopes raised by the discovery of Hellriegel and Wilfarth, that leguminous plants bear on their roots nodosities abounding in bacteria endowed with the property of fixing atmospheric nitrogen; and it is proposed that the necessary amount of nitrogen demanded by grain crops should be supplied to the soil by cropping it with clover and ploughing in the plant when its nitrogen assimilation is complete. But it is questionable whether such a mode of procedure will lead to the lucrative stimulation of crops. It must be admitted that practice has long been ahead of science, and for ages farmers have valued and cultivated leguminous crops. The four-course rotation is turnips, barley, clover, wheat—a sequence popular more than two thousands years ago. On the continent, in certain localities, there has been some extension of microbe cultivation; at home we have not reached even the experimental stage. Our present knowledge leads to the conclusion that the much more frequent growth of clover on the same land, even with successful microbe-seeding and proper mineral supplies, would be attended with uncertainty and difficulties. The land soon becomes what is called "clover sick," and turns barren.

There is still another and invaluable source of fixed nitrogen. I mean the treasure locked up in the sewage and drainage of our towns. Individually the amount so lost is trifling, but multiply the loss by the number of inhabitants, and we have the startling fact that, in the United Kingdom, we are content to hurry down our drains and water courses, into the sea, fixed nitrogen to the value of no less than £16,000,000 per annum. This unspeakable waste continues, and no effective and universal method is yet contrived of converting sewage into corn. Of this barbaric waste of manurial constituents Liebig, nearly half a century ago, wrote in

these prophetic words: "Nothing will more certainly consummate the ruin of England than a scarcity of fertilisers—it means a scarcity of food. It is impossible that such a sinful violation of the divine laws of Nature should for ever remain unpunished; and the time will probably come for England sooner than for any other country, when, with all her wealth in gold, iron, and coal, she will be unable to buy one-thousandth part of the food which she has, during hundreds of years, thrown recklessly away."

The more widely this wasteful system is extended, recklessly returning to the sea what we have taken from the land, the more surely and quickly will the finite stocks of nitrogen locked up in the soils of the world become exhausted. Let us remember that the plant creates nothing; there is nothing in bread which is not absorbed from the soil, and unless the abstracted nitrogen is returned to the soil, its fertility must ultimately be exhausted. When we apply to the land nitrate of soda, sulphate of ammonia, or guano, we are drawing on the earth's capital, and our drafts will not perpetually be honoured. Already we see that a virgin soil cropped for several years loses its productive powers, and without artificial aid becomes infertile. Thus the strain to meet demands is increasingly great. Witness the yield of forty bushels of wheat per acre under favourable conditions, dwindling through exhaustion of soil to less than 7 bushels of poor grain, and the urgency of husbanding the limited store of fixed nitrogen becomes apparent. The store of nitrogen in the atmosphere is practically unlimited, but it is fixed and rendered assimilable by plants only by cosmic processes of extreme slowness. The nitrogen which with a light heart we liberate in a battleship broadside, has taken millions of minute organisms patiently working for centuries to win from the atmosphere.

The only available compound containing sufficient fixed nitrogen to be used on a world-wide scale as a nitrogenous manure is nitrate of soda, or Chili saltpetre. This substance occurs native over a narrow band of the plain of Tamarugal, in the northern provinces of Chili, between the Andes and the coast hills. In this rainless district for countless ages the continuous fixation of atmospheric nitrogen by the soil, its conversion into nitrate by the slow transformation of billions of nitrifying organisms, its combination with soda, and the crystallisation of the nitrate, have been steadily proceeding, until the nitrate fields of Chili have become of vast commercial importance, and promise to be of inestimably greater value in the future. The growing exports of nitrate from Chili at present amount to about 1,200,000 tons.

The present acreage devoted to the world's growth of wheat is about 163,000,000 acres. At the average of 12.7 bushels per acre this give 2,070,000,000 bushels. But thirty years hence the demand will be 3,260,000,000 bushels, and there will be difficulty in finding the necessary acreage on which to grow the additional amount required. By increasing the present yield per acre from 12.7 to 20 bushels we should with our present acreage secure a crop of the requisite amount. Now from 12.7 to 20 bushels per acre is a moderate increase of productiveness, and there is no doubt that a dressing with nitrate of soda will give this increase and more.

The action of nitrate of soda in improving the yield of wheat has been studied practically by Sir John Lawes and Sir Henry Gilbert on their experimental field at Rothamstead. This field was sown with wheat for thirteen consecutive years without manure, and yielded an average of 11.9 bushels to the acre. For the next thirteen years it was sown with wheat and dressed with 5 cwt. of nitrate of soda per acre, other mineral constituents also being present. The average yield for these years was 36.4 bushels per acre—an increase of 24.5 bushels. In other words, 22.86 lbs. of nitrate of soda produce an increase of one bushel of wheat.

At this rate, to increase the world's crop of wheat by 7.3 bushels, about 1½ cwt. of nitrate of soda must annually be applied to each acre. The amount required to raise the world's crop on 163,000,000 acres from the present supply of 2,070,000,000 bushels to the required 3,260,000,000 bushels will be 12,000,000 tons distributed in varying amounts over the wheat-growing countries of the world. The countries which produce more than the average of 12.7 bushels will require less, and those below the average will require more; but, broadly speaking, about 12,000,000 tons annually of nitrate of soda will be required, in addition to the 1½ million tons already absorbed by the world.

It is difficult to get trustworthy estimates of the amount of nitrate surviving in the nitre beds. Common rumour declares the supply to be inexhaustible, but cautious local authorities state that at the present rate of export, of over one million tons per annum,

the raw material "caliche," containing from 25 to 50 per cent. nitrate, will be exhausted in from twenty to thirty years.

Dr. Newton, who has spent years on the nitrate fields, tells me there is a lower class material, containing a small proportion of nitrate, which cannot at present be used, but which may ultimately be manufactured at a profit. Apart from a few of the more scientific manufacturers, no one is sanguine enough to think this debatable material will ever be worth working. If we assume a liberal estimate for nitrate obtained from the lower grade deposit, and say that it will equal in quantity that from the richer quality, the supply may last, possibly fifty years, at the rate of a million tons a year; but at the rate required to augment the world's supply of wheat to the point demanded thirty years hence, it will not last more than four years.

I have passed in review all the wheat-growing countries of the world, with the exception of those whose united supplies are so small as to make little appreciable difference to the argument. The situation may be summed up briefly thus:—The world's demand for wheat—the leading bread-stuff—increases in a crescendo ratio year by year. Gradually all the wheat-bearing land on the globe is appropriated to wheat growing, until we are within measurable distance of using the last available acre. We must then rely on nitrogenous manures to increase the fertility of the land under wheat, so as to raise the yield from the world's low average—12·7 bushels per acre—to a higher average. To do this efficiently and feed the bread-eaters for a few years will exhaust all the available store of nitrate of soda. For years past we have been spending fixed nitrogen at a culpably extravagant rate, heedless of the fact that it is fixed with extreme slowness and difficulty, while its liberation in the free state takes place always with rapidity and sometimes with explosive violence.

Some years ago Mr. Stanley Jevons uttered a note of warning as to the near exhaustion of our British coalfields. But the exhaustion of the world's stock of fixed nitrogen is a matter of far greater importance. It means not only a catastrophe little short of starvation for the wheat-eaters, but indirectly, scarcity for those who exist on inferior grains, together with a lower standard of living for meat-eaters, scarcity of mutton and beef, and even the extinction of gunpowder.

ARTIFICIAL PRODUCTION OF NITRATE.

There is a gleam of light amid this darkness of despondency. In its free state nitrogen is one of the most abundant and pervading bodies on the face of the earth. Every square yard of the earth's surface has nitrogen gas pressing down on it to the extent of about seven tons—but this is in the *free* state, and wheat demands it *fixed*. To convey this idea is an object-lesson, I may tell you that, previous to its destruction by fire, Colston Hall, measuring 146ft. by 80ft. by 70ft., contained 27 tons weight of nitrogen in its atmosphere; it also contained one-third of a ton of argon. In the free gaseous state this nitrogen is worthless; combined in the form of nitrate of soda it would be worth about £2,000.

For years past attempts have been made to effect the fixation of atmospheric nitrogen, and some of the processes have met with sufficient partial success to warrant experimentalists in pushing their trials still further; but I think I am right in saying that no process has yet been brought to the notice of scientific or commercial men which can be considered successful either as regards cost or yield of product. It is possible, by several methods, to fix a certain amount of atmospheric nitrogen; but to the best of my knowledge no process has hitherto converted more than a small amount, and this at a cost largely in excess of the present market value of fixed nitrogen.

The fixation of atmospheric nitrogen, therefore, is one of the great discoveries awaiting the ingenuity of chemists. It is certainly deeply important in its practical bearings on the future welfare and happiness of the civilised races of mankind. This unfulfilled problem, which so far has eluded the strenuous attempts of those who have tried to wrest the secret from Nature, differs materially from other chemical discoveries which are in the air, so to speak, but are not yet matured. The fixation of nitrogen is vital to the progress of civilised humanity. Other discoveries minister to our increased intellectual comfort, luxury, or convenience; they serve to make life easier, to hasten the acquisition of wealth, or to save time, health, or worry. The fixation of nitrogen is a question of the not far distant future. Unless we can class it among certainties to come the great Caucasian race will cease to be foremost in the world, and will be squeezed out

of existence by races to whom wheaten bread is not the staff of life.

Let me see if it is not possible even now to solve the momentous problem. As far back as 1892 I exhibited, at one of the soirées of the Royal Society, an experiment on "The Flame of Burning Nitrogen." I showed that nitrogen is a combustible gas, and the reason why when once ignited the flame does not spread through the atmosphere and deluge the world in a sea of nitric acid is that its igniting point is higher than the temperature of its flame—not, therefore, hot enough to set fire to the adjacent mixture. But by passing a strong induction current between terminals the air takes fire and continues to burn with a powerful flame, producing nitrous and nitric acids. This inconsiderable experiment may not unlikely lead to the development of a mighty industry destined to solve the great food problem. With the object of burning out nitrogen from air so as to leave argon behind, Lord Rayleigh fitted up apparatus for performing the operation on a larger scale, and succeeded in effecting the union of 29·4 grammes of mixed nitrogen and oxygen at an expenditure of one horse-power. Following these figures it would require one Board of Trade unit to form 74 grammes of nitrate of soda, and therefore 14,000 units to form one ton. To generate electricity in the ordinary way with steam engines and dynamos, it is now possible with a steady load night and day, and engines working at maximum efficiency, to produce current at a cost of one-third of a penny per Board of Trade unit. At this rate one ton of nitrate of soda would cost £26. But electricity from coal and steam engines is too costly for large industrial purposes; at Niagara, where water power is used, electricity can be sold at a profit for one-seventeenth of a penny per Board of Trade unit. At this rate nitrate of soda would cost not more than £5 per ton. But the limit of cost is not yet reached, and it must be remembered that the initial data are derived from small scale experiments, in which the object was not economy, but rather to demonstrate the practicability of the combustion method, and to utilise it for isolating argon. Even now electric nitrate at £5 a ton compares favourably with Chili nitrate at £7 10s. a ton; and all experience shows that when the road has been pointed out by a small laboratory experiment, the industrial operations that may follow are always conducted at a cost considerably lower than could be anticipated from the laboratory figures.

Before we decide that electric nitrate is a commercial possibility, a final question must be mooted. We are dealing with wholesale figures, and must take care that we are not simply shifting difficulties a little further back without really diminishing them. We start with a shortage of wheat, and the natural remedy is to put more land under cultivation. As the land cannot be stretched, and there is so much of it and no more, the object is to render the available area more productive by a dressing with nitrate of soda. But nitrate of soda is limited in quantity, and will soon be exhausted. Human ingenuity can contend even with these apparently hopeless difficulties. Nitrate can be produced artificially by the combustion of the atmosphere. Here we come to finality in one direction; our stores are inexhaustible. But how about electricity? Can we generate enough energy to produce 12,000,000 tons of nitrate of soda annually? A preliminary calculation shows that there need be no fear on that score; Niagara alone is capable of supplying the required electric energy without much lessening its mighty flow.

The future can take care of itself. The artificial production of nitrate is clearly within view, and by its aid the land devoted to wheat can be brought up to the 30 bushels per acre standard. In days to come, when the demand may again overtake supply, we may safely leave our successors to grapple with the stupendous food problem.

And, in the next generation, instead of trusting mainly to food-stuffs which flourish in temperate climates, we probably shall trust more and more to the exuberant food-stuffs of the tropics, where, instead of one yearly sober harvest, jeopardised by any shrinkage of the scanty days of summer weather or of the few steady inches of rainfall, Nature annually supplies heat and water enough to ripen two or three successive crops of food-stuffs in extraordinary abundance. To mention one plant alone, Humboldt—from what precise statistics I know not—computed that, acre for acre, the food-productiveness of the banana is 133 times that of wheat—the unripe banana, before its starch is converted into sugar, is said to make excellent bread.

Considerations like these must in the end determine the range and avenues of commerce, perhaps the fate of continents. We must develop and guide Nature's latent energies, we must utilise

her inmost workshops, we must call into commercial existence Central Africa and Brazil to redress the balance of Odessa and Chicago.

THE LATEST ACHIEVEMENTS OF SCIENCE.

Having kept you for the last half hour rigorously chained to earth, disclosing dreary possibilities, it will be a relief to soar to the heights of pure science and to discuss a point or two touching its latest achievements and aspirations. The low temperature researches which bring such renown to Professor Dewar and to his laboratory in the Royal Institution have been crowned during the present year by the conquest of one of Nature's most defiant strongholds. On May 10 last Professor Dewar wrote to me these simple but victorious words: "This evening I have succeeded in liquefying both hydrogen and helium. The second stage of low temperature work has begun." Static hydrogen boils at a temperature of 238° C. at ordinary pressure, and at 250° C. in a vacuum, thus enabling us to get within 23° C. of absolute zero. The density of liquid hydrogen is only one-fourteenth that of water, yet in spite of such a low density it collects well, drops easily, and has a well-defined meniscus. With proper isolation it will be as easy to manipulate liquid hydrogen as liquid air.

The investigation of the properties of bodies brought near the absolute zero of temperature is certain to give results of extraordinary importance. Already platinum resistance thermometers are becoming useless, as the temperature of boiling hydrogen is but a few degrees from the point where the resistance of platinum would be practically nothing, or the conductivity infinite.

Several years ago I pondered on the constitution of matter in what I ventured to call the fourth state. I endeavoured to probe the tormenting mystery of the atom. What is the atom? Is a single atom in space solid, liquid, or gaseous. Each of these states involves ideas which can only pertain to vast collections of atoms. Whether, like Newton, we try to visualise an atom as a hard, spherical body, or, with Boscovitch and Faraday, to regard it as a centre of force, or accept the vortex atom theory of Lord Kelvin, an isolated atom is an unknown entity difficult to conceive. The properties of matter—solid, liquid, gaseous—are due to molecules in a state of motion. Therefore matter as we know it involves essentially a mode of motion; and the atom itself—intangible, invisible, and inconceivable—is its material basis, and may indeed be styled the only true matter. The space involved in the motions of atoms has no more pretension to be called matter than the sphere of influence of a body of riflemen—the sphere filled with flying leaden missiles—has to be called lead. Since what we call matter essentially involves a mode of motion, and since at the temperature of absolute zero all atomic motions would stop, it follows that matter as we know it would at that paralysing temperature probably entirely change its properties. Although a discussion of the ultimate absolute properties of matter is purely speculative, it can hardly be barren, considering that in our laboratories we are now within moderate distance of the absolute zero of temperature.

I have dwelt on the value and importance of nitrogen, but I must not omit to bring to your notice those little known curiously related elements which during the past twelve months have been discovered and partly described by Professor Ramsay and Dr. Travers. For many years my own work has been among what I may call the waste heaps of the mineral elements. Professor Ramsay is dealing with vagrant atoms of an astral nature. During the course of the present year he has announced the existence of no fewer than three new gases—krypton, neon, and metargon. Whether these gases, chiefly known by their spectra, are true unalterable elements, or whether they are compounded of other known or unknown bodies, has yet to be proved. Fellow-workers freely pay tribute to the painstaking zeal with which Professor Ramsay has conducted a difficult research, and to the philosophic subtlety brought to bear on his investigations. But, like most discoverers, he has not escaped the flail of severe criticism.

There is still another claimant for celestial honours. Professor Nasini tells us he has discovered, in some volcanic gases at Pozzuoli, that hypothetical element coronium, supposed to cause the bright line 5316.9 in the spectrum of the sun's corona. Analogy points to its being lighter and more diffusible than hydrogen, and a study of its properties cannot fail to yield striking results. Still awaiting discovery by the fortunate spectroscopist are the unknown celestial elements aurorium—with a characteristic line at 5570.7—and nebulum, having two bright lines at 5007.05 and 4959.02.

The fundamental discovery by Hertz of the electro-magnetic waves predicted more than thirty years ago by Clerk Maxwell, seems likely to develop in the direction of a practical application which excites keen interest—I mean the application to electric signalling across moderate distances without connecting wires. The feasibility of this method of signalling has been demonstrated by several experimenters at more than one meeting of the British Association, though most elaborately and with many optical refinements by Oliver Lodge at the Oxford meeting in 1894. But not until Signor Marconi induced the British Post Office and foreign governments to try large scale experiments did wireless signalling become generally and popularly known or practically developed as a special kind of telegraphy. Its feasibility depends on the discovery of a singularly sensitive detector for Hertz waves—a detector whose sensitiveness in some cases seems almost to compare with that of the eye itself. The fact noticed by Oliver Lodge in 1889, that an infinitesimal metallic gap subjected to an electric jerk became conducting, so as to complete an electric circuit, was rediscovered soon afterwards in a more tangible and definite form and applied to the detection of Hertz waves by M. E. Branly. Oliver Lodge then continued the work, and produced the vacuum filing-tube coherers with automatic tapper-back, which are of acknowledged practical service. It is this varying continuity of contact under the influence of extremely feeble electric stimulus alternating with mechanical tremor, which, in combination with the mode of producing the waves revealed by Hertz, constitutes the essential and fundamental feature of "wireless telegraphy." There is a curious and widely-spread misapprehension about coherers, to the effect that to make a coherer work the wave must fall upon it. Oliver Lodge has disproved this fallacy. Let the wave fall on a suitable receiver, such as a metallic wire or, better still, on an arrangement of metal wings resembling a Hertz sender, and the waves set up oscillating currents which may be led by wires (enclosed in metal pipes) to the coherer. The coherer acts apparently by a species of end-impact of the oscillatory current, and does not need to be attacked in the flank by the waves themselves. This interesting method of signalling—already developing in Marconi's hands into a successful practical system which inevitably will be largely used in lighthouse and marine work—presents more analogy to optical signals by flash-light than to what is usually understood as electric telegraphy; notwithstanding the fact that an ordinary Morse instrument at one end responds to the movements of a key at the other, or, as arranged by Alexander Muirhead, a siphon recorder responds to an automatic transmitter at about the rate of slow cable telegraphy. But although no apparent optical apparatus is employed, it remains true that the impulse travels from sender to receiver by essentially the same process as to that which enables a flash of magnesium powder to excite a distant eye.

The phenomenon discovered by Zeeman, that a source of radiation is affected by a strong magnetic field in such a way that light of one refrangibility becomes divided usually into three components, two of which are displaced by diffraction analysis on either side of the mean position and are oppositely polarised to the third or residual constituent, has been examined by many observers in all countries. The phenomenon has been subjected to photography with conspicuously successful results by Professor T. Preston in Dublin and by Professor Michelson and Dr. Ames and others in America.

It appears that the different lines in the spectrum are differently affected, some of them being tripled with different grades of relative intensity, some doubled, some quadrupled, some sextupled, and some left unchanged. Even the two components of the D lines are not similarly influenced. Moreover, whereas the polarisation is usually such as to indicate that motions of a negative ion or electron constitute the source of light, a few lines are stated by the observers at Baltimore, who used what they call the "small" grating of 5 inches width ruled with 65,000 lines, to be polarised in the reverse way.

Further prosecution of these researches must lead to deeper insight into molecular processes and the mode in which they affect the ether; indeed already valuable theoretic views have been promulgated by H. A. Lorenz, J. Larmor, and G. F. Fitzgerald, on the lines of the radiation theory of Dr. Johnstone Stoney; and the connection of the new phenomena with the old magnetic rotation of Faraday is under discussion. It is interesting to note that Faraday and a number of more recent experimenters were led by theoretical considerations to look for some such effect; and though the inadequate means at their disposal did not lead to success,

nevertheless a first dim glimpse of the phenomenon was obtained by M. Fievez, of the Royal Observatory at Brussels, in 1885.

It would be improper to pass without at least brief mention the remarkable series of theoretic papers by Dr. J. Larmor, published by the Royal Society, on the relationship between ether and matter. By the time these researches become generally intelligible they may be found to constitute a considerable step towards the further mathematical analysis and interpretation of the physical universe on the lines initiated by Newton.

In the mechanical construction of Röntgen ray tubes I can record a few advances: the most successful being the adoption of Professor Silvanus P. Thompson's suggestion of using for the anti-cathode a metal of high atomic weight. Osmium and iridium have been used with advantage, and osmium anti-cathode tubes are now a regular article of manufacture. As long ago as June, 1896, X-ray tubes with metallic uranium anti-cathodes were made in my own laboratory, and were found to work better than those with platinum. The difficulty of procuring metallic uranium prevented these experiments from being continued. Thorium anti-cathodes have also been tried.

Röntgen has drawn fresh attention to a fact very early observed by English experimenters—that of the non-homogeneity of the rays and the dependence of their penetrating power on the degree of vacuum; rays generated in high vacua have more penetrative power than when the vacuum is less high. These facts are familiar to all who have exhausted focus tubes on their own pumps. Röntgen suggests a convenient phraseology; he calls a low vacuum tube, which does not emit the highly penetrating rays, a "soft" tube, and a tube in which the exhaustion has been pushed to an extreme degree, in which highly penetrating rays predominate, a "hard" tube. Using a "hard" tube, he took a photograph of a double-barrelled rifle, and showed not only the leaden bullets within the steel barrels, but even the wads and the charges.

Benoit has re-examined the alleged relation between density and opacity to the rays, and finds certain discrepancies. Thus, the opacity of equal thicknesses of palladium and platinum are nearly equal, whilst their densities and atomic weights are very different, those of palladium being about half those of platinum.

At the last meeting of the British Association visitors saw—at the McGill University—Professors Cox and Callendar's apparatus for measuring the velocity of Röntgen rays. They found it to be certainly greater than 200 kilometres per second. Majorana has made an independent determination, and finds the velocity to be 600 kilometres per second with an inferior limit certainly of not less than 150 kilometres per second. It may be remembered that J. J. Thomson has found for cathode rays a velocity of more than 10,000 kilometres per second, and it is extremely unlikely that the velocity of Röntgen rays will prove to be less.

Trowbridge has verified the fact, previously announced by Professor S. P. Thompson, that fluor-spar, which by prolonged heating has lost its power of luminescing when re-heated, regains the power of thermo-luminescence when exposed to Röntgen rays. He finds that this restoration is also effected by exposure to the electric glow discharge, but not by exposure to ultra-violet light. The difference is suggestive.

As for the action of Röntgen rays on bacteria, often asserted and often denied, the latest statement by Dr. H. Rieder, of Munich, is to the effect that bacteria are killed by the discharge from "hard" tubes. Whether the observation will lead to results of pathologic importance remains to be seen. The circumstance that the normal retina of the eye is slightly sensitive to the rays is confirmed by Dorn and by Röntgen himself.

The essential wave-nature of the Röntgen rays appears to be confirmed by the fact ascertained by several of our great mathematical physicists that light of excessively short wave-length would be but slightly absorbed by ordinary material media, and would not, in the ordinary sense, be refracted at all; in fact, a theoretic basis for a comprehension of the Röntgen rays had been propounded before the rays were discovered. At the Liverpool meeting of the British Association several speakers, headed by Sir George Stokes, expressed their conviction that the disturbed electric field caused by the sudden stoppage of the motion of an electrically charged atom yielded the true explanation of the phenomena extraneous to the Crookes high vacuum tubes—phenomena so excellently elaborated by Lenard and by Röntgen. More recently, Sir George Stokes has re-stated his "pulse" theory, and fortified it with arguments which have an important bearing on the whole theory of the refraction of light. He still

holds to their essentially transverse nature, in spite of the absence of polarisation, an absence once more confirmed by the careful experiments of Dr. L. Graetz. The details of this theory are in process of elaboration by Professor J. J. Thomson.

Meantime, while the general opinion of physicists seems to be settling towards a wave or ether theory for the Röntgen rays, an opposite drift is apparent with respect to the physical nature of the cathode rays; it becomes more and more clear that cathode rays consist of electrified atoms or ions in rapid progressive motion. My idea of a fourth state of matter, propounded in 1881*, and at first opposed at home and abroad, is now becoming accepted. It is supported by Professor J. J. Thomson†: Dr. Larmor's theory‡ likewise involves the idea of an ionic substratum of matter; the view is also confirmed by Zeeman's phenomenon. In Germany—where the term cathode ray was invented almost as a protest against the theory of molecular streams propounded by me at the Sheffield meeting of the British Association in 1879—additional proofs have been produced in favour of the doctrine that the essential fact in the phenomenon is electrified radiant matter.

The speed of these molecular streams has been approximately measured, chiefly by aid of my own discovery nearly twenty years ago, that their path is curved in a magnetic field, and that they produce phosphorescence where they impinge on an obstacle. The two unknown quantities, the charge and the speed of each atom, are measurable from the amount of curvature and by means of one other independent experiment.

It cannot be said that a complete and conclusive theory of these rays has yet been formulated. It is generally accepted that collisions among particles, especially the violent collisions due to their impact on a massive target placed in their path, give rise to the interesting kind of extremely high frequency radiation discovered by Röntgen. It has, indeed, for some time been known that whereas a charged body in motion constitutes an electric current, the sudden stoppage, or any violent acceleration of such a body, must cause an alternating electric disturbance, which, though so rapidly decaying in intensity as to be practically "dead beat," yet must give rise to an ethereal wave or pulse travelling with the speed of light, but of a length comparable to the size of the body whose sudden change of motion caused the disturbance. The emission of a high-pitched musical sound from the jolting of a dustman's cart (with a spring bell hung on it) has been suggested as an illustration of the way in which the molecules of any solid not at absolute zero may possibly emit such rays.

If the target on to which the electrically charged atoms impinge is so constituted that some of its minute parts can thereby be set into rhythmical vibration, the energy thus absorbed reappears in the form of light, and the body is said to phosphoresce. The efficient action of the phosphorescent target appears to depend as much on its physical and molecular as on its chemical constitution. The best known phosphori belong to certain well-defined classes, such as the sulphides of the alkaline-earthly metals, and some of the so-called rare earths; but the phosphorescent properties of each of these groups are profoundly modified by an admixture of foreign bodies—witness the effect on the lines in the phosphorescent spectrum of yttrium and samarium produced by traces of calcium or lead. The persistence of the samarium spectrum in presence of overwhelming quantities of other metals, is almost unexampled in spectroscopy; thus one part of samaria can easily be seen when mixed with three million parts of lime.

Without stating it as a general rule, it seems as if with a non-phosphorescing target the energy of molecular impact reappears as pulses so abrupt and irregular that, when resolved, they furnish a copious supply of waves of excessively short wave-length, in fact the now well-known Röntgen rays. The phosphorescence so excited may last only a small fraction of a second, as with the constituents of yttria, where the duration of the different lines varies between the 0.003 and the 0.0009 second; or it may linger for hours, as in the case of some of the yttria earths, and especially with the earthy sulphides, where the glow lasts bright enough to be commercially useful. Excessively phosphorescent bodies can be excited by light waves, but most of them require the stimulus of electrical excitement.

It now appears that some bodies, even without special stimulation, are capable of giving out rays closely allied, if not in some cases identical, with those of Professor Röntgen. Uranium and

* *Phil. Trans.*, Part 2, 1881, pp. 433-4.

† *Phil. Mag.*, October 1897, p. 312.

‡ *Phil. Mag.*, December, 1897, p. 506.

thorium compounds are of this character, and it would almost seem from the important researches of Dr. Russell that this ray-emitting power may be a general property of matter, for he has shown that nearly every substance is capable of affecting the photographic plate if exposed in darkness for sufficient time.

No other source for Röntgen rays but the Crookes tube has yet been discovered, but rays of kindred sorts are recognised. The Becquerel rays, emitted by uranium and its compounds, have now found their companions in rays—discovered almost simultaneously by Curie and Schmidt—emitted by thorium and its compounds. The thorium rays affect photographic plates through screens of paper or aluminium, and are absorbed by metals and other dense bodies. They ionise the air, making it an electrical conductor; and they can be refracted and probably reflected, at least diffusively. Unlike uranium rays, they are not polarised by transmission through tourmaline, therefore resembling in this respect the Röntgen rays.

Quite recently M. and Mdme Curie have announced a discovery which, if confirmed, cannot fail to assist the investigation of this obscure branch of physics. They have brought to notice a new constituent of the uranium mineral pitchblende, which in a four hundred fold degree possesses uranium's mysterious power of emitting a form of energy capable of impressing a photographic plate and of discharging electricity by rendering air a conductor. It also appears that the radiant activity of the new body, to which the discoverers have given the name of polonium, needs neither the excitation of light nor the stimulus of electricity; like uranium, it draws its energy from some constantly regenerating and hitherto unsuspected store, exhaustless in amount.

It has long been to me a haunting problem how to reconcile this apparently boundless outpour of energy with accepted canons. But as Dr. Johnstone Stoney reminds me, the resources of molecular movements are far from exhausted. There are many stores of energy in Nature that may be drawn on by properly constituted bodies without very obvious cause. Some time since I drew attention to the enormous amount of locked-up energy in the ether; nearer our experimental grasp are the motions of the atoms and molecules, and it is not difficult mentally so to modify Maxwell's demons as to reduce them to the level of an inflexible law, and thus bring them within the ken of a philosopher in search of a new tool. It is possible to conceive a target capable of mechanically sifting from the molecules of the surrounding air the quick from the slow movers. This sifting of the swift moving molecules is effected in liquids whenever they evaporate, and in the case of the constituents of the atmosphere, wherever it contains constituents light enough to drift away molecule by molecule. In my mind's eye I see such a target as a piece of metal cooler than the surrounding air acquiring the energy that gradually raises its temperature from the outstanding effect of all its encounters with the molecules of the air about it; I see another target of such a structure that it throws off the slow moving molecules with little exchange of energy, but is so influenced by the quick moving missiles that it appropriates to itself some of their energy. Let uranium or polonium, bodies of densest atoms, have a structure that enables them to throw off the slow moving molecules of the atmosphere, while the quick moving molecules, smashing on to the surface, have their energy reduced and that of the target correspondingly increased. The energy thus gained seems to be employed partly in dissociating some of the molecules of the gas (or in inducing some other condition which has the effect of rendering the neighbouring air in some degree a conductor of electricity) and partly in originating an undulation through the ether, which, as it takes its rise in phenomena so disconnected as the impacts of the molecules of the air, must furnish a large contingent of light waves of short wave length. The shortness in the case of these Becquerel rays appears to approach without attaining the extreme shortness of ordinary Röntgen rays. The reduction of the speed of the quick-moving molecules would cool the layer of air to which they belong; but this cooling would rapidly be compensated by radiation and conduction from the surrounding atmosphere. Under ordinary circumstances the difference of temperature would scarcely be perceptible, and the uranium would thus appear to perpetually emit rays of energy with no apparent means of restoration.

The total energy of both the translational and internal motions of the molecules locked up in quiescent air at ordinary pressure and temperature is about 140,000 foot-pounds in each cubic yard of air. Accordingly the quiet air within a room 12 feet high, 18 feet wide, and 22 feet long contains energy enough to propel a one-

horse engine for more than twelve hours. The store drawn upon naturally by uranium and other heavy atoms only awaits the touch of the magic wand of science to enable the twentieth century to cast into the shade the marvels of the nineteenth.

MONIUM—A NEW ELEMENT.

Whilst placing before you the labours and achievements of my comrades in science I seize this chance of telling you of engrossing work of my own on the fractionation of yttria, to which for the last eighteen years I have given ceaseless attention. In 1883, under the title of "Radiant Matter Spectroscopy," I described a new series of spectra produced by passing the phosphorescent glow of yttria, under molecular bombardment *in vacuo*, through a train of prisms. The visible spectra in time gave up their secrets, and were duly embalmed in the *Philosophical Transactions*. At the Birmingham meeting of the British Association in 1886 I brought the subject before the Chemical Section, of which I had the honour to be President. The results led to many speculations on the probable origin of all the elementary bodies—speculations that for the moment I must waive in favour of experimental facts.

There still remained for spectroscopic examination a long tempting stretch of unknown ultra-violet light, of which the exploration gave me no rest. But I will not now enter into details of the quest of unknown lines. Large quartz prisms, lenses, and condensers, specially sensitised photographic films capable of dealing with the necessary small amount of radiation given by feebly phosphorescing substances,* and above all tireless patience in collating and interpreting results, have all played their part. Although the research is incomplete I am able to announce that among the groups of rare earths giving phosphorescent spectra in the visible region there are others giving well-defined groups of bands which can only be recorded photographically. I have detected and mapped no less than six such groups extending to λ 3060.

Without enlarging on difficulties, I will give a brief outline of the investigation. Starting with a large quantity of a group of the rare earths in a state of considerable purity, a particular method of fractionation is applied, splitting the earths into a series of fractions differing but slightly from each other. Each of these fractions, phosphorescing *in vacuo*, is arranged in the spectrograph, and a record of its spectrum photographed upon a specially prepared sensitive film.

In this way, with different groups of rare earths, the several invisible bands were recorded—some moderately strong, others exceedingly faint. Selecting a portion giving a definite set of bands, new methods of fractionation were applied, constantly photographing and measuring the spectrum of each fraction. Sometimes many weeks of hard experiment failed to produce any separation, and then a new method of splitting up was devised and applied. By unremitting work—the solvent of most difficulties—eventually it was possible to split up the series of bands into various groups. Then, taking a group which seemed to offer possibilities of reasonably quick result, one method after another of chemical attack was adopted, with the ultimate result of freeing the group from its accompanying fellows and increasing its intensity and detail.

As I have said, my researches are far from complete, but about one of the bodies I may speak definitely. High up in the ultra-violet, like a faint nebula in the distant heavens, a group of lines was detected, at first feeble and only remarkable on account of their isolation. On further purification these lines grew stronger. Their great refrangibility cut them off from other groups. Special processes were employed to isolate the earth, and using these lines as a test, and appealing at every step to the spectrograph, it was pleasant to see how each week the group stood out stronger and stronger, while the other lines of yttrium, samarium, ytterbium, &c., became fainter, and at last, practically vanishing, left the sought-for group strong and solitary. Finally, within the last few weeks, hopefulness has emerged into certainty, and I have absolute evidence that another member of the rare earth groups has been added to the list. Simultaneously with the chemical and spectrographic attack, atomic weight determinations were constantly performed.

As the group of lines which betrayed its existence stand alone, almost at the extreme end of the ultra-violet spectrum, I propose

* In this direction I am glad to acknowledge my indebtedness to Dr. Schuman, of Leipzig, for valuable suggestions and detail of his own apparatus, by means of which he has produced some unique records of metallic and gaseous spectra of lines of short wave-length.

to name the newest of the elements monium, from the Greek *μόνος*, alone. Although caught by the searching rays of the spectrum, monium offers a direct contrast to the recently discovered gaseous elements, by having a strongly marked individuality; but although so young and wilful, it is willing to enter into any number of chemical alliances.

Until my material is in a greater state of purity I hesitate to commit myself to figures: but I may say that the wave-lengths of the principal lines are 3120 and 3117. Other fainter lines are at 3219, 3064, and 3060. The atomic weight of the element, based on the assumption of R_2O_3 , is not far from 118—greater than that accepted for yttrium and less than that for lanthanum.

I ought almost to apologise for adding to the already too long list of elements of the rare earth class—the asteroids of the terrestrial family. But as the host of celestial asteroids, unimportant individually, become of high interest when once the idea is grasped that they may be incompletely coagulated remains of the original nebula, so do these elusive and insignificant rare elements rise to supreme importance when we regard them in the light of component parts of a dominant element, frozen in embryo, and arrested in the act of coalescing from the original protyle into one of the ordinary and law-abiding family for whom Newlands and Mendeleeff have prepared pigeon-holes. The new element has another claim to notice. Not only is it new in itself, but to discover it a new tool had to be forged for spectroscopic research.

Further details I will reserve for that tribunal before whom every aspirant for a place in the elemental hierarchy has to substantiate his claim.

OF PSYCHIC RESEARCHES.

These, then, are some of the subjects, weighty and far-reaching, on which my own attention has been chiefly concentrated. Upon one other interest I have not yet touched—to me the weightiest and the farthest reaching of all.

No incident in my scientific career is more widely known than the part I took many years ago in certain psychic researches. Thirty years have passed since I published an account of experiments tending to show that outside our scientific knowledge there exists a force exercised by intelligence differing from the ordinary intelligence common to mortals. This fact in my life is, of course, well understood by those who honoured me with the invitation to become your President. Perhaps among my audience some may feel curious as to whether I shall speak out or be silent. I elect to speak, although briefly. To enter at length on a still debatable subject would be unduly to insist on a topic which—as Wallace, Lodge, and Barrett have already shown—though not unfitted for discussion at these meetings, does not yet enlist the interest of the majority of my scientific brethren. To ignore the subject would be an act of cowardice—an act of cowardice I feel no temptation to commit.

To stop short in any research that bids fair to widen the gates of knowledge, to recoil from fear of difficulty or adverse criticism, is to bring reproach on science. There is nothing for the investigator to do but to go straight on, “to explore up and down, inch by inch, with the taper his reason”; to follow the light wherever it may lead, even should it at times resemble a will-o'-the-wisp. I have nothing to retract. I adhere to my already published statements. Indeed, I might add much thereto. I regret only a certain crudity in those early expositions which, no doubt justly, militated against their acceptance by the scientific world. My own knowledge at that time scarcely extended beyond the fact that certain phenomena new to science had assuredly occurred, and were attested by my own sober senses, and better still, by automatic record. I was like two-dimensional being who might stand at the singular point of a Riemann's surface, and thus find himself in infinitesimal and inexplicable contact with a plane of existence not his own.

I think I see a little farther now. I have glimpses of something like coherence among the strange elusive phenomena; of something like continuity between those unexplained forces and laws already known. This advance is largely due to the labours of another association of which I have also this year the honour to be President—the Society for Psychical Research. And were I now introducing for the first time these inquiries to the world of science I should choose a starting-point different from that of old. It would be well to begin with telepathy; with the fundamental law, as I believe it to be, that thoughts and images may be transferred from one mind to another without the agency of the recognised organs of sense—that knowledge may enter the human mind

without being communicated in any hitherto known or recognised ways.

Although the inquiry has elicited important facts with reference to the mind, it has not yet reached the scientific stage of certainty which would entitle it to be usefully brought before one of our sections. I will, therefore, confine myself to pointing out the direction in which scientific investigation can legitimately advance. If telepathy take place we have two physical facts—the physical change in the brain of A, the suggester, and the analogous physical change in the brain of B, the recipient of the suggestion. Between these two physical events there must exist a train of physical causes. Whenever the connecting sequence of intermediate causes begins to be revealed the inquiry will then come within the range of one of the sections of the British Association. Such a sequence can only occur through an intervening medium. All the phenomena of the universe are presumably in some way continuous, and it is unscientific to call in the aid of mysterious agencies when with every fresh advance in knowledge it is shown that ether vibrations have powers and attributes abundantly equal to any demand, even to the transmission of thought. It is supposed by some physiologists that the essential cells of nerves do not actually touch, but are separated by a narrow gap which widens in sleep while it narrows almost to extinction during mental activity. This condition is so singularly like that of a Branly or Lodge coherer as to suggest a further analogy. The structure of brain and nerve being similar, it is conceivable there may be present masses of such nerve coherers in the brain whose special function it may be to receive impulses brought from without through the connecting sequence of ether waves of appropriate order of magnitude. Röntgen has familiarised us with an order of vibration of extreme minuteness compared with the smallest waves with which we have hitherto been acquainted, and of dimensions comparable with the distances between the centres of the atoms of which the material universe is built up; and there is no reason to suppose that we have here reached the limit of frequency. It is known that the action of thought is accompanied by certain molecular movements in the brain, and here we have physical vibrations capable from their extreme minuteness of acting direct on individual molecules, while their rapidity approaches that of the internal and external movements of the atoms themselves.

Confirmation of telepathic phenomena is afforded by many converging experiments, and by many spontaneous occurrences only thus intelligible. The most varied proof, perhaps, is drawn from analysis of the sub-conscious workings of the mind, when these, whether by accident or design, are brought into conscious survey. Evidence of a region below the threshold of consciousness has been presented, since its first inception, in the *Proceedings of the Society for Psychical Research*; and its various aspects are being interpreted and welded into a comprehensive whole by the pertinacious genius of F. W. H. Myers. Concurrently our knowledge of the facts in this obscure region has received valuable additions at the hands of labourers in other countries. To mention a few names out of many, the observations of Richet, Pierre Janet, and Binet (in France), of Breuer and Freud (in Austria), of William James (in America) have strikingly illustrated the extent to which patient experimentation can probe subliminal processes, and can thus learn the lessons of alternating personalities and abnormal states. Whilst it is clear that our knowledge of sub-conscious mentation is still to be developed, we must beware of rashly assuming that all variations from the normal waking condition are necessarily morbid. The human race has reached no fixed or changeless ideal; in every direction there is evolution as well as disintegration. It would be hard to find instances of more rapid progress, moral and physical, than in certain important cases of cure by suggestion—again to cite a few names out of many—by Liébeault, Bernheim, the late Auguste Voison, Bérillon (in France), Schrenck-Notzing (in Germany), Forel (in Switzerland), van Eeden (in Holland), Wetterstrand (in Sweden), Milne-Bramwell and Lloyd Tuckey (in England). This is not the place for details, but the *vis medicatrix* thus evoked, as it were, from the depths of the organism, is of good omen for the upward evolution of mankind.

A formidable range of phenomena must be scientifically sifted before we effectually grasp a faculty so strange, so bewildering, and for ages so inscrutable, as the direct action of mind on mind. This delicate task needs a rigorous employment of the method of exclusion—a constant setting aside of irrelevant phenomena that

could be explained by known causes, including those far too familiar causes, conscious and unconscious fraud. The inquiry unites the difficulties inherent in all experimentation connected with *mind*, with tangled human temperaments and with observations dependent less on automatic record than on personal testimony. But difficulties are things to be overcome even in the elusory branch of research known as Experimental Psychology. It has been characteristic of the leaders among the group of inquirers constituting the Society for Psychical Research to combine critical and negative work with work leading to positive discovery. To the penetration and scrupulous fair-mindedness of Professor Henry Sidgwick and of the late Edmund Gurney is largely due the establishment of canons of evidence in psychical research, which strengthen while they narrow the path of subsequent explorers. To the detective genius of Dr. Richard Hodgson we owe a convincing demonstration of the narrow limits of human continuous observation.

It has been said that "Nothing worth the proving can be proved, nor yet disproved." True though this may have been in the past, it is true no longer. The science of our century has forged weapons of observation and analysis by which the veriest tyro may profit. Science has trained and fashioned the average mind into habits of exactitude and disciplined perception, and in so doing has fortified itself for tasks higher, wider, and incomparably more wonderful than even the wisest among our ancestors imagined. Like the souls in Plato's myth that follow the chariot of Zeus, it has ascended to a point of vision far above the earth. It is henceforth open to science to transcend all we know of the matter, and to gain new glimpses of a profounder scheme of Cosmic Law.

An eminent predecessor in this chair declared that "by an intellectual necessity he crossed the boundary of experimental evidence, and discerned in that matter, which we in our ignorance of its latent powers, and notwithstanding our professed reverence for its Creator, have hitherto covered with opprobrium, the potency and promise of all terrestrial life." I should prefer to reverse the apophthegm, and to say that in life I see the promise and potency of all forms of matter.

In old Egyptian days a well-known inscription was carved over the portal of the temple of Isis:—"I am whatever hath been, is, or ever will be; and my veil no man hath yet lifted." Not thus do modern seekers after truth confront Nature—the word that stands for the baffling mysteries of the universe. Steadily, unflinchingly, we strive to pierce the inmost heart of Nature, from what she is to re-construct what she has been, and to prophesy what she shall yet be. Veil after veil we have lifted, and her face grows more beautiful, august, and wonderful, with every barrier that is withdrawn.

MEDICAL JOTTINGS.

OWING TO THE RECENT ORDINANCE of the General Medical Council forbidding the employment of unqualified assistants, doctors have found considerable difficulty this holiday season in obtaining temporary substitutes to take charge of their patients. Instances have occurred however, which show that the new regulation is often ignored. In one case of ptomaine poisoning at Hackney it was proved at the coroner's inquest that the principal was away from home, and left his patients in the charge of two assistants, one of whom was unqualified, and in this case the burden of attendance was thrown on him. In another case where a child died of meningitis, following a fall, the jury returned a verdict as to the cause of death, and added a rider censuring the doctor for neglecting the patient and for sending an unqualified practitioner to visit the child, and asked that a report of the proceedings should be sent to the General Medical Council.

IT HAS BEEN DECIDED by the Committee to close the Edinburgh Medical School for Women for the present. The policy of the school authorities had been to provide classes for women students exclusively in all subjects of the curriculum with the exception of physics and physiology (specially excepted by the University Court) in compliance with the University regulations. It was found, however, that these regulations had been altered and permission granted for the holding of mixed classes in connection with the Medical School for Women at Minto House, and that a large majority of the women studying medicine in Edinburgh were attending these mixed classes, with the result that it became

impossible for the authorities to continue to provide expensive separate classes, involving guarantees to lecturers and the provision of suitable premises, and an adequate staff, when the ground was cut from under their feet by the much cheaper expedient of mixed classes. The result is to be regretted, as six out of the seven women who have taken the degrees of M.B., C.M., at the University of Edinburgh, were entirely educated at the Edinburgh School of Medicine for Women, of which Dr. Sophia Jex-Blake is the Dean.

IT HAS BEEN DECIDED to increase the accommodation at Cambridge University for the teaching of pharmacology, which has long been regarded by the teachers of the Medical Faculty as an indispensable part of the medical curriculum. The Pharmacological Laboratory at Cambridge has only been in existence a few years, but as an evidence of its value as an institution for teaching, as well as research, it may be mentioned that one of the two gold medals given by the University of Edinburgh for a thesis for the degree of M.D. has been awarded to Dr. Andrew Balfour for work done in this laboratory.

SIR THOMAS SMITH, who lately resigned his post as professor of surgery to St. Bartholomew's Hospital, will deliver the inaugural address at the next session of the Abernethian Society. Sir Thomas has chosen for his subject, reminiscences of his forty eight years' association with St. Bartholomew's Hospital.

IF THE REPORT BE TRUE of a recent occurrence at the Royal Infirmary, Glasgow, there seems to be great need for the disciplinary powers of the authorities to be exerted. It is stated that a young member of the resident hospital staff, who had made himself somewhat obnoxious to his colleagues, was one night on his way to his rooms, when he was waylaid and forcibly taken before a masked mock tribunal, where a trial was held and the charges against the unpopular doctor declared proved. He was sentenced to the order of the bath, his clothes were forcibly removed, and he was carried to and plunged into a cold bath, where he was left. The cause of offence was stated to be that the doctor had refused to receive in the wards under his charge certain cases which he considered should be treated elsewhere.

DENTAL NOTES.

The Editor of the *Dental Weekly* points out "How often writers and speakers fail to mention the use of floss silk as a means of dental prophylaxis. The use of the tooth brush is freely insisted on, while the floss silk, which is far more important, is not mentioned. The tooth brush, as it is usually applied, does not reach the parts that are mostly the first to become attacked with caries, viz., between the teeth. Floss silk when passed between does it more effectively than anything else, and dentists would do well to urge on patients the frequent cleaning between the teeth where approximal fillings have been inserted."

Professor Ramsay has been writing in the *Nineteenth Century* respecting the importance of the use of pure anæsthetics. Many of the disagreeable after-effects following the administration of anæsthetics is, to a certain extent, often due to impurities or careless handling. Impurities are: 1. Those of manufacture; 2. Due to subsequent decomposition. The first can always be avoided by using only that of reliable makers, but the second rests principally with those using the drug. After a bottle containing chloroform is opened, oxidation readily takes place, with the formation of hydrochloric acid and carbonyl chloride, the presence of which gives rise to coughing and painful respiration. Ether, according to Professor Ramsay, also decomposes after prolonged exposure to air. A sharp-smelling compound is formed, which probably is ethyl peroxide. Coughing and an abnoxious flavour denote the presence of this body. Professor Ramsay suggests the addition of a little slaked lime to the chloroform bottle to correct the presence of these impurities. The addition of a little mercury to ether oxidises and so precipitates the ethyl peroxide as a dirty-black precipitation.

Save all your surplus amalgam and roll into small pellets of different sizes while soft—they will prove very useful when filling large cavities by embedding them in the soft amalgam. It reduces the tendency to shrink, and is a saving of material.—Mackenzie, *Brit. Journ.*

A Basis of Knowledge for Pharmaceutical Students

IN view of the fact that pharmaceutical students too frequently enter upon courses of study at schools of pharmacy whilst ill-fitted to benefit by the instruction there given, the opportunity has been taken to ask those responsible for the arrangement of the courses of study what elementary knowledge, in their opinion, a student should possess. The answers to that question are summarised below, and it will be noted that there is a fairly general agreement amongst them. The most obvious requirements are a fair grounding in elementary chemistry, botany, and physics, together with a good all-round knowledge of mathematics. Add to that a proficiency in reading Latin prescriptions and a close practical acquaintance with the British Pharmacopœia, and the student will probably be as well prepared for his final school course as it is possible for him to be.

Mr. F. H. ALCOCK, of Birmingham, a former Bell Scholar, thinks that a student, having passed his "First" examination, which should be one which included Euclid, algebra, and advanced arithmetic, should, on commencing his pupilage, begin at once with the studies which will concern him when "out of his time," and he has attained the legal minimum age. He should certainly be familiar with common drugs and chemicals, and by examining these during dusting, etc., have cultivated the powers of observation and reflection. He should know how to handle a microscope and the common utensils of the dispensing department, *i.e.*, to measure accurately, to hold the scales correctly, to spread a blister, to prepare a plaster shape, to know a plaster iron infusion pot, suppository and other moulds, to gauge at sight the capacity of a bottle, and the right size cork to fit it. The fact that many pupils seldom see a prescription should not debar him from making himself master of the grammar of one, but to whom is he to look for aid? Most certainly his principal; for if the latter cannot assist him he is not a fit and proper person to take pupils. The writer does not favour the plan of leaving every subject until the pupilage expires and then going to a school and cramming the necessary knowledge into a period of six months or more. A gradual training, such as is required when a student desires to sit for the grand scholarships which the Society offers, is held to be decidedly the best road to success at the Minor or Major or Maximus (*i.e.*, the avocation of a pharmacist). Mr. Alcock also says he is often consulted by pharmacists and their pupils, and has invariably recommended that the latter should go to a competent teacher for at least one afternoon per week from the moment they enter pharmacy until they leave their pupilage, taking one subject or two for one quarter and changing the subject as he acquires proficiency in its rudiments and can continue its study by himself. A lesson in *materia medica*, with some roots, barks, etc., before him, makes a lasting impression on the young student, if it is made interesting. Similarly a botanical lesson with some plants, razor, microtome, slides, and microscope. In pharmacy the preparation of a copaiba emulsion or an effervescing mixture. These create a desire to do work properly and to avoid carelessness. As he gets nearer the close of his pupilage he could attend oftener, and no doubt if a man of ability he would have learnt sufficient to follow the lectures and demonstrations of a school of

pharmacy and quickly understand the system of teaching used, fall in with it and become a complete master of his subjects, and, having banished nervousness, be prepared to meet his examiners with pleasure and success. In place of the competent pharmacy teacher (which could be his principal), attendance at technical schools where chemistry and botany are carefully taught would be a good plan. It is, however, a pity that they are required at these schools to read for special examinations of the Science and Art Department, which certainly do not assist him in expanding his mind and making his studies profitable. One fruitful source of difficulty with the young man who has not previously prepared himself before entering a school is that he is so overwhelmed by the difficult names he is called upon to know and use constantly, that he is at least a month or more in a state of bewilderment, a result arising from a want of knowledge of the meaning of the words themselves and their derivation.

Mr. JOHN CRUICKSHANK, Secretary of the Aberdeen Pharmaceutical Association, explains that students, before entering the Pharmacy Department at Gordon's College, must have an elementary knowledge of botany and chemistry. He says: "Our Education Committee in its deliberations for the establishing of pharmacy classes at Gordon's College has all along had in view the fact that at a great many pharmacy schools the cram system is too much in evidence, and that the knowledge their students possess is merely evanescent. What we have principally in view is the fact that in nearly every town and village throughout the kingdom students can attend botany and chemistry classes under the Science and Art Department. In Aberdeen apprentices serve five years. During the first year we consider they have quite enough to do getting up to the work of the shop, assuming, of course, that they have already passed the Preliminary examination. In the second year of their apprenticeship we encourage them to take up elementary botany and chemistry (Science and Art). The third year they take the more advanced course, then during the remaining two years they go to the evening pharmacy classes, when they will have had a full course in all the Minor subjects, extending each year from the end of September well into April. After this and with a good shop training, where they have to make most if not all the galenic preparations of the B.P., they may now enter a full course at a school of pharmacy with every prospect of making a creditable appearance at the examination, and of lasting effect in after life."

Mr. WILLIAM KIRKBY, of Owens College, Manchester, thinks that, until the time comes when a two years' course of instruction is provided for pharmaceutical students, it will be necessary, if a student is to get all the benefit he should out of a pharmacy school, for him to have some previous knowledge of elementary chemistry and botany. The present arrangement requires the attendance of a man at classes on *materia medica* and pharmaceutical chemistry at the same time that he is getting up his elementary botany and chemistry. These technical subjects cannot possibly be properly apprehended unless a considerable knowledge of chemistry and botany has already been acquired. It should be urged upon all who really desire to make themselves efficient to attend classes of general instruction in these subjects.

Mr. R. C. COWLEY, of the Liverpool School of Pharmacy, finds that, in the case of some youths, the Minor examination is looked upon as a night-mare, a something that must be got over before reaching the desideratum of getting into business, and which may be put off to some future period, when possibly a kind providence will endow them with the necessary energy to put their shoulder to the wheel for just that period of time necessary to imbibe the minimum amount of knowledge required to satisfy the examiners. Evidently this type of man is eminently unsuited for the calling in life he has selected; a calling which requires a man, in order to make it a successful one, to have a reservoir of knowledge of various kinds to draw on, especially as the medical man continues to know less and less of pharmacy and its allied subjects. As our pharmaceutical examinations do not necessitate a compulsory course of training beforehand, apart from the hypothetical three years, this man will be, like the poor, always with us, and the writer is inclined to think that a compulsory curriculum would hardly eradicate him. Fortunately there are others of a different stamp, who, from their earliest entrance into the business, see the necessity for education, and apply themselves accordingly. It is of serious import that masters do not often impress on their apprentices the necessity of applying themselves to study during this period of their lives, and, what is worse to my mind, some do not allow the necessary time nor even foster the habit of study in those placed under their charge. The youth is fortunate who is placed under a master who tries to incite the love of study in his pupil, as it is extremely difficult to forget the work learned during one's pupilage, and those who take advantage of their fortunate position will not be afterwards handicapped thereby. But alas! it is often otherwise. The first step necessary to ensure success is to have a sound mathematical training. The writer has often seen men puzzling over a simple problem in volumetric analysis, and every examiner has doubtless seen the same. The next step is to make the best possible use of their time during their apprenticeship. There are dotted all over the country science and art schools, where a sound elementary knowledge may be obtained in most of the subjects necessary for the pharmaceutical examinations. Before seriously settling down to read up for the "Minor" a student should endeavour to reach the "Advanced" stage, or of course its equivalent. A young man who has honestly and conscientiously pursued this course should not have to go up for his examination twice. Sometimes a man may happen to scrape through his examination who should not, and sometimes a man who is well able to pass may, through sheer nervousness, fail. Those are the faults of examination, but of all tests of knowledge it is the best yet known. It is not suggested that education is the sole salvation of the present state of pharmacy, nor is it maintained that a successful student always makes a successful business man, but it is asserted that the present condition of pharmacy will yet be beneficially assisted by education, and that, other conditions being equal, the man with the widest knowledge of the sciences has a better chance of becoming a successful business man than the one who has just managed to scrape through his examinations.

Mr. CHARLES TURNER, F.C.S., of the Manchester College of Pharmacy, finds in actual experience that students for the Minor come to him in many cases knowing nothing of chemistry, botany, and the allied sciences; possibly half have done a certain amount of work and a few have seriously studied. He is of opinion that a student should, if possible, attend classes once a week as soon as he is eighteen or nineteen years of age. Such men should afterwards move into a more advanced class and will do better than average students from a technical school. All

schools of pharmacy should have a section devoted to junior students, and help the apprentices in the neighbourhood. In country places, however, this is impossible, and in that case apprentices and junior assistants are advised to join technical classes where possible, and gain a knowledge of the things which come to their hand, the names of flowers, etc.; if they cannot do that or obtain help let them learn from small books (Roscoe's, Scott's, or Edmund's 'Botany,' etc.) the principles of the life of the plants he sees, and the nature of the common drugs and chemicals he handles every day.

Mr. A. EBERLIN, Hon. Secretary of the Nottingham and Notts. Chemists' Association, states that the Council of the Association considers that a student should have taken a course of chemistry and passed an examination equivalent to the "elementary stage" of the Science and Art Department, prior to entering upon a special course of instruction.

Dr. MUTER, of the South London School of Pharmacy, is strongly in favour of a stringent Preliminary examination, including mathematics, and he considers that all young men during their apprenticeship should chiefly devote their time to attaining a perfect knowledge of the Pharmacopœia, and leave the sciences until they have an opportunity of studying them under competent guidance. So writes Mr. W. H. Dodd, Secretary to the School, in Dr. Muter's absence on a holiday.

Mr. C. EDWARD SAGE, F.C.S., Red Lion Square, London, is of opinion that Minor students should have passed the Preliminary examination or its equivalent, and in addition they should at least possess the knowledge of mathematics, physics, and chemistry, which is required of candidates for the London matriculation examination. Nothing is more tiring to the teacher, or irksome to a candidate over twenty years of age, than for the former to have to teach and the latter to learn Latin declensions, rule of three, and percentage, and the rudiments of chemistry and physics. Another point to which students would do well to pay attention is the study of the Pharmacopœia. In these days so many chemists buy nearly everything and the apprentices have little chance of learning their B.P. by practical experience, and in consequence they often start studying for their Minor with only a smattering of knowledge of the book which is published "by authority."

Mr. G. S. V. WILLS, F.L.S., M.P.S., of the Westminster College of Chemistry and Pharmacy, considers that the student should pass the "First" or Preliminary examination, and that having passed that examination, he should be able to read abbreviated Latin prescriptions in full. Having served three years' apprenticeship he should possess a fair knowledge of dispensing, and have made most of the ordinary galenical preparations in the Pharmacopœia. He ought to acquire an elementary knowledge of chemistry, pharmacognosy, and botany, such as can be obtained from any ordinary text-book, and though not absolutely essential, a course of postal tuition would lay a foundation upon which the superstructure could be thoroughly and substantially built in a very short space of time.

Mr. WATSON WILL, F.C.S., of the Metropolitan College of Pharmacy, expresses the opinion, based on nearly twenty years' experience, that for anyone to be successful with his work it is necessary for him to possess a sounder educational knowledge

than that demanded by our present miserable Preliminary examination, and that he should have an acquaintance with algebra and mathematics. A thorough knowledge obtained from practical experience of the processes of manufacture of B.P. preparations is also essential, in other words, a sound apprenticeship with a practical pharmacist. During apprenticeship the student should, if possible, attend Science Classes, and acquire a knowledge of botany and chemistry both from the theoretical and practical stand-points. The writer has always found that young men who have had the above advantages have invariably turned out the most brilliant students combined with high success in business. One of the greatest failings in the young pharmacist's education lies chiefly at the door of the individual who takes him as an apprentice, and rarely, if ever, educates him.

Mr. FRANK R. DUDDERIDGE, of the North of England School of Chemistry and Pharmacy, Newcastle-on-Tyne, thinks a student should commence the study of the sciences embraced in the Minor syllabus as soon as he begins his apprenticeship, the Preliminary examination to be taken previously. The practical details of the various processes in pharmacy should be performed by him in the course of his daily duties, as many of the B.P. preparations as possible being actually made by himself. He should gain the theoretical side by attendance at elementary classes during the winter evenings, such as are provided at his, the writer's, own and other schools of pharmacy, taking instruction also in elementary chemistry and botany, one or two subjects being studied during each year of his apprenticeship, at the close of which he should attend a full-time day course at a school of pharmacy for six months, and with reasonable application be able to pass the Minor at his first attempt.

Mr. W. B. COWIE, Ph. C., of the Edinburgh Central School of Chemistry and Pharmacy, considers that every student should have an elementary knowledge of chemistry, physics, and botany, and also a good general experience in dispensing, before entering a school of pharmacy. The average student, however, possesses none of these. In most cases his knowledge of the science subjects has been culled from Attfield and Bentley, without assistance or supervision. The result is that he is frequently far astray, and when he commences to study under teachers he has much to unlearn. Regarding dispensing, the average student on entering is at best but a mechanical mixer, and has had no experience in preparing pharmacopœial compounds.

Mr. G. E. SKERRY, M.A., of the City School of Chemistry and Pharmacy, is of opinion that under the present system many students waste their time, owing to their apprenticeship, and he would recommend an intermediate examination which might be passed between the first and second years of apprenticeship. This would, he thinks, not only raise the tone of the profession considerably, but give full occupation to apprentices at a very critical time. Continuing, he says, it is somewhat difficult to fix the amount of knowledge that should be possessed by a student before entering on a course at a school of pharmacy, but he should, at least, possess an elementary knowledge of chemistry, as regards non-metals, together with a practical acquaintance with the analysis of single salts. He should also have some acquaintance with botanical terms, gained by a study of a few wild flowers, and above all a practical knowledge of pharmacy, which should be, but often is not, possessed by a student who has served his apprenticeship.

Mr. R. B. GREAVES, F.C.S., of the Sheffield College of Pharmacy says that a student joining a pharmaceutical school for even a six-month course, without having some previous knowledge of his work, even though he be successful at his examination, can only have a very sorry idea of his calling. The most lamentable weakness of the average student of pharmacy is his defective knowledge or absolute ignorance of elementary mathematics. This accounts in a very great measure for the deplorably large number of rejections so familiar to everybody. For the more thoroughly grounded the candidate is in elementary mathematics the more easily and intelligibly does he grasp every detail of his work and the more invariably is he successful. In addition, before joining a school of pharmacy a student should be very forcibly impressed with the importance of acquiring an elementary knowledge of theoretical non-metallic chemistry, and especially some acquaintance with ordinary analytical processes.

Mr. B. KEEN, Ph. C., of Bristol, finds that those youths who have had a good general education, especially in mathematics, make most progress when they come to science.

Mr. GEORGE CLAYTON, F.C.S., of the Northern College of Pharmacy, thinks it is advisable that the student should have a good knowledge of elementary general chemistry, for instance, that which comes within the scope of the Science and Art Examinations first and second stages, and the same with regard to his botany, then he should be well acquainted with the Pharmacopœia, especially being conversant with the practical details of the galenic preparations therein. He feels sure a student who is familiar with these subjects would make satisfactory progress afterwards in the care of a good teacher.

Dr. A. B. GRIFFITHS, of the Brixton School of Pharmacy having had great experience in teaching students during the past fifteen years, firmly believes that the Preliminary examination should be made almost as difficult as the London matriculation. He says students of pharmacy have (as a rule) an extremely poor knowledge of arithmetic and mathematics. He is frequently being asked the meaning of the word "inversely" (law of gravitation, law of Boyle, law of gaseous diffusion, etc.), and finds very few "Minor" students can solve a problem in square root. He should say that 90 per cent., at least, of the "Major" students know nothing of sines, tangents, etc. (light and electricity). The best students are found to be those who have previously attended science classes (night classes) and who have conscientiously worked at the preliminary subjects either at school or afterwards.

Mr. FREDERICK DAVIS, of the Imperial College of Chemistry, is of opinion the student should be well grounded in an elementary knowledge of the British Pharmacopœia, gained by making the galenic preparations of that work during his apprenticeship and by the dispensing of prescriptions. An elementary knowledge of chemistry and botany would also be of great value.

Mr. STOKES DEWSON, of the Central School of Pharmacy, thinks pharmaceutical students should have a fair knowledge of elementary chemistry and of elementary botany, and should know enough elementary algebra to be able to solve simple equations before they commence a course of pharmaceutical instruction.

Pages for Pharmaceutical Students

CHAPTERS IN ORGANIC CHEMISTRY.

PRELIMINARY.

The division of chemistry into inorganic and organic was originally based upon the belief that compounds belonging to the latter class could not be produced artificially in the laboratory, but only resulted from the intervention of the so called vital force. The term organic chemistry is still retained, but it is frequently qualified by defining it as the chemistry of the carbon compounds, for Wöhler in 1828, by his synthesis of urea, showed that living matter was not essential to the formation of organic substances.

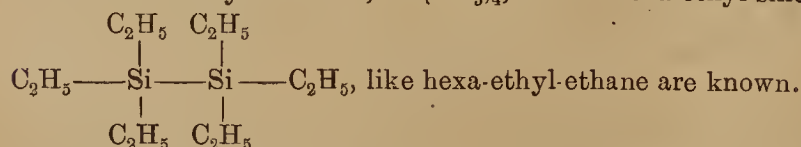
The thoughtful student must, however, be struck by the fact that the chemistry of the carbon compounds comprises a very much larger proportion of the whole field of chemistry than that of any other element. The cause of this is to be found in the capacity of carbon atoms to combine with each other, forming systems having a number of valencies which may be saturated by combination with various elements or groups. The formation of the immense number of carbon compounds depends then upon this property and the tetra-valency of carbon. For if an element is univalent, when two atoms of it are combined there is no further possibility of development as the valencies of both are satisfied, thus



If the element were divalent, the formation of a simple chain is possible having in any case only two valencies unsaturated



In the case of a trivalent element the number of possible compounds would be increased, and still more so in the case of a tetravalent element like carbon. No other element exhibits this property of forming a nucleus or chain of atoms to anything like the same extent. An interesting comparison is provided by the element silicon. Silicon and carbon are both tetravalent, and both fall in the same vertical column in the periodic arrangement of the elements. In their simpler compounds many analogies are also evident. The two oxides, CO_2 and SiO_2 , form with water the two acids, H_2CO_3 and H_2SiO_3 . Two simple hydrides are known, CH_4 and SiH_4 , and their halogen compounds are also similar in formula and constitution. Silicon also possesses the power to build up compounds like carbon, but only to a comparatively limited extent. For example, compounds such as tetra-methyl-silicane, $Si(CH_3)_4$, like tetra-methyl-methane, $C(CH_3)_4$, and hexa-ethyl-silicane,



In certain other cases silicon can replace carbon, as in silico-oxalic acid, $Si \cdot O \cdot OH$ analogous to ordinary oxalic acid, and in silico-propionic acid, $C_2H_5 \cdot SiO \cdot OH$.

The other elements exhibit the property of forming such compounds either not at all or to a less marked extent than silicon. Hence we do not meet in inorganic chemistry with the complex reactions and decompositions that present such difficulties for the beginner in organic chemistry. The complexities are, however, not so great as they seem at first sight, according to the systematic manner in which the main properties of

the carbon compounds can be arranged. From this it follows that by the proper study of a comparatively few typical bodies the student becomes possessed of information which not only relates to these particular bodies, but can be applied almost directly to the elucidation of the properties of a large number of other substances genetically related to the bodies already studied. In organic compounds the same element or group of elements may have very different properties according to the manner in which it is combined in the molecule. In order to explain these differences, constitutional formulæ are employed. These formulæ serve to show in a graphic manner not only the relative positions in which we suppose the constituent atoms to be grouped, but also the class of compound to which the substance belongs, but also, by inference, what reactions the substance will exhibit. It should never be forgotten that such constitutional formulæ with lines or dots to represent the atomic linkings are purely hypothetical. They are merely conventional methods of recording or recalling to the mind in a comprehensive manner certain facts or reactions represented by the formula. The student should never use a formula unless he can clearly explain it, and give at the same time the experimental results by which it is justified.

The necessity for practical work in organic chemistry cannot be too strongly impressed upon the student. It is absolutely essential to the proper comprehension of the subject and should be pursued to the utmost limits possible with the resources at his disposal. Much valuable work can be done with comparatively simple apparatus, and with a little improvising and a few additions the ordinary set of apparatus, costing about twenty shillings, will suffice for elementary purposes. Directions for carrying out typical experiments will be found in most elementary text-books; for example, those of Remsen, Perkin and Kipping, and Wade. The student will derive more valuable information from such a course of practical work than he could possibly acquire by reading alone. It will serve to make him familiar with the appearance and properties of a number of organic substances, and will materially facilitate his comprehension of facts and reactions which he is not able to verify by direct experiment.

ESSENTIALS OF VEGETABLE HISTOLOGY AS APPLIED TO PHARMACOGNOSY.

INTRODUCTORY.

Notwithstanding the improved state of pharmaceutical education the microscope has not yet attained that position in the practice of pharmacy which it has in the practice of medicine. Among medical men it is now regarded as an absolutely essential tool in the prosecution of every-day work, and the medical student is as much obliged to possess one as he is to possess his dissecting instruments. Among pharmacists it is regarded for the most part as a somewhat expensive toy, though there are a few who concede that occasionally it may be a useful aid in obscure cases of drug adulteration. When the fact is apprehended that there is a science of vegetable comparative anatomy, just as there is of animal comparative anatomy, it must be plain that it is a branch of study having a most important practical bearing upon pharmacognosy. The limits of variation in anatomical structure permit of being very definitely fixed according to known biological laws. Many histological features

of drugs therefore acquire a significance of much more value than such macroscopical characters as size, colour, and markings.

It would appear then that the pharmacist should avail himself without delay of the assistance of the microscope as a valuable tool for the identification of vegetable drugs. The management of the instrument is very readily acquired, and the technique of vegetable histology is by no means difficult to master. Further—it is a branch of study which does not require a laboratory, as it can be prosecuted in the ordinary dwelling room without any inconvenience. For those who are unable to take out a collegiate course in vegetable histology, it is proposed to sketch out a course of study which will serve the double purpose of giving an insight into general plant anatomy and a practical knowledge of the structure of official drugs.

So many articles and books have been written on the structure and use of the microscope that it is unnecessary to repeat such matters here. It may be well, however, to mention a few points which are the outcome of personal experience, and may conduce to the comfort of other workers.

The microscope should be provided with a tube of the length of about 160 Mm., that is to say, of the continental type. It is rarely possible to use the instrument in the inclined position because of the necessity for the frequent use of reagents. The longer tubes (250 Mm., of the English models cause considerable fatigue to the neck and back when used for any length of time. There are so many good English and continental makers that there is really no difficulty in obtaining at a moderate price an instrument in every way satisfactory for the use of the pharmacist. Two objectives are essential, namely, a 1 inch or $\frac{3}{4}$ inch, and a $\frac{1}{2}$ inch or $\frac{1}{3}$ inch. By some workers the $\frac{1}{2}$ inch objective is preferred to the 1 inch, or $\frac{3}{4}$ inch, but as it does not give so large a field it does not permit of the relations of the various tissues being seen to so great advantage as with a lower power. With two eye-pieces, a shallow and a deep one, and a draw tube the worker is provided with powers of magnification adequate for any work which he may have to undertake in this particular branch of microscopy. Of course, it is necessary when buying a microscope to bear in mind the possibility of its future use in bacteriology. Therefore, a stand should be purchased which is thoroughly rigid in all positions and which admits of the subsequent addition of an Abbe illuminator.

Amongst minor accessories, besides the usual glass slips and thin cover-glasses there will be required a good razor, hollow ground on one side and not too flexible, two or three needles in handles, a pair of forceps which close when pressure is applied, a pair of dissecting scissors with long shanks, one or two fine round sable brushes for handling sections, and a few thin glass rods and pipettes. Many other little implements may be thought desirable at first, but experience will show that those enumerated are all that are really useful. Sable brushes are the most efficient section lifters that can be desired, if only a little patience is expended upon in manipulating them when they are first used. For the staining and washing of sections nothing can excel, for cleanliness as well as for the ease with which sections are seen, the lids of one ounce white opal covered pots. One piece of apparatus calls for more notice than it usually receives, namely, the hone. The kind which is best adapted for sharpening the razor is that used by razor-setters. It is a white stone, often traversed by a large net work of fine lines, upon a substratum of slate. The cost of it perhaps will not appear to be proportionate to the purpose for which it is needed. But when it is remembered that good sections can only be obtained when the razor is in the pink of condition an extra shilling or two will prove not to

be badly invested in a good hone. The setting of the razor is one of the greatest stumbling blocks to be encountered at the outset of the study of the histology of drugs. The material is so difficult to bring to the best condition for sectioning that the razor edge suffers to a very great extent in a very short time, and the defect is not remedied by simple stropping, but recourse must be had to the stone. Considerable care in the setting of the razor is really necessary, because the better it is done the better sections will be obtained.

In the series of articles now commenced, it is proposed to treat in order, as far as possible, of the temporary mounting and examination of specimens; imbedding and section cutting; clearing; staining and permanent mounting; reagents and their uses; cell walls, their characters and reactions; cell contents, their characters and reactions; tissue systems and their elements; the practical examination of drugs under the divisions of roots, rhizomes, stems, barks, leaves, flowers, fruits, seeds, starches, hairs, glands, etc. Any suggestions with which readers may favour the Editor will receive careful consideration, and any questions which they may feel inclined to ask will be answered as satisfactorily as the present state of knowledge on the subject permits.

EXPLANATORY NOTES ON THE B.P.*

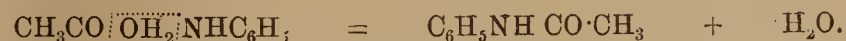
Acetanilidum.—When aniline is heated with glacial acetic acid aniline acetate is first formed. By heating this for some hours in a flask fitted with a reflux condenser one molecule of water is eliminated and acetanilide is produced.



Just as ammonia (from which aniline may be regarded as derived by substitution of the phenyl radicle, C_6H_5 , for one hydrogen atom) forms ammonium acetate by reaction with acetic acid.



By prolonged heating—



The very slight solubility of acetanilide in water should be remembered for purposes of practical dispensing. Heated with solution of potash it undergoes hydrolysis, a molecule of water being taken up again. Consequently aniline and acetic acid are regenerated, the latter combining with the alkali to form potassium acetate.



By adding a few drops of chloroform and warming the mixture, phenyl isocyanide is produced. This reaction is characteristic of all *primary amines*, i.e., bodies derived from ammonia by the replacement of one hydrogen atom by a group or radicle. The primary amines contain, therefore, the group NH_2 .



Note that this reaction (Hofmann's) only occurs in presence of free alkali, and is of interest in showing the difference between the constitution of isomeric cyanides and isocyanides. The phenyl-isocyanide produced in the reaction above probably has the nitrogen linked directly to the phenyl radicle $\text{C}_6\text{H}_5\text{-N-C}$, on account of its production from aniline $\text{C}_6\text{H}_5\text{-NH}_2$, while phenyl cyanide would have the carbon directly united to the phenyl radicle $\text{C}_6\text{H}_5\text{-C-N}$.

Solution of bromine produces an insoluble brom-acetanilide. A similar reaction does not occur with phenacetin (*q.v.*), because in the latter the hydrogen atoms remaining in the aromatic nucleus are "protected" by the presence of the ethoxy group ($\text{O}\cdot\text{C}_2\text{H}_5$).

Acidum Aceticum.—The darkening produced in the test for formates would be due to the precipitation of metallic silver through the reducing action of formic acid. The permanganate

* NOTE—This series of articles should be read in conjunction with the series referring to the 1885 B.P., and published in the *P. J.* during 1897 and the earlier portion of the current year.

test is based upon the fact that the tarry matters, like most other organic substances, reduce the potassium permanganate and consequently destroy the crimson colour of the solution, while acetic acid is not oxidised by that body in the cold. Inspection of the formula for acetic acid, CH_3COOH , readily shows why it is not easily oxidised, for the carbon atom in the carboxyl group is already fully oxidised and the other exists as a paraffin residue, and it is well known that such alkyl groups are only oxidised with difficulty.

Acidum Aceticum Glaciale.—The increase in specific gravity by the addition of water is progressive until the mixture contains 77 per cent. acid and 23 per cent. water. This proportion corresponds to the formation of the hydrate, $\text{CH}_3\text{COOH}\cdot\text{H}_2\text{O}$, and the fluid has a sp. gr. of 1.075. If the dilution be continued, the sp. gr. falls progressively from this point, and when the mixture contains 46 per cent. acetic acid the sp. gr. is 1.058, or the same as the original glacial acid.

Acidum Arseniosum.—When arsenious anhydride dissolves in water, the solution behaves as if it contains the corresponding arsenious acid formed by combination of water with the anhydride.



The formula As_4O_6 —just double the one used for simplicity in the equation above—is based upon the vapour density determination, the sp. gr. of its vapour being 198. When silver nitrate is added to a solution of arsenious acid in water—without addition of acid or alkali—silver nitrate is produced, but only partly precipitated because of its solubility in the nitric acid simultaneously liberated in the double decomposition—



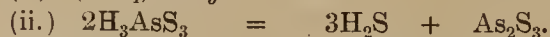
The test is rendered much more delicate by using the solution of silver ammonio-nitrate, since the nitric acid is hereby neutralised. Silver iodide, which is also yellow, is easily distinguished by its insolubility in both nitric acid and ammonia.

In the volumetric test, solution of the anhydride is facilitated by adding sodium bicarbonate. Some of this bicarbonate is converted into carbonate during the ebullition. The presence of an alkali, to neutralise the arsenic and hydriodic acids produced during the titration, is necessary for the completion of the reaction—



The alkaline carbonates and hydroxides react with iodine, and hence the bicarbonate is employed, since this salt does not absorb iodine during the titration. The addition of the three drops of hydrochloric acid is intended to remove the carbonate produced during the solution of the arsenic, partly by conversion into sodium chloride and partly by reversion to bicarbonate through the carbonic acid formed by the action of the hydrochloric acid.

If any sulphide be present in the anhydride as an impurity it dissolves in solution of ammonia forming a thio-salt corresponding to the arsenites *i.e.*, $(\text{NH}_4)_3\text{AsS}_3$, in which sulphur replaces the oxygen. When the solution is acidulated with hydrochloric acid, yellow arsenic sulphide is precipitated, because the free acid corresponding to this thio-salt is unstable and decomposes into H_2S and As_2S_3 .



The formation of soluble alkali thio-salts by the sulphides of arsenic, antimony, and tin, and their decomposition by addition of acid, is utilised in qualitative analysis to effect the separation of these metals from the other metals precipitated with them by sulphuretted hydrogen in acid solutions. Compare your analytical tables and memoranda.

Acidum Benzoicum.—The present Pharmacopœia recognises the acid of artificial origin as well as the acid obtained from benzoin. When toluene (methyl-benzene), $\text{C}_6\text{H}_5\cdot\text{CH}_3$, is boiled in a flask fitted with a reflux condenser with chromic or nitric acid the methyl group is gradually oxidised to carboxyl with formation of benzoic acid $\text{C}_6\text{H}_5\text{COOH}$. This occurs not only with toluene but also with all derivatives of benzene having one side chain, no matter what the composition of this side chain may be. For example, propyl benzene, $\text{C}_6\text{H}_5\text{—CH}_2\cdot\text{CH}_2\cdot\text{CH}_3$, benzaldehyde, $\text{C}_6\text{H}_5\text{—C}\cdot\text{O}\cdot\text{H}$, and cinnamic acid, $\text{C}_6\text{H}_5\text{—CH}\cdot\text{CH}\cdot\text{COOH}$, all yield benzoic acid by oxidation, the side chain being oxidised while the aromatic nucleus remains unattacked. The latter is only oxidised by energetic oxidising agents at an elevated temperature. The oxidation of toluene is effected comparatively slowly. If benzyl chloride,

$\text{C}_6\text{H}_5\text{CH}_2\text{Cl}$, be first prepared the oxidation of this body can be carried out much more quickly than that of the original hydrocarbon. This method is consequently adopted commercially. To prepare the benzyl chloride *boiling* toluene is submitted to the action of chlorine preferably exposed to strong light. This causes substitution to occur in the side chain; if chlorination be carried out at a low temperature and in the dark the substitution takes place in the benzene nucleus, and quite another compound results, *viz.*, chlor-toluene, $\text{C}_6\text{H}_4\text{Br}\cdot\text{CH}_3$. This statement is of general application to the action of bromine and chlorine on the homologues of benzene, and should be carefully remembered with the reservation that *in actual practice* a small quantity of the derivative contrary to the rule is usually obtained. In the present case a little chlor-toluene is formed, and by subsequent oxidation yields chlor-benzoic acid, $\text{C}_6\text{H}_4\text{Cl}\cdot\text{COOH}$. The fact that the chlorine remains in the oxidised product is a proof that the substitution was effected in the benzene nucleus and not in the side chain (*vide infra*, test for chlorobenzoic acid). Note carefully the effect on the oxidisability of the side chain produced by the entrance of the chlorine atom in benzyl chloride. The entrance of various elements and groups often profoundly modifies the behaviour of the compound towards reagents, and this is frequently utilised in synthetic processes.

In the urine of herbivorous animals, such as the ox and horse, hippuric acid is found in place of the uric acid of the urine of carnivorous animals. Hippuric acid is benzoyl-amido-acetic acid.

Acetic acid, $\text{CH}_3\cdot\text{COOH}$.

Amido-acetic acid, $\text{NH}_2\text{CH}_2\cdot\text{COOH}$.

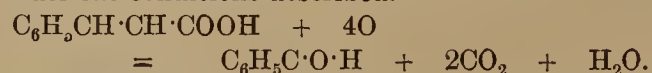
Benzoyl-amido acetic acid, $\text{C}_6\text{H}_5\text{CO NH}\cdot\text{CH}_2\text{COOH}$.

When this is boiled with dilute hydrochloric acid hydrolysis occurs, with formation of benzoic and amido-acetic acids.



As a point in nomenclature note that the benzoyl radicle bears the same relationship to benzoic acid as acetyl (CH_3CO) to acetic acid. When the hydrolysis is completed the benzoic acid can be filtered off, leaving the amido-acetic acid in solution as hydrochloride. Amido-acetic acid or glycocholl, as it is called (because it has a sweet taste and was originally obtained from colloid substances like gelatin), is an example of a body which is capable of acting as a base by virtue of its ammonia residue, or as an acid, because it contains replaceable hydrogen in a carboxyl group.

Benzoic acid from hippuric acid, unless very carefully purified, has an unpleasant odour indicative of its origin. It is probably sometimes mixed with some benzoic acid from benzoin in order to cover this odour. The careful application of dry heat in an open tube reveals the presence of most impurities, since these for the most part are not volatile like benzoic acid, but remain behind and carbonise. If any chlorobenzoic be present (*vide supra*) it will be decomposed by ignition with calcium carbonate, a proportionate quantity of calcium chloride being formed. (Compare methods for determination of halogens in organic compounds in your text-book). Dilute nitric acid will convert the excess of calcium carbonate into soluble calcium nitrate and dissolve any calcium chloride which may have been formed. The latter may then be detected in the usual manner by the formation of silver chloride. The detection of cinnamic acid, which occurs sometimes in the acid prepared from benzoin, depends upon its oxidation to benzaldehyde, $\text{C}_6\text{H}_5\text{C}\cdot\text{O}\cdot\text{H}$. When fully oxidised cinnamic yields benzoic acid, but the intermediate stage of oxidation to benzoic aldehyde is easily observable under the conditions described.



The last test serves to detect not only cinnamic and hippuric acid, but almost every other form of organic impurity. Permanganate of potassium in neutral solution has no action on benzoic acid, for in this compound the side chain is fully oxidised, and the benzene nucleus is unaffected by the reagent (*cp.* acidum aceticum) under the conditions mentioned. Compounds, like the other two acids mentioned, having side chains not fully oxidised are oxidised by the permanganate with consequent discharge of the pink colour. Note that in neutral solution the permanganate is reduced to the state of hydrated manganese dioxide, $\text{MnO}_2\cdot\text{H}_2\text{O}$, which forms a brownish precipitate, while in acid solution the oxidation is more energetic, and the manganese is reduced to the state of manganous oxide, MnO , which in presence of acid dissolves to form the corresponding salt, *e.g.* MnSO_4 and MnCl_2 .

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ADDRESS TO STUDENTS.

SINCE last the opportunity was taken in these columns to address pharmaceutical students especially, considerable changes have been effected in the regulations affecting pharmacy, new Bye-laws having been adopted by the Pharmaceutical Society and approved by the Privy Council, while the Pharmacy Acts have been amended in several important particulars. The alterations in the Bye-laws affect students in more ways than one, for though the new stipulations regarding their preliminary education will not come into force for two years from the present date, all who have recently been apprenticed to the craft are personally interested in the changes affecting the qualifying examination and the conditions of membership of the Pharmaceutical Society. It may also be urged here that, inasmuch as the standard of the Preliminary examination is being raised primarily in the interests of students themselves, all who have not yet passed that examination will do well, for their own sake, to enter for an examination of as high and comprehensive a character as will be compulsory two years hence.

Since many students who read these lines may not be acquainted with the future requirements, it may be as well to explain that after August, 1900, persons desiring certificates of competent skill and qualification to be registered as chemists and druggists under the Pharmacy Act, 1868, must produce a certificate of having passed an examination in English grammar and composition, Latin, one modern foreign language, and also in arithmetic, algebra, and Euclid. Such examination must be conducted by an approved examining body and the advanced standard will assimilate the requirements in respect of preliminary education with those enforced by the medical authorities. It will be observed that no scientific subject is included in the syllabus, so that the standard of the Matriculation examination of the University of London will not be quite attained, but the latter will of course be one of the approved examinations, and students are strongly urged to rest content with nothing short of the London University certificate as the

beginning of their professional career. For the more a student learns before he enters upon the period of pupilage the smoother will be his path subsequently and the brighter his prospects of success.

After satisfying this first test of general school knowledge, the student will naturally set about gaining the best technical training he can. No better place can offer itself for that purpose than the establishment of a first-class chemist and druggist. There he should make the most of his opportunities during the next few years, supplementing the shop training by attending lectures on chemistry, botany, and physics, whilst also devoting as much time as possible to practical experimental work in those sciences, as well as practical pharmacy. And then reason suggests that he should devote twelve months to a systematic course of study at some recognised institution, prior to presenting himself for the qualifying examination. Home work alone has sufficed in many instances to prepare the candidate for this ordeal, but at a heavier cost than is usually recognised at the time, for, however thoroughly the solitary student may work at home, he is apt to proceed in the most roundabout manner; he thus wastes much valuable time and misses much that would prove of incalculable advantage to him in not having the guidance of experts in his studies and the stimulating assistance of association with fellow students, day by day.

In any case he will arrive sooner or later at his immediate goal—the examination room, and must there prove, to the satisfaction of the assembled examiners, that he possesses such knowledge of his business as will fully meet the statutory requirements, and that he is fit to be entrusted with the control of a pharmacy, the preparation and dispensing of medicaments and the distribution of poisonous substances. The Minor examination is now no mean test of a candidate's capacity and it is rendered all the more severe inasmuch as he must satisfy the examiners that besides possessing a sound knowledge of botany, materia medica, chemistry, physics, posology, and the law relating to the sale of poisons, he is fully competent to translate and dispense prescriptions. Serious weakness in any one branch will be sufficient to ensure failure. To avoid that it is essential that deep rather than surface knowledge should be possessed by the candidate. The best safeguard against the annoyance of failure, apart from honest and systematic work, is an extended range of general knowledge, acquired as far as possible before joining the ranks of pharmacy and added to continually during the period of pupilage. Even though the Preliminary examination passed be the London Matriculation test, much more can yet be done—in the direction of extending one's acquaintance with mathematics, acquiring dexterity of manipulation, and so forth—to facilitate progress later in life, and the more thoroughly the student continues to work from the very outset of his career the greater will be his satisfaction when, a few years later, he gains his diploma as a legally qualified chemist and druggist.

Above all, students should bear in mind that this qualification represents the minimum requirement held to be indispensable, in the public interest, for all persons carrying on business as chemists and druggists. That is the palladium of the craft, the only ground for distinguishing it from other trade occupations. It is therefore the duty of every chemist and druggist to uphold the standard of qualification, however much the particular class of business carried on may differ from high-class pharmacy.

ANNOTATIONS.

SOMETHING SENSATIONAL was expected from Sir William Crookes in his presidential address to the British Association, but nothing so surprising as that he should pose as an authority on the food supply of the world. Assuming the accuracy of the numerous figures he quotes, one marvels at the industry which has enabled him to attain such a comprehensive grasp of a subject of the highest economic importance, yet quite out of his ordinary range. The gist of his conclusions in this matter is that danger threatens the Caucasian race through the possibly near exhaustion of the world's stock of fixed nitrogen, as assimilated by that race as wheat-eaters. Such exhaustion, he points out, is a matter of far greater importance than the coming scarcity of British coal prophesied by Mr. Stanley Jevons, for "it means not only a catastrophe little short of starvation for the wheat-eaters, but indirectly, scarcity for those who exist on inferior grains, together with a lower standard of living for meat-eaters, scarcity of mutton and beef, and even the extinction of gunpowder."

THE ARTIFICIAL PRODUCTION OF NITRATE, however, is well within the bounds of possibility, and it is shown that Niagara alone is capable of supplying the required electric energy to produce nitrate by combustion of the atmosphere, without much lessening its mighty flow. The problem is to generate enough energy to produce twelve million tons of sodium nitrate annually, and on that score Sir William thinks the future can take care of itself. "The artificial production of nitrate is clearly within view, and by its aid, the land devoted to wheat can be brought up to the thirty bushels per acre standard. In days to come, when the demand may again overtake supply, we may safely leave our successors to grapple with the stupendous food problem." But both the present and future generations must develop and guide Nature's latent energies, and utilise her inmost workshops, Central Africa and Brazil being called into commercial existence to redress the balance of Odessa and Chicago.

MONIUM—ANOTHER NEW ELEMENT—is Sir William Crookes' personal contribution to the recent brilliant achievements of science, which he so ably summarises. This element owes its detection to the spectroscope, and its discovery is the latest outcome of an extended investigation of a series of spectra produced by passing the phosphorescent glow of yttria, under molecular bombardment *in vacuo*, through a train of prisms. The spectrum of monium has been revealed high up in the ultra-violet, where, "like a faint nebula in the distant heavens, a group of lines was detected, at first feeble and only remarkable on account of their isolation. On purification, the lines grew stronger, and within the last few weeks absolute evidence has been obtained that another member of the rare earth group has been added to the list. The name "monium" (from the Greek *μόνος*, alone) fitly indicates the isolation of the lines distinguishing the new element, almost at the extreme end of the ultra-violet spectrum. The wave-lengths of the principal lines are 3120 and 3117, and the atomic weight of the element is not far from 118—between that of yttrium and lanthanum.

OF PSYCHIC RESEARCH much less was said in Sir William's address than most people would have liked. He thinks he sees a little further now than when he took part many years ago in certain psychic researches, and he has glimpses of something like coherence among the strange elusive phenomena then new to

science, and not yet accepted by any but a select few. He believes that telepathy is possible—that thoughts and images may be transferred from one mind to another without the agency of the recognised organs of sense, and that knowledge may enter the human mind without being communicated in any hitherto known or recognised ways. It is pointed out that some physiologists think the essential cells of nerves do not actually touch, but are separated by a narrow gap which widens in sleep while it narrows almost to extinction during mental activity. "This condition is so singularly like that of a Branly or Lodge coherer as to suggest a further analogy. The structure of brain and nerve being similar, it is conceivable there may be present masses of such nerve coherers in the brain whose special function it may be to receive impulses brought from without through the connecting sequence of ether waves of appropriate order of magnitude.

"RÖNTGEN'S RESEARCHES have familiarised us with an order of vibration of extreme minuteness compared with the smallest waves with which we have hitherto been acquainted, and of dimensions comparable with the distances between the centres of the atoms of which the material universe is built up; and there is no reason to suppose that we have here reached the limit of frequency." It is known that the action of thought is accompanied by certain molecular movements in the brain, and here we have physical vibrations capable from their extreme minuteness of acting direct on individual molecules, while their rapidity approaches that of the internal and external movements of the atoms themselves." Confirmation of telepathic phenomena is held to be afforded by many converging experiments, and by many spontaneous occurrences only thus intelligible. But be that as it may, the phenomena are without doubt dependent on physical causes, and we are told that it is unscientific to call in the aid of mysterious agencies to account for them when with every fresh advance in knowledge the ether vibrations are shown to have power and attributes abundantly equal to any demand, even to the transmission of thought.

DR. D. MORRIS, C.M.G., D.Sc., lately Assistant Director of the Royal Gardens at Kew, has now been formally appointed by the Secretary of State for the Colonies, Commissioner of Agriculture for the West Indies, to preside over the new Agricultural Department, which has been constituted as a charge on Imperial funds in accordance with the recommendation of the West India Royal Commission, and the recent vote of the House of Commons. Dr. Morris leaves this country for Barbados by the Royal Mail Steamer "Orinoco," from Southampton on the 21st instant, and his official address after that date will be "Commissioner, Imperial Department of Agriculture, Barbados, West Indies."

THE NEW B.P. was under consideration at the annual meeting of the Canadian Medical Association, held in Quebec last month. Dr. T. D. Reed, of Montreal, urged that the book should be carefully studied and adopted as the absolute standard for the Dominion, and in view of the fact that no date had been named for the coming into force of the new work, he moved that, "whereas a revised edition of the British Pharmacopœia has been issued containing numerous and important changes, and whereas uncertainty exists as to the date when the British Pharmacopœia, 1898, is to be considered in force, the Canadian Medical Association in annual meeting assembled, recommends that October 1, 1898; be taken as the date on and after which in the absence of instructions otherwise, physicians' prescriptions should be compounded with the

preparations of the British Pharmacopœia, 1898." This motion appears to have been adopted, after some more or less complimentary opinions on the British Pharmacopœia had been aired. Though that work is pretty generally followed in Canada, its authority is not unquestioned there. Dr. MacNeill is reported as saying that the United States Dispensatory includes all that is best in the British, French, and German Pharmacopœias, and that it is very extensive and full of information. If the B.P. is to be taken as the standard, it should, he thinks, be improved and extended. Ultimately Dr. Roddick moved the appointment of a Committee to impress the matter upon the attention of the Federal authorities, and that was agreed to.

THE PROTEST OF ARBROATH CHEMISTS against the dispensing of medicines at the local infirmary by a person who possessed no statutory qualification for such work, has proved of little avail, having resulted only in the appointment as dispenser and nurse of another person without any pharmaceutical qualification, at the magnificent salary of thirty pounds per annum. The directors were recently reported to be considering whether they could arrange for the employment of "a nurse legally qualified to dispense medicines," but as the name of the person appointed does not appear in the Register of Chemists and Druggists for the current year, we can only conclude that a legal qualification was felt to be too expensive a luxury for the poor of Arbroath.

RULES FOR THE PRESCRIPTION COUNTER are more often understood than expressed, when they exist at all, but it is undoubtedly better to have them printed and suspended in a prominent place in every dispensing department. The following rules, which occupy a prominent position over the prescription counter of a Detroit pharmacy, are copied from the *Bulletin of Pharmacy* in the hope that they may prove useful, if only as suggestions, to some of our readers:—

"I. Keep the prescription scales clean, and when not in use keep them covered.

"II. Keep the dispensing bottles well filled and always perfectly clean.

"III. Keep everything in its proper place.

"IV. After using a utensil, or a dispensing bottle, do not leave it on the prescription counter, but place it back where it belongs.

"V. When compounding prescriptions do not carry on a conversation with anyone.

"VI. Keep customers out from behind the prescription case.

"VII. Label every package of drugs sent out, and when poison, be sure and give the antidote.

"VIII. When compounding prescriptions do not let your mind wander off to something else, but remember that you hold in your hands the life of a human being, and act accordingly.

"IX. Always charge prescriptions, or any other goods, before wrapping them up."

THE HAMPSTEAD ANALYST, Mr. A. W. Stokes, finds much less to complain of than others in similar positions, for he reports that, out of three hundred and ten samples of food, drugs, and disinfectants analysed by him during the quarter ending March 25 last, only two were found to be adulterated. The drugs examined numbered fifty-five samples, consisting of about twenty different articles; some of these were general articles in stock, others were made up from special prescription. In all cases they were found to be genuine, of full strength, and properly compounded. In no case was a cheaper material substituted for any part of the drug

asked for. "It is very satisfactory to know," observes the analyst, "that if, in spite of his salubrious surroundings, anyone at Hampstead needs physicking, there is a reasonable certainty of his getting pure drugs."

A DEMONSTRATION HAS BEEN GIVEN before the Surgical Section of the British Medical Association in Edinburgh by Mr. Geo. Peters, of Toronto, of a new method of making casts of living objects, anatomical subjects and pathological specimens. The process consists in spraying melted paraffin wax over the whole surface of the object, cooling it by spraying ice-cold water at the same time, strengthening the mould with plaster of Paris and removing it in as many sections as the nature of the subject calls for. The advantages of the system are, minuteness of detail on the surface of the cast and the absence of the compressing effects so noticeable when plaster of Paris or other heavy materials are used.

A GOOD STORY is told of a Birmingham lady who recently took her daughter to a local physician for advice. According to the *Medical Times*, the girl was suffering from what is known as "general lowness." There did not appear to be much the matter with her, but she was pale and listless, and did not care about eating or doing anything. The doctor, after due consultation, prescribed for her a glass of claret three times a day with her meals. The mother, who was somewhat deaf but apparently heard all he said, bore off her daughter determined to carry out the doctor's orders to the very letter. In ten days they were back again, and the girl looked quite a different creature. She was rosy cheeked, smiling, and the picture of health. The doctor congratulated himself upon the keen insight displayed in his diagnosis, but was somewhat disconcerted when he learnt that owing to the mother's deafness his instructions had been mistaken for carrots, which the girl had obediently eaten three times a day.

THE PADWICK CRICKET COLLECTION, which is now announced as being in the market, is noteworthy as having been formed by the late Mr. T. Padwick, pharmaceutical chemist, of Redhill, who died a few months ago. A catalogue of this remarkable collection, extending to twenty octavo pages, has been issued by Mr. Alfred J. Gaston, of 133, Ditchling-rise, Brighton. Mr. Padwick probably spent many hundreds of pounds on his library, for he appears to have bought everything at all bearing on the subject. According to a note in the *Times*, the earlier of the rarities include James Love's "Cricket," an heroic poem published in 1770, and "The Kentish Cricketers," also a poem, issued in 1773, neither of which was known to the bibliographer Lowndes. There are two copies of Hoyle's "Games," 1775, a copy of the *New Universal Magazine* (one of the many rivals of the *Gentleman's*) for 1752, containing "the rules of the game at cricket, as settled by the Cricket Club in 1744, played at the Artillery Ground, London," with a folding plate depicting the game—one of the earliest representations of cricket with two stumps and the old-fashioned club bat. There are also North's "Nottingham Cricket Matches," 1771-1829; Sutton's "Nottingham Matches," 1771-1853; one complete and several incomplete sets of Fred Lillywhite's "Guide," and at least one copy of probably every book dealing with or relating to the game published during the last half century. The pictures, photographs, and engravings bearing on the game of cricket are also very numerous, the most important being, perhaps, "A Cricket Match," said to be by Morland, and over 100 years old, taken from the Cricketer's Arms, Chertsey.

How to Become a Pharmacist in Great Britain.

Legal Requirements and Hints on Procedure.

In Great Britain the legal qualification for carrying on the business of pharmacy is that of "chemist and druggist." The conditions of registration as a chemist and druggist are that the candidate must be of the full age of twenty-one years, he must have been engaged for at least three years in the translation and dispensing of prescriptions, and have passed a simple scholastic examination in Latin, English, and arithmetic, followed by the Minor or qualifying examination, which tests his knowledge of chemistry, physics, botany, materia medica, prescription-reading, dispensing, practical pharmacy, and the poison regulations. To secure the higher title of "pharmaceutical chemist" he must subsequently pass the Major examination, the subjects of which are advanced chemistry, physics, botany, and materia medica.

As pointed out in the last Student's Number of the *Pharmaceutical Journal*, the first step in any properly arranged course of technical education is to show proof of satisfactory school training. This, the would-be pharmacist should do by passing one of the scholastic examinations specified in the list on page 308, preference being given to the Matriculation examination of the University of London. The period of pupilage need not exceed three years, but the student will benefit if he should be apprenticed for a longer period, so long as the indentures include a clause permitting him to attend day classes during the last year. Apprenticeship in a good all-round business is strongly recommended, as under such circumstances the peculiar value of the pharmaceutical training is better brought out than is otherwise possible. As soon as apprenticeship is entered upon a copy of the pamphlet 'Advice to Students' should be obtained from the Secretary of the Pharmaceutical Society, 17, Bloomsbury Square, London, W.C., who will send it free on application. This pamphlet contains detailed information as to the best way of studying chemistry, botany, materia medica, and pharmacy during apprenticeship.

The book that should most engage the student's attention from the outset of his career is the British Pharmacopœia; he should compare the drugs, chemicals, and galenical preparations in the pharmacy with the official descriptions, commit doses to memory, and learn the thousand and one facts that must be known sooner or later. The practical study of chemistry should also be commenced during this first year, and the mysteries of prescription Latin, concerning which the article by Mr. Ince (see p. 281) should be consulted, will serve to fill up odd moments. During the second year of pupilage the student's knowledge of chemistry may be applied in the interpretation of passages in the Pharmacopœia that were not clear when first attacked. Attfield's 'Chemistry' and the "Explanatory Notes on the B.P.," now appearing in these pages, will be found the best guides in this direction. Botany should be studied practically in the fields and lanes, with Holmes' 'Botanical Note Book' and John's 'Flowers of the Field' as constant companions. This might be followed by a course of lectures on botany, accompanied by practical work. Chemistry, however, should receive the lion's share of attention, and the B.P. constitute the student's chief text-book. Materia medica and practical pharmacy may be attacked systematically the third year, with the aid of the most recent text-books, though numerous facts bearing on both subjects should have been already accumulated. It will also be found advantageous, as has been repeatedly urged, to prepare for the Jacob Bell Scholarships

examination. The subjects of this examination—Latin, French or German, English, arithmetic, chemistry, pharmacy, and botany—should all be more or less familiar to the student, and the mere attempt to win one of the scholarships will result in incalculable benefit to the candidate, whether he be actually successful or not.

The next step will probably be to take a college course in preparation for the qualifying examination. Particulars of the various institutions where suitable courses are conducted will be found at page 317 *et seq.* Nine to twelve months should be devoted to preparation for the Minor, and as much more time should be spared subsequently for further study, prior to entering for the Major examination. Whilst the Minor qualification confers the title of "chemist and druggist," and is all that is legally necessary to practise pharmacy without let or hindrance, while entitling the successful candidate to be elected to full membership of the Pharmaceutical Society, passing the higher examination gives the right to the title "pharmaceutical chemist," and exempts the holder from all jury service.

The Cost of a Pharmaceutical Training.

With regard to the question of cost, the initial expense will be the "premium" which will be required by the would-be apprentice's master. As has been pointed out on many occasions, probably no step in the young pharmacist's life requires greater circumspection than this pupilage or apprenticeship. When the duties and obligations are properly carried out by the contracting parties on both sides, the apprentice will learn more, and his receptive mind will receive more lasting impressions than at any other period of his career. A pharmacist who takes an apprentice into his business virtually has the power of training him into a good, an indifferent, or a bad pharmacist, and no one should take an apprentice with a premium unless he has the opportunity, the capability, and the intention of teaching his pupil the rudiments of his art and business. It is to ill-directed apprenticeships that much of the indifference and lack of interest in the craft displayed among the junior members can be attributed; and also, to a still greater degree, the large number of failures at the examinations. The principal who "turns out" his apprentices well trained and well equipped for their future career, confers a benefit not only on his individual pupils, but also on the pharmaceutical body as a whole. Such tuition and supervision for a period of three years cannot, however, be had for less than £80 to £100. To this must be added the cost of clothing and pocket money, books, and the fees for classes in elementary chemistry, botany, and physics. The total cost may be set down approximately as follows:—

FEES FOR SCHOOL, LECTURES, ETC.

	£	s.	d.
Elementary Course	30	0	0
Advanced "	18	0	0
Books (at least)	8	0	0
Examination Fees, Minor	5	5	0
" " Major	3	3	0
Apparatus	2	0	0
Maintenance for 62 weeks at 30s.	98	0	0
Clothing and incidental expenses	15	0	9
	174	8	0
Premium for 3 years' pupilage	100	0	0
Clothing and incidental expenses for 3 years' pupilage ..	50	0	0
Total cost of pharmaceutical training	324	8	0

This scheme of cost is intended to give a fair average, and may obviously be modified, according to circumstances.

The Student's Library.

To every pharmaceutical student the choice of suitable text-books is a difficult matter. It is important to distinguish between text-books and books of reference. The economical will content themselves with the former, and these notes apply largely to such students as wish for trustworthy books that will enable them to get a thorough knowledge of their work without putting them to unnecessary expense. The Minor requirements will be considered first, and at the outset it may be stated that if a wise choice of books is made for the work of the qualifying examination but few more will be needed to cover the Major work.

CHEMISTRY.—Newth's 'Inorganic Chemistry' (Longmans; 6s. 6d.). Attfield's 'Manual' (Gurney and Jackson; 15s.). Owens College 'Laboratory Tables' (Coinish; 1s. 6d.). Wade's 'Introduction to the Study of Organic Chemistry' (Sonnenschein; 7s. 6d.). Woodward's 'Chemical Arithmetic,' Part I. (Simpkin, Marshall; 2s.).

BOTANY.—Scott's 'Introduction to Structural Botany' (A. and C. Black; 3s. 6d.). Green's 'Manual,' vols. I. and II. (Churchill; 7s. 6d. and 10s. 6d.). Bower's 'Practical Botany for Beginners' (Macmillan; 3s.). Wishart's 'Botanist's Vade-Mecum' (Livingstone; 2s. net); Holmes' 'Botanical Note Book' (Dulau, 3s.).

PHARMACY.—1898 British Pharmacopœia (Spottiswoode, 10s. 6d.); Squire's 'Companion to the British Pharmacopœia' (Churchill, 12s. 6d.); Proctor's 'Lectures on Practical Pharmacy' (Churchill, 14s.); Lucas' 'Practical Pharmacy' (Churchill, 12s. 6d.).

MATERIA MEDICA.—Southall's 'Materia Medica' (Churchill, 6s.).

PHYSICS.—Aldous' 'Elementary Course of Physics' (Macmillan; 7s. 6d.); Everett's 'Physics' (Blackie; 3s. 6d.).

LATIN.—Ince's 'Latin Grammar of Pharmacy' (Baillièrè; 5s.).

The foregoing selection can be depended on as the best that is attainable at present. Passing to a more detailed discussion of this subject, it may be stated that the extreme popularity of Newth's 'Chemistry' is of itself a recommendation. The first part treats of the fundamental principles and theories of chemistry, the rest of the book deals with the metals and non-metals, giving just the required information in a comparatively small space. Bloxam's 'Chemistry' (Churchill, 18s. 6d.), is more suitable as a book of reference, whilst Ramsay's 'Elementary Systematic Chemistry' (Churchill, 4s. 6d.), does not contain enough information for examination purposes. Attfield's 'Manual' is too well known to need many remarks, it will be found useful in preparing samples of pure chemicals, *e.g.*, potassium permanganate, and for elementary quantitative analysis. Chemical arithmetic frequently offers some difficulty to Minor candidates. A perusal of Woodward's 'Chemical Arithmetic,' Part I., will render the subject not only clear but interesting. Wade's well-written book contains more information than is wanted for the Minor, but as it is the best Major text-book, the student will do well to use it in his Minor work, and pick out what is required. After working through the qualitative tables in 'Attfield,' no better course is open than to follow the Owens College tables for a time; the explanatory footnotes given are extremely helpful.

In botany the study of Scott's first volume is to be recommended in the first instance. In this little book the main elementary principles of the science are set forth in fascinating language, and the three higher groups of plants, the dicotyledons, the monocotyledons, and the gymnosperms, illustrated by the type system by means of the wallflower, the lily, and the spruce fir; afterwards Green's first volume will be read with greater profit. The second volume is necessary for its chapters on physiology. Bower's 'Practical Botany' is the best laboratory companion, as it gives full directions for section-cutting, and the preparation of the necessary microscopical slides. For the field-botanist no handier books have yet been written than Wishart's 'Botanist's Vade Mecum' and Holmes's 'Botanical Note Book.' A satisfactory all-round English work on pharmacy is still a desideratum. Proctor's 'Lectures on Practical Pharmacy' is at present the best, Lucas' 'Practical Pharmacy' is also officially recommended. Squire's 'Companion to the British Pharmacopœia' gives invaluable information concerning incompatibles and other dispensing notes, besides

practical remarks on the chemical and vegetable materia medica of the British Pharmacopœia. It should, however, be remembered that the British Pharmacopœia itself is the most important book on pharmacy, and year by year the student should increase his own notes on those official preparations which he has prepared. There will be found from time to time a series of articles on this subject in the Students' Page of this Journal. At present the best book on materia medica, apart from the Pharmacopœia, is Barclay's edition of Southall's book, but the appearance of Professor Greenish's work on the subject is awaited with interest. A good plan by which habits may be fixed on the mind consists in filling in the names of places on a blank map, and on the opposite page writing the names of the drugs found in the places mentioned. Examiners are fond of asking the precise locality of out-of-the-way parts of the globe, *e.g.*, Teshimkent. In physics again we have to deplore the absence of a suitable book. Everett's 'Physics' (Blackie, 3s. 6d.) is useful, but the new work by Aldous is much more comprehensive and simply written. The student will also have to rely largely on the first part of Newth's 'Chemistry.' It goes without saying that Ince's 'Latin Grammar of Pharmacy' (Baillièrè, 5s.) is the book on the Latinity of prescriptions.

For the Major course the student cannot do better than invest in the following books, in addition to those recommended for Minor work:—

CHEMISTRY.—Woodward's 'Arithmetical Chemistry,' Part II. (Simpkin, Marshall; 3s. 6d.). Valentin's 'Qualitative Chemical Analysis' (Churchill; 9s.). Clowes and Coleman's 'Quantitative Analysis' (Churchill; 10s.).

BOTANY.—Scott's 'Structural Botany,' vol. II. (A. and C. Black; 3s. 6d.).

MATERIA MEDICA.—(For those who can read French) Collin's 'Guide Pratique pour la détermination des Poudres Officinales' (Octave Doin; 4s.); Maisch's 'Materia Medica' (Kimpton, 10s. 6d. net).

PHYSICS.—Glazebrook's 'Heat and Light' (Cambridge Press; 5s.). Tutorial Series, 'Hydrostatics'; 'Electricity and Magnetism' (Clive, 3s. 6d. each).

It may be added that it is highly necessary to acquire the foregoing works on chemistry. The first treats of Avogadro's law, specific heat and vapour densities, etc., including much of the physical side of chemistry. It exactly fits the Major requirements. Valentin's is the best all-round work on practical chemistry, and Clowes and Coleman will be wanted for volumetric and gravimetric analysis; the directions in the latter as to manipulation are alone worth more than the price of the book. Every word in Scott's second volume should be known; after this no better book can be read than Green's second volume, as regards the lower forms of plant life from vascular cryptogams down to algæ, fungi, and bacteria. Green's Manual gives all the necessary matter connected with the physiology of plants. The town student will do well to arrange, if possible, with a friend in the country to have a regular supply of fresh flowers, when they are in season. Collin's little work imparts valuable information in the newer department of pharmacognosy, *viz.*, the examination of powdered vegetable drugs. The monographs on the more potent drugs in the Pharmacopœia should receive close attention, and the descriptions should be compared with actual specimens. Physics is the least satisfactory subject. In the first place, the syllabus demands a knowledge of the subject that cannot adequately be acquired in a six months' course. The only way to tackle this subject is by choosing from the text-books given above just the information demanded by the syllabus. There is no time to pick up the connecting links. Having now considered in detail the various publications that will help a student to obtain the knowledge he requires, a final word of advice may be added as to note-books. It is best to write only on one side of the page and to use well-bound books, quarto size, with good paper. A student should seek to make his notes as complete as possible, so that in after life they may be of real service to him when the Minor and Major are events of the long ago.

Particulars of Examinations, Scholarships, and Prizes,

FIRST EXAMINATION.

(For Registration as Apprentices or Students.)

Fee Two Guineas.

This examination will be held, at the following centres, at 11 o'clock, on the second Tuesdays in January, April, July, and October:—

Aberdeen	Carnarvon	Lancaster	Nottingham
Birmingham	Cheltenham	Leeds	Oxford
Brighton	Darlington	Lincoln	Penzance
Bristol	Dundee	Liverpool	Peterborough
Cambridge	Edinburgh	London	Plymouth
Canterbury	Exeter	Manchester	Sheffield
Cardiff	Glasgow	Newcastle	Shrewsbury
Carlisle	Hull	Northampton	Southampton
Carmarthen	Inverness	Norwich	York

Also at the following centres in July only:—

Jersey; Guernsey; Isle of Man (Douglas); Orkney (Kirkwall).

Candidates must give notice to the Registrar in London, on a printed form of application, which can only be obtained from him, and pay the fee not less than fourteen days prior to that on which the examination is to be held. Each candidate must at the time of entry state at which of the centres he desires to present himself.

The examination is wholly in writing, and comprises the following

Subjects.

LATIN.—Grammar; translation of simple sentences from English into Latin. Translation into English from Cæsar, 'De Bello Gallico,' Book I., or Virgil, 'Æneid,' Book I. [In each examination paper passages from both of these authors will be given, but a candidate is required to translate from one author only.]

ARITHMETIC.—Numeration; the first four rules—simple and compound; reduction; vulgar and decimal fractions; simple and compound proportion; a thorough knowledge of the British and metrical systems of weights and measures; percentages and stocks. [In each examination a paper question will be given involving a knowledge of the metrical system, which every candidate will be required to attempt.]

ENGLISH.—Grammar and composition. [In awarding marks, spelling and the quality of the handwriting are taken into account.]

Time Allowed.

Latin, 11 a.m. to 12.30 p.m.; arithmetic, 12.30 p.m. to 2 p.m.; English, 3 p.m. to 4.30 p.m.

CERTIFICATES IN LIEU.

The Boards of Examiners are empowered to accept in lieu of the First examination of the Society a certificate of having passed at one examination, all the compulsory subjects of any one of the following examinations, provided Latin, Arithmetic, and English were included in the subjects of the examination for which the certificate was granted:—

University of Oxford.

Junior or Senior Local Examinations.
Responsions.
Moderations.
Examination for a Degree in Arts.

University of Cambridge.

Junior or Senior Local Examinations.
Higher Local Examinations.
Previous Examinations.
Examination for a Degree in Arts.

University of Durham.

Junior or Senior Local Examinations.
Registration Examination for Medical students.
Examination for Students at the end of the first year.
Examination for a Degree in Arts or Science.

University of London.

Matriculation Examination.
Preliminary Scientific (M.B.) Examination.
Examination for a Degree in Arts or science.

Victoria University.

Entrance Examination in Arts of the Faculty of Medicine.
Preliminary Examination.

University of Edinburgh.

Junior or Senior Local Examinations.
Preliminary Examination for Graduation in Science or Medicine and Surgery.
Examination for a Degree in Arts or Science.

University of Aberdeen.

Junior or Senior Local Examinations.
Preliminary Examination for Graduation in Medicine or Surgery.
Examination for a Degree in Arts.

University of Glasgow.

Junior or Senior Local Examinations.
Preliminary Examination for Graduation in Medicine or Surgery.

University of St. Andrew's.

Junior or Senior Local Examinations.
Preliminary Examination for Graduation in Medicine or Surgery.
Examination for a Degree in Arts.

University of Dublin.

Public Entrance Examinations.
Examination for a Degree in Arts.

Royal University of Ireland.

Matriculation.
First University Examination.
Second University Examination.
Examination for a Degree in Arts.

Queen's University in Ireland.

Local Examinations for Men and Women
Entrance or Matriculation Examination.

Previous Examination for B.A. Degree.
Examination for a Degree in Arts.

Oxford and Cambridge Schools' Examination Board.

Certificate.

Royal College of Surgeons of England.

Preliminary Examination for the Membership or for the Fellowship.

Royal Colleges of Physicians and Surgeons of Edinburgh.

Preliminary Examination in General education, conducted by a Board appointed by these two Colleges combined.

Faculty of Physicians and Surgeons of Glasgow.

Preliminary Examination in General Education.

Royal Colleges of Physicians and Surgeons in Ireland.

Preliminary Examination.

Apothecaries' Hall of Ireland.

Preliminary Examination in General Education.

Intermediate Education Board for Ireland.

Senior, Middle, and Junior Certificates.

Owens College.

Junior Students' General Examination.

College of Preceptors.

Examination for a First or Second Class Certificate.

Incorporated Law Society.

Preliminary Examination in General Knowledge.

University of Wales.

Matriculation Certificate.

University of the Cape of Good Hope.

Matriculation Examination.

Scotch Education Department.

The Honours and First Grade Leaving Certificates are accepted, provided the Certificates in English, Latin, and Arithmetic are all obtained at any one Annual Examination.

SPECIAL NOTICE.—Each certificate must be forwarded to the Registrar with the fee of two guineas for the approval of the Board of Examiners, and must have been so approved by the Board of Examiners before the candidate will be eligible to enter his name for the Minor examination. (See instructions to candidates below.) After August, 1900, the above examination will be discontinued, and in place thereof a certificate of having passed an examination of the London Matriculation standard will be required.

MAJOR AND MINOR EXAMINATIONS.

The Boards of Examiners in London and in Edinburgh will meet at the end of September or the beginning of October, 1898, and in January, April, and July, 1899. The dates of the commencement of the examinations are duly announced in the *Pharmaceutical Journal*.

SPECIAL NOTICE.—Each candidate must state, at the time of giving notice, whether he desires to be examined in London or in Edinburgh. Richard Bremridge, Registrar, 17, Bloomsbury Square, London, W.C.

The written and practical portions of the examinations precede the oral portions.

Instructions to Candidates.

Each candidate must give notice and pay the fee to the Registrar in London on or before the fifteenth day of September or December, 1898, and the fifteenth day of March and June, 1899, and he will receive due notice of the date on which he will be required to present himself for examination.

When giving notice (for the first time), a candidate for the Minor examination must have attained the full age of twenty-one years, and must have been registered as having passed the First examination. He will at the same time be required to produce a registrar's certificate of birth, and a certified declaration that for three years he has been registered and employed as an apprentice or student, or has otherwise for three years been practically engaged in the translation and dispensing of prescriptions.

The printed form on which this declaration is to be made can only be obtained from the Registrar in London.

The attention of candidates who desire to submit, for the approval of the Boards of Examiners, the certificates of other examining bodies in lieu of the First examination, is specially directed to the regulation that these certificates must have been approved by the Boards of Examiners before such candidates will be eligible to enter their names for the Minor examination.

MODIFIED EXAMINATION.

Persons entitled to enter for the Modified examination, and desirous of so doing, should apply to the Registrar for particulars. No person is eligible for this examination who did not register for the same on or before December 31, 1869.

MINOR EXAMINATION

For Registration under the Pharmacy Act, 1868, as Chemists and Druggists, and entrance to the Pharmaceutical Society as "Member."

Fee Five Guineas.*

The Council of the Pharmaceutical Society recommends that all candidates before presenting themselves for examination should receive a systematic course of instruction occupying a period of not less than six months; and that such period of study should include at least sixty lectures in chemistry, eighteen hours' work in each week in practical chemistry, forty-five lectures and demonstrations in botany, and twenty-five lectures and demonstrations in materia medica.

The following are the subjects of examination:—

Botany.

The candidate will be required to recognise any of the plants specified in the list appended to this schedule; to refer any flowers that may be shown to him to their class and sub-class; to possess a general knowledge of the internal structure of stems, leaves, and roots, and their parts, and of the elementary tissues of which they are composed; to describe a cell, its structure and usual contents; to explain the thickening of cell-walls, and to describe the manner in which cells are combined to form tissues. To distinguish between roots and stems, and to name such important modifications of either as present distinguishing characteristics. To name correctly such leaf shapes as are shown, and to recognise appendages or any important modifications of the leaf. To have a practical knowledge of the various arrangements of leaves or flowers in the bud, and of the different kinds of phyllotaxis and of inflorescence; to understand the principles of branching, and the different kinds of branch systems. To possess a general knowledge of the processes of reproduction of plants, and to describe those of phanerogams and ferns. To name and describe the arrangements of the parts of the flower, the number, position and shape of the floral envelopes and of the organs of reproduction; to name and describe the different kinds of fruits, and the various modes of dehiscence and kinds of placentation. To have a general knowledge of the physiology of plants, and to describe the functions of the roots, stems and leaves. To be acquainted with the materials which form the food of plants, and to understand the part played by starch, sugar, and aleurone grains in the life of the plant. To recognise, by means of the microscope, sections of stems of dicotyledonous, monocotyledonous and cryptogamic plants; spiral, reticulated and scalariform vessels; as well as the simpler structures, such as stomata, pollen grains and hairs.

List of Plants for Recognition.

Aconitum Napellus	Valeriana officinalis	Mentha viridis
Papaver Rhoeas	Achillea Millefolium	" Pulegium
" somniferum	Anthemis nobilis	Rosmarinus officinalis
Brassica alba	Matricaria Chamomilla	Daphne Laureola
Cochleria Armoracia	Taraxacum officinale	" Mezerium
Althæa officinalis	Menyanthes trifoliata	Juniperus Sabina
Ruta graveolens	Borago officinalis	Taxus baccata
Cytisus Scoparius	Atropa Belladonna	Colchicum autumnale
Rosa canina	Datura Stramonium	Arum maculatum
Bryonia dioica	Hyoscyamus niger	Avena sativa
Æthusa Cynapium	Solanum Dulcamara	Hordeum vulgare
Conium maculatum	Digitalis purpurea	Triticum sativum
Foeniculum capillaceum	Lavandula vera	Aspidium Filix-mas
Ænanthe crocata	Mentha piperita	

Chemistry and Physics.

The candidate will be expected to possess an elementary knowledge of the following subjects:—

(a) The law of the conservation of energy; the law of gravitation; the balance; specific gravity; atmospheric pressure; the barometer, air-pump, and siphon; the law of Boyle; temperature; thermometer; the law of Charles; the law of gaseous diffusion; W. Meyer's method for determining vapour densities.

(β) The chief characteristics of chemical action, the distinction of elements and compounds; the laws of chemical combination by weight and volume; the hypothesis of Avogadro; atomic weight and molecular weight; chemical formulæ and nomenclature; valency; the distinction between metals and non-metals.

(γ) The general characters of the non-metals; the chief methods of preparation and the typical reactions of the following non-

metallic elements and compounds:—Hydrogen, oxygen, ozone, water, peroxide of hydrogen; chlorine, bromine and iodine, and their compounds with hydrogen and oxygen; fluorine, hydrofluoric acid; nitrogen, ammonia, the oxides of nitrogen, nitrous acid, nitric acid; sulphur, sulphuretted hydrogen, sulphurous and sulphuric anhydrides and acids, thiosulphuric acid; phosphorus, phosphine, the oxides and oxy-acids of phosphorus, the chlorides of phosphorus; silicon, silica, fluoride of silicon, silicofluoric acid; boron, boric acid. The usual impurities in those of the above-named substances that are included in the British Pharmacopœia.

(δ) The general characters and classification of the metals, and the general methods of forming oxides and salts; the sources, the usual methods of extracting, and the chief properties of the under-mentioned metals and the principal modes of preparation, properties, adulterations, and contaminations of such of their compounds as are described in the British Pharmacopœia,—potassium, sodium ammonium lithium, barium, calcium, magnesium, zinc, aluminium, iron, chromium, manganese, arsenium, antimony, tin, copper, bismuth, lead, silver, mercury, gold and platinum.

(ε) Carbon, its oxides, cyanogen, hydrocyanic acid, cyanide of potassium, ferrocyanide and ferricyanide of potassium, oxalic acid. The chief methods of preparing marsh gas, ethylene, alcohol, aldehyde, acetic acid, acetate of ethyl, spirit of nitrous ether, nitrite of amyl, hydrate of chloral, chloroform, iodoform, ether; the principal properties, reactions, and mutual relations of these compounds. The candidate will also be expected to possess a general knowledge of the methods of estimating carbon, hydrogen, and nitrogen in organic compounds, and of obtaining molecular formulæ.

Note.—Candidates will be expected to solve simple problems relating to the weight and volume, under conditions of temperature and pressure, of elements and compounds concerned in chemical reactions.

Chemistry.—PRACTICAL EXAMINATION.

To determine the specific gravity of liquids and solids, to be familiar with the general construction and use of the thermometer and barometer.

To recognise by chemical tests the more important non-metallic elements and compounds, as well as the metals and salts indicated in the foregoing list; to detect the chief impurities in those that are included in the British Pharmacopœia; to recognise by their physical properties those which possess well-defined characteristics.

To identify by chemical tests the organic compounds before enumerated, and, in addition, tartaric and citric acids, starch, cane sugar, grape sugar, salicin, quinine, morphine and strychnine; and to detect the impurities in such as are included in the British Pharmacopœia.

To perform those volumetric determinations which are described in the British Pharmacopœia.

To be familiar with the construction and use of the balance, and to have a practical knowledge of the British and Metric Systems of Weights and Measures.

To quantitatively determine the total alkaloids in cinchona bark, and in the tincture and extract of nux vomica, and the morphine in opium.

The candidate will further be expected to have a practical acquaintance with the methods of preparing the more important inorganic substances, including the non-metals and their compounds, and such metallic compounds as are included in the British Pharmacopœia, and also the following organic compounds:—Ether, chloroform, spirit of nitrous ether, nitrite of amyl, acetate of ethyl, and hydrocyanic acid, so that he may be able to explain to the examiner the operations involved in their preparation, and, if called upon, to perform the operations or certain stages of them himself.

Materia Medica.

The candidate is required to recognise specimens of any crude drug mentioned in the British Pharmacopœia or in the annexed list, and to describe their methods of production and their characteristics so far as may be necessary to detect adulteration or substitution. He must be familiar with their geographical sources, the botanical and zoological names of the plants and animals yielding them, the natural orders to which they belong, and the localities from which they are obtained. The candidate will be required to name their chief active constituents and also the official preparations into which they enter.

* After August, 1900, the examination fee will be ten guineas.

Roots.	Tussilago Farfara	Cryptogamic Substances.
Althæa officinalis	Spigelia marilandica	Lycopodium clavatum, etc.
Inula Helenium	Marrubium vulgare	Fucus vesiculosus
Alkanna tinctoria	Solanum Dulcamara	Chondrus crispus
Bryonia alba et dioica	Euphorbia pilulifera	Animal Substances.
Rhizomes, etc.	Convallaria majalis	Spongia officinalis
Helleborus niger	Flowers.	Coccus Lacca
Sanguinaria canadensis	Calendula officinalis	Mylabris Cichorii
Iris florentina	Pyrethrum cinerariæfo- lium, etc.	Sepia officinalis
Allium sativum	Arnica montana	Castor Fiber
Veratrum album	Fruits.	
Acorus Calamus	Punica Granatum	Hairs.
Agropyron (Triticum) repens	Cuminum Cyminium	Mucuna pruriens
Barks.	Capsicum annuum	Juices, etc.
Berberis vulgaris	Laurus nobilis	Acacia Catechu
Cinnamodendron corti- cosum	Piper longum	Lactuca virosa (Lactuca- rium)
Simaruba amara	Vanilla planifolia	Aloe spicata, etc.
Erythrophlaeum guineense	Seeds.	Curare (Woorari)
Quillaia Saponaria	Paullinia sorbilis (Guar- ana)	Gum-Resins.
Prunus serotina	Trigonella Fœnum-græ- cum	Boswellia Carterii, etc.
Ulmus campestris	Dipteryx odorata	Euphorbia resinifera
Ulmus fulva	Pyrus Cydonia	Oleo-Resins,
Cinnamomum Cassia	Strychnos amara	Pistacia Torebinthus
Coto	Hyoseyamus niger	Resins.
Herbs.	Amomum Melegueta	Callitris quadrivalvis
Grindelia Squarrosa et robusta	Areca Catechu	Pinites succinifer
		Calamus Draco

Prescriptions.

The candidate is required to read without abbreviation auto-graph prescriptions; translate them into English; understand the grammatical construction of the Latin; and render a literal as well as an appropriate translation of the directions for use. To detect errors, discover unusual doses, and have a general knowledge of posology. To calculate percentages and other quantities occurring in prescriptions; also to render in good Latin ordinary prescriptions written in English.

Practical Dispensing.

To weigh, measure, and compound medicines; write the directions in concise language in a neat and distinct hand; to finish and properly direct each package.

[In awarding marks in this subject the time taken by the candidate in doing the work is taken into account.]

Pharmacy.*

The candidate will be required to possess a general knowledge of the following branches:—

(a) Operations requiring the use of heat. Evaporation, with particular reference to the preparation of extracts and inspissated juices; special characters and modes of preparing the various classes of extracts; influence of surface temperature and pressure upon the rate of evaporation; water, steam and sand baths; distillation, ordinary, fractional, and destructive; distinctive characters and objects of each; official preparations illustrating the various kinds of distillation, apparatus employed, the retort and receiver, still and worm, Liebig's condenser, principles on which they are constructed and used. Sublimation, its objects and applications in pharmacy; official products of sublimation, calcination and fusion. Desiccation, temperature best suited for drying particular drugs, loss in drying vegetable drugs, forms of drying ovens, principles on which they are constructed and used.

(b) Disintegration of solid substances: cutting, bruising and pulverisation; apparatus employed, principles indicating which is to be adopted in particular instances; methods for controlling the degree of comminution, sieves and sifting, trituration, levigation, elutriation, granulation, including methods for producing certain chemicals, as fine powders, small crystals, scales, etc. Solution: its nature, solvent power of various menstrua, influences of (a) temperature; (b) state of division of the substance to be dissolved; (c) time; (d) position of the substance in the menstruum; lixiviation, infusion, digestion and decoction; maceration, percolation and displacement, principles on which the successful performance of these processes depend; form and materials for percolators and other vessels employed. Filtration, objects and methods, filtering media, means of expediting filtration; dialysis: its application in pharmacy, construction and use of the dialyser. Expression, methods of obtaining the juices from plants; recovery of the residual liquids from tincture marcs, etc., screw, hydraulic and other presses. The principles involved in the dispensing of medicines, particularly with reference to the best excipients and methods for forming pill masses, the preparation

and nature of emulsions, the most suitable emulsifying agents, and the best means of suspending insoluble substances in liquids.

(γ) The candidate will also be required to show a practical knowledge of the processes, and understand the principles of the processes by which the official preparations belonging to the following classes are made, viz., collodions, confections, decoctions, dilute acids, extracts (solid and liquid), glycerins, infusions, juices, liniments, lotions, mixtures, ointments, pill masses, plasters, powders (simple and compound), solutions, spirits, suppositories, syrups, tinctures, vinegars, waters and wines. He must be able to conduct such of the operations, or parts of them, as may be required by the examiner. A knowledge of the proportion of active ingredient or crude material in official preparations containing aconite, antimony, arsenic, belladonna, Calabar bean, cantharides, hydrate of chloral, chloroform, caustic potash and soda, colchicum, digitalis, elaterinum, ergot, iodine, iodoform, ipecacuanha, lead, mercury, nux vomica, opium, phosphorus, scammony, stramonium squill, alkaloids and alkaloidal salts.

Candidates will be required to enumerate the poisons contained in Schedule A of the Pharmacy Act, 1868, and those since added thereto, in pursuance of the provision contained in Section II. of that Act, viz. :—

- (a) Poisons within Part I. of the Schedule.
- (b) Poisons within Part II. of the Schedule.

They will be required to describe minutely the conditions required upon the sale by retail of poisons both in Part I. and Part II. of Schedule A; and to write the proper entry required, according to Schedule F of the Act, for the sale of a poison coming within Part I. of Schedule A. They will also be required to state the conditions imposed on the sale of scheduled poisons by wholesale and for export; and upon the sale of a scheduled poison when forming an ingredient in a medicine dispensed.

A knowledge of the conditions imposed on the sale of arsenic by the Arsenic Act will also be required.

Candidates must not take into the examination rooms or laboratories any books or any notes or memoranda, whether written or in print.

MAJOR EXAMINATION.

For registration as Pharmaceutical Chemists under the Pharmacy Act, 1857 Pharmaceutical Chemists, whilst in practice, are exempt in England and Wales from service on all Juries and Inquests under the Juries Act, 1862.

Fee Three Guineas.

The examination in the respective subjects may be oral, practical, or in writing.

Chemistry and Physics.

In addition to the subjects indicated by the Schedule for the Minor examination the candidate will be expected to possess a knowledge of the most important facts connected with—

1. The physical constitution of the three states of matter; liquefaction of gases, critical point; the diffusion of gases and liquids, dialysis; methods for determining vapour densities; solution.

2. The dynamical theory of heat; heat and temperature; sources, development and propagation of heat; radiation, diathermancy and athermancy, separation of heat from light; latent heat; boiling point, distillation; freezing mixtures; specific heat; calorimeters; relation of specific heat to atomic weight; thermometers, the air thermometer; methods of determining exceedingly high and low temperatures.

3. The undulatory theory of light; reflection; refraction; propagation of light, the photometer; mirrors and lenses, the microscope; decomposition of white light by a prism; the spectroscope, spectrum analysis; double refraction; polarisation, the polariscope; influence of light in promoting chemical change, the principles of the ordinary photographic processes.

4. The methods of producing magnetism; magnetic induction. Sources of electricity, frictional electricity; the electroscopes; electric induction; electric machines; the Leyden jar; voltaic electricity; the principal forms of voltaic batteries; the galvanometer; chemical effects of current; electrolysis; measurement of current, Ohm's law; voltameter; secondary currents, secondary batteries; thermo-electricity; the thermopile; production of heat and light from electricity; electromotors; dynamo-machines.

5. The history of the atomic theory; the hypothesis of Avogadro; the methods by which the standard atomic weights

* The 1898 Pharmacopœia will be official in the January examination, 1899.

have been determined; dissociation; specific volume; the periodic law.

6. Classification of carbon compounds; rational formulæ; isomerism. The characteristics and constitution of the chief typical organic compounds. The constitution, sources, methods of preparation, properties, reactions and mutual relations of the following organic compounds:—Cyanogen derivatives.—Urea, cyanuric acid, uric acid. Hydrocarbons.—The principal members of the paraffin, olefine, acetylene and benzene series; their chief haloid and nitro-derivatives. Theory of isomerism in paraffin and benzene series. Paraffin derivatives.—Distinction of primary, secondary and tertiary alcohols; the chief primary monohydric alcohols; glycol; glycerin (glycerol); mannite; acetaldehyde, chloral; chloral hydrate; acetone; ether; the principal acids of the acetic series; oleic acid; glycollic and lactic acids; oxalic, succinic, malic, tartaric, racemic and citric acids; ethylamine; acetamide; glycocine; cane sugar; grape sugar; milk sugar; maltose; starch and cellulose. Benzene derivatives.—Phenol sulphonic acid; phenol; resorcin (resorcinol); aniline; benzaldehyde; salicylaldehyde; benzoic acid; salicylic acid. The principal properties of the terpenes and camphors, essential oils, resins. The characteristics of naphthalene and its derivatives. The processes of alcoholic, acetic, lactic and ammoniac fermentation. The properties and decomposition products of the principal glucosides, alkaloids, and other substances of definite chemical composition in the British Pharmacopœia.

Chemistry.—PRACTICAL EXAMINATION.

The candidate will be expected to be able—

To analyse mixtures containing three metallic salts; to estimate the nitrogen in organic compounds by the soda-lime process; to determine melting and boiling points. To perform the operations (or certain stages of them) necessary for the preparation of cyanogen, artificial urea, ethyl chloride, iodoform, ethylene, ethylene dibromide, acetaldehyde, formic acid, oxalic acid, nitrobenzene, aniline, benzoic acid, the nitrophenols. To recognise by their chemical reactions, and to determine, where necessary, by the Pharmacopœial gravimetric or volumetric methods, the strength and purity of the most important of the inorganic and organic compounds (including crude drugs and galenical preparations) described in the British Pharmacopœia. To detect and separate the most important alkaloids, alkaloidal salts and glucosides, and to separate in the pure state morphine from opium and strychnine from nux vomica.

In the practical portion of the Major examination standard works of reference are provided for the use of candidates, at the discretion of the examiner. No other books or memoranda are allowed.

Botany.

In addition to what is required for the Minor, the candidate is expected to possess an intimate acquaintance with the parts of the flower, fruit and seed; to describe the structure and development of the pollen and of the ovule, and to trace the steps by which the latter is transformed into the seed. To have an intimate knowledge of the structure of cells, whether isolated or in combination, to form tissues; of the contents of cells in their various stages of development; and a general knowledge of the origin of gums, acids, and mineral and other secretions of plants. To be familiar with the composition of the cell wall, its chemical nature, properties, and reactions; with the changes it undergoes in the formation of wood, cork, and mucilage, and in the processes of thickening and cuticularisation. To possess a knowledge of the general principles of classification, the system of Linnæus, and of the natural system founded upon that of De Candolle. To be able to distinguish practically the natural orders included in the schedule appended below, and such of the leading genera of each of these orders as are therein specified; also to refer to their respective orders or genera such specimens included in the schedule as may be shown to him. To possess a general knowledge of the method of reproduction in cryptogams, and to describe that of mosses; to be familiar with the development of the spores in these plants, and to be able to compare the different organs with the corresponding organs in phanerogams; to possess a knowledge of the alternation of generations in the cryptogams, and the modifications under which this is represented in the phanerogams. To have a practical acquaintance with the use of the microscope, and by means of it to recognise the various tissues found in the plant, the reproductive organs of cryptogams and phanerogams, and the more important cell contents.

Schedule.

RANUNCULACEÆ. Anemone Helleborus Aconitum	POTENTILLACEÆ. Potentilla Rosa Pyrus	GENTIANACEÆ Erythraea Menyanthes	EUPHORBACEÆ Euphorbia Buxus
PAPAVERACEÆ Papaver Chelidonium	CUCURBITACEÆ Ecbalium Bryonia	CONVOLVULACEÆ Solanum Solanum Physalis	CUPULIFERÆ Fagus Quercus Corylus
CRUCIFERÆ Brassica Cochlearia	UMBELLIFERÆ Eryngium Cicuta Carum	ATROPA Atropa Hyoscyamus Datura	SALICACEÆ Salix BETULACEÆ Betula
VIOLACEÆ Viola	ENANTHE Enanthe Feniculum	SCROPHULARIACEÆ Verbascum Scrophularia Digitalis	ALNUS Alnus CONIFERÆ Juniperus Pinus
MALVACEÆ Malva	DAUCUS Daucus Conium	LABIATÆ Mentha Origanum Thymus	OECHIDACEÆ Ophrys AMARYLLIDACEÆ Amaryllis IRIDACEÆ Iris Crocus
RUTACEÆ Ruta	DIPSACEÆ Dipsacus	MARRUBIUM Marrubium	LILIACEÆ Lilium Convallaria
LEGUMINOSÆ Lathyrus Mimosa Cercis	COMPOSITÆ Tussilago Inula Matricaria Anthemis	POLYGONACEÆ Polygonum Rumex	RUSCUS Ruscus Allium GRAMINEÆ Gramineæ
ROSACEÆ Prunus Spiræa			

Materia Medica.

This comprises a practical knowledge of the methods of estimating the value of important drugs, of distinguishing commercial varieties of the same, and of separating such of their active principles as are official in the British Pharmacopœia.

The candidate is also expected to have a general acquaintance with the active constituents of all important drugs, and to possess a general knowledge of the chemical properties of the official alkaloids, glucosides, resins, and essential and fixed oils.

The microscope will be introduced for the examination of certain drugs.

EXAMINATION FEES.

	£	s.	d.
First Examination	2	2	0
Minor Examination	5	5	0
Major Examination	3	3	0

All fees must be paid at the time of giving notice to attend an examination, and no portion of a fee will, under any circumstances, be returned.

Reduced Fees.

Persons who have failed to pass an examination, or who have failed to attend an examination at the time appointed, may, on payment of reduced fees, re-enter for examination.

The reduced fees payable are as follows:—

(a) In the case of a person who has attended an examination and failed to pass:—

First Examination	1	1	0
Minor Examination	3	3	0
Major Examination	2	2	0

(b) In the case of a person who has failed duly to attend an examination at the time appointed.....ONE GUINEA.

(c) In the case of a person who shall have proved to the satisfaction of the Council or the Boards of Examiners (by production of medical certificate or otherwise) that failure to attend was occasioned by unavoidable or proper causes.....ONE SHILLING.

SUBSCRIPTIONS TO THE PHARMACEUTICAL SOCIETY.

	Annual Subscription.
	£ s. d.
Persons who have passed the First examination, or whose certificates have been accepted in lieu thereof, are eligible to be elected "Student Associates" of the Society.....	0 10 6
Persons who have passed the qualifying examination, or who have been registered as chemists and druggists in business before August 1, 1868, are eligible to be elected "Members" of the Society.)	1 1 0
Life Composition fee for Members	10 10 0
All subscriptions are due on election, and on January 1st in each succeeding year.	

PRIVILEGES OF SUBSCRIBERS TO THE SOCIETY.

Members and Student-Associates of the Society are supplied with the Journal of the Society regularly as published, free of charge. They have also the use of the Library and Museum.

Members have a voice in the administration of the Benevolent Fund of the Society, and, in case of need, may receive assistance therefrom. Student-Associates are eligible, under certain conditions (see below), to compete for the Jacob Bell Scholarships, the Manchester Pharmaceutical Association Scholarship, and the Herbarium Prize.

PRIZES AND SCHOLARSHIPS.

Council Examination Prizes.

Pharmaceutical chemists who were members of the Society at the time of passing the Major examination are entitled to compete for the following prizes at the end of the session in which they passed the Major examination:—

FIRST PRIZE.—Pereira Medal in silver, and a present of books value £5, or thereabouts, given by the late Thomas Hyde Hills in memory of Jacob Bell.

SECOND PRIZE.—The Pharmaceutical Society's Medal in silver.

THIRD PRIZE.—The Pharmaceutical Society's Medal in bronze.

SUBJECTS OF EXAMINATION.—Materia medica, botany, and chemistry.

The next competition for these prizes will take place in April, 1899, after the ordinary meeting in that month of the Boards of Examiners.

The Registrar communicates with each person entitled to compete, requiring not less than three days' notice of his intention to present himself for examination, and no person will be admitted to compete unless he shall have given the required notice.

The examination is a written one, and competitors may be examined in London or Edinburgh.

The Council selects and appoints special Examiners, who set the questions, examine the answers, and report the result direct to the Council.

The Jacob Bell Memorial Scholarships.*

TWO BELL SCHOLARSHIPS are offered annually, and come into operation at the commencement of the session in October, and the scholars shall for that session be pupils in the Pharmaceutical Society's School.

ANNUAL VALUE OF SCHOLARSHIPS.—Each scholarship is of the annual value of thirty pounds, and is tenable for one year only; each scholar may, however, at the termination of his year of tenure, apply for free admission to the next ensuing advanced course in the Society's School. The payment will be made in two moieties; the first to be paid when the scholar enters upon his studies in the School, and the second at the expiration of five months. In addition to the endowment, the Council provides for the Bell scholars free laboratory instruction and admission to the lectures, and books of the value of five pounds—given by the late Thomas Hyde Hills—are divided equally between them.

SUBJECTS OF EXAMINATION.—*Latin*: Virgil; the first three books of the *Aeneid*; Latin prescriptions; translations of Latin into English and English into Latin; translations from any Latin pharmacopœia, and parsing. *French or German*. *English*: Composition and parsing. *Arithmetic*: The first four simple and compound rules, fractions, and decimals; the British and metrical systems of weights and measures. *Elementary Chemistry, Pharmacy, and Botany*.

CONDITIONS OF THE COMPETITION.—Each competitor must give notice to the Secretary on or before June 1.

The notice must be accompanied by

- (a) A registrar's certificate of birth.
- (b) Testimonials from present or previous employers, or masters, as to capability, industry, and general conduct.
- (c) A declaration that the competitor has passed not less, or has been engaged not less than three years in the pharmacy of a registered pharmaceutical chemist, or chemist and druggist. (The form on which this declaration is to be made can only be obtained from the Secretary, 17, Bloomsbury Square, London, W.C.)

* A scholar is supposed to be commencing his studies, or at least to have made only that progress which may be reasonably looked for during an apprenticeship. The object of the examination is to ascertain that the candidate has such an amount of ability, and affords evidence of having made such use of it in the acquirement of elementary knowledge, as will justify the expectations of his proving a successful student, who may do credit to the appointment, and become a useful and accomplished member of the pharmaceutical body.

At the time of giving notice the competitor must be a subscribing "Student-Associate" of the Society.

On the day on which the examination is held the competitor must be not less than 20 or more than 22 years of age.

No person to whom a Manchester Pharmaceutical Scholarship has been awarded is permitted to compete for a Bell Scholarship.

The examination for these scholarships takes place on the second Tuesday in July, at the same centres as for the First examination. It will be wholly in writing, and will be conducted under the same conditions as the "First" examination, and such safeguards as the Council may from time to time deem expedient. The written papers must be distinguished by a motto, and not by the name of the candidate.

The examination will be conducted by two or more persons appointed by the Council, and the award made (subject to the approval of the Council) by a Committee consisting of the President, the Vice-President, and the said examiners.

Manchester Pharmaceutical Association Scholarship.

One Scholarship is offered annually, and will be presented at the commencement of the Session of the Pharmaceutical Society's School in October. The scholar shall for that session be a pupil in the Society's School, or in case he may elect, he shall be a pupil in any provincial school of pharmacy approved by the Council of the Society.

The Scholarship is of the value of about £26 (the income arising from a sum of £750), which is to be expended for instruction in the Society's School, or in the provincial school selected by the scholar and approved by the Council of the Society.

SUBJECTS OF EXAMINATION.—*Latin*: Virgil; 'Æneid,' first three books, or Cæsar, 'De Bello Gallico,' first three books of Commentaries; * Latin prescriptions; translation of Latin into English and English into Latin; translations from any Latin pharmacopœia, and parsing. *French or German*. *English*:—Composition and parsing. *Arithmetic*:—The first four simple and compound rules, fractions and decimals; the British and metrical systems of weights and measures. *Elementary Chemistry, Pharmacy, and Botany*.

CONDITIONS OF THE COMPETITION.—Each competitor must give notice to the Secretary on or before June 1.

The notice must be accompanied by

- (a) A registrar's certificate of birth.
- (b) Testimonials from present or previous employers or masters as to capability, industry, and general conduct.
- (c) A declaration that the competitor has passed not less, or has been engaged not less than three years in the pharmacy of a registered pharmaceutical chemist, or chemist and druggist, in Lancashire, Cheshire, or the High Peak Parliamentary Division of Derbyshire. (The form on which this declaration is to be made can only be obtained from the Secretary, 17, Bloomsbury Square, London, W.C.)

At the time of giving notice the competitor must be a subscribing "Student-Associate" of the Society.

On the day on which the examination is held the competitor must be not less than nineteen or more than twenty-one years of age. The examinations are held at the same time and centres as for the Jacob Bell Scholarships, and the award made in the same manner and by the same persons as in the case of those scholarships.

No person to whom a Bell Scholarship has been awarded is permitted to compete for the Manchester Pharmaceutical Association Scholarship.

The Redwood Scholarship.

The Redwood Scholarship is offered annually in April to pharmaceutical chemists who are desirous of obtaining advanced instruction in chemistry and chemical pharmacology, with a view to conducting original investigations in these subjects.

The scholar will receive the sum of £20, and will be provided, free of cost, with a working bench, apparatus and materials in the Society's Research Laboratory, and will be required to work under the supervision of the Director, and to observe the rules and regulations of the Research Laboratory. The nomination of the scholar will be made by the Research Committee after ascertaining the candidate's fitness by means of an examination in chemistry and

* Passages from both authors are given, but a candidate is only required to translate from one author.

materia medica, or in such other manner as the Committee may think fit. The nomination of the Research Committee will be submitted for the approval of the Council who elects the scholar.

A Redwood scholar may be re-elected on the recommendation of the Research Committee.

The holder of a Jacob Bell Memorial Scholarship, if he be a pharmaceutical chemist, will be eligible for election as a Redwood scholar after the expiration of his Bell Scholarship.

Applications for the Redwood Scholarship must be sent to the Secretary of the Pharmaceutical Society not later than the 25th day of April in each year.

The Burroughs Scholarship.

The Burroughs Scholarship is offered annually in April to pharmaceutical chemists who are desirous of obtaining advanced instruction in chemistry and pharmacy, with a view to conducting original investigations in these subjects.

The scholar receives the sum of £26, and is provided, free of cost, with a working bench, apparatus, and materials in the Research Laboratory. He is required to work under the supervision of the professor of chemistry, and to observe the rules and regulations of the laboratory. The nomination of the scholar is made by the School Committee after ascertaining the candidate's fitness by means of an examination in chemistry and pharmacy, or in such other manner as the Committee may think fit. The nomination of the Committee is submitted for the approval of the Council, who elects the scholar.

Applications for the Burroughs Scholarship must be sent to the Secretary of the Pharmaceutical Society not later than April 25 in each year.

Herbarium Prize.

A Silver Medal is annually offered by the Council for the best Herbarium, collected in any part of the United Kingdom, the Channel Islands, or the Isle of Man, between the first day of January in one year and the first day of July in the year following, and should there be more than one possessing such an amount of merit as to entitle the collector to reward, a second prize consisting of a Bronze Medal, and also Certificates of Honour, will be given at the discretion of the Council. In the event of none of the collections possessing sufficient merit to justify the Council in awarding medals or certificates, none will be given.

Competitors must be subscribing "Student-Associates" of the Society, and under twenty-one of age.

The collections must consist of phanerogamous plants and ferns, arranged according to the natural system adopted in some work on British botany (such as that of Babington or Hooker), and be accompanied by lists, arranged according to the same method.

No collection may contain more than 150 specimens, which must be carefully selected and mounted so as to display the characteristic features of the more prominent and typical genera of the chief British natural orders. The name of each plant, its habitat, and the date of collection, must be stated on the paper on which it is mounted.

Each collection must be accompanied by a note, containing a declaration signed by the collector, and certified by his employer, or a pharmaceutical chemist to whom the collector is known, to the following effect:—The specimens which accompany this note were collected by myself, between the 1st day of January, 18—, and the 1st day of July, 18—, and were named and arranged without any other assistance than that derived from books.

The merits of the collections will be estimated not so much by the number of plants as by the correctness with which they are named, and by their being typical specimens. The manner in which they are preserved and mounted will also be taken into account.

The collections must be forwarded to the Secretary of the Society, 17, Bloomsbury Square, so that they may be received by him not later than the first day of July, indorsed "Herbarium for Competition for the Prize." After the Prize Distribution in October, they will be retained one month, under the care of the Curator of the Museums, and then returned to the collectors, if required.

How to Become A Pharmacist in Ireland.

Great Britain and Ireland have distinct Pharmacy Acts, and their examination regulations differ to some extent. Moreover, pharmaceutical certificates granted in either of the British Isles are not recognised in the other.

Preliminary Examination.

The Preliminary examination of the Pharmaceutical Society of Ireland is held on the first Tuesday of January, April, July, and October. The following are the compulsory subjects:—

LATIN.—To translate into English and parse sentences from a Latin author:—Cæsar's 'Commentaries,' First Book; or Virgil's 'Æneid,' First Book. To translate an easy English sentence into Latin.

ENGLISH.—English grammar, including orthography and parsing. To write on a subject selected by the Examiner, and to write from dictation.

ARITHMETIC.—The first four rules, simple proportion, vulgar fractions, and decimals. To describe the British weights and measures, and the metric system.

ALGEBRA.—As far as simple equations, inclusive.

GEOMETRY.—Including the first book of Euclid.

ELEMENTARY THEORETICAL CHEMISTRY.—Chemical Action: Illustrations and examples; simple and compound substances; atoms and molecules; chemical symbols and nomenclature; formulæ and equations; general nature of acids, bases, and salts. Combustion: Structure and properties of flame. Water: Proofs of composition; methods of purification. The Air: Its constitution; reasons for considering it a mixture and not a compound. The chief physical and chemical characters, with methods of preparation of the following elements and compounds: Hydrogen, oxygen (and ozone), nitrogen, carbon, chlorine, sulphur, nitrous oxide, nitric oxide, nitric acid, ammonia, carbon dioxide, carbon monoxide, marsh gas, olefiant gas, hydrochloric acid, sulphur dioxide, sulphurous acid, sulphuric acid, sulphuretted hydrogen.

In addition, candidates must pass in one of the following optional subjects:—

ELEMENTARY PHYSICS AND MECHANICS.—Sound, light and heat, as given in Ganot's 'Elementary Course of Natural Philosophy'; mechanics of solids and fluids, comprising the elements of statics, dynamics, and hydrostatics.

THE RUDIMENTS OF BOTANY.—Oliver's 'Lessons in Elementary Botany.' Part I.

FRENCH, GERMAN, or any other modern language.

As in the case of the British Preliminary, certificates of certain other examining bodies are accepted in lieu of this examination.

The fee for this examination is £2 2s., which should be lodged in the Bank of Ireland to the credit of the Pharmaceutical Society of Ireland, and the receipt sent with the candidate's application to the Registrar, at the Society's office, 67, Lower Mount Street, Dublin; not later than the Tuesday fortnight preceding the day of examination. The optional subject selected should be stated, and the application be accompanied by a certificate of birth. A candidate who has failed to pass is at liberty to present himself for re-examination six months later on payment of 10s. 6d.

Assistants' Certificates.

These certificates are granted on passing the Preliminary or its equivalent and a special examination in the following subjects:—

PRESCRIPTIONS.—Candidates will be required to read autograph prescriptions, translate them into English, render a correct translation of the directions for use, and detect unusual doses.

PRACTICAL DISPENSING.—To weigh, measure, and compound medicines, write the directions in suitable language, finish, and properly direct each package.

MATERIA MEDICA AND QUALITY OF SPECIMENS.—To recognise the Pharmacopœia chemicals in frequent demand, and specimens

of roots, barks, leaves, fruits, resins, and gums in ordinary use; also to estimate the quality of each specimen submitted, and its freedom from adulteration.

PHARMACY.—To recognise the preparations of the Pharmacopœia which are not of a definite chemical nature, such as extracts, tinctures, and powders, and give the proportions of the more active ingredients. The candidates will also be examined in the Sale of Poisons (Ireland) Act.

Rejected candidates may present themselves again after a lapse of six months, on payment of 10s. 6d. A necessary condition in the case of all candidates is that they must have been engaged for four years in an open pharmacy kept (a) by a pharmaceutical chemist or an apothecary in Ireland, or (b) by a pharmaceutical chemist or chemist and druggist in Great Britain, or (c) he may have served two years in a registered druggist's or chemist and druggist's shop in Ireland, and two years subsequently in an open pharmacy.

Registered Druggists.

Registered druggists may sell poisons, but are not entitled to compound medical prescriptions. The qualification of "registered druggist" is acquired by passing an examination testing the candidate's knowledge of English orthography and composition, arithmetic, the weights and measures of the British Pharmacopœia, the appearance and properties of the various drugs and chemicals in general use, and the Irish Poisons Act. The candidate must previously have served a four years' apprenticeship with a pharmaceutical chemist, licentiate apothecary, registered chemist and druggist, or registered druggist; and be twenty-one years of age. The examination fee is £2 2s., and there is a registration fee of the same amount.

The Pharmaceutical Licence.

If, besides complying with all the conditions for the assistant's examination, the candidate has attained the age of twenty-one years, passed the Preliminary not less than twelve months previously, and attended a course in practical chemistry of not less than three month's duration, including 100 hours' practical work at the bench, and a course in botany of *materia medica*, he will have fulfilled all the conditions imposed on those who seek to pass the final examination and acquire the right to term themselves "pharmaceutical chemists." This qualification is superior to the British "chemist and druggist," as it gives the holder the extra advantage of enjoying a monopoly in compounding medical prescriptions.

The following are the examination subjects:—

BOTANY.—To recognise the principal indigenous plants used in medicine, to refer them to their natural orders, and to give the definitions and the distinctive characters of their several parts.

MATERIA MEDICA.—To recognise specimens of the drugs of the Pharmacopœia, to describe their characters and active principles, name the sources from which they are obtained, and the official preparations into which they enter; and to detect adulterations.

GENERAL AND PHARMACEUTICAL CHEMISTRY.—The elementary laws of chemistry and physics, including chemical equations. To recognise the chemical substances of the Pharmacopœia; to describe the processes by which they are obtained; qualitative analysis (including the tests of the Pharmacopœia) and volumetric analysis; and to submit to a practical examination in those subjects.

PRACTICAL PHARMACY.—To translate Latin prescriptions; to detect dangerous doses; to compound and dispense correctly; to explain the processes of making the non-chemical preparations of the Pharmacopœia, and to recognise them; and to have an intimate knowledge of the Sale of Poisons (Ireland) Act, 33 and 34 Vict. chap. 26, 1870.

A clear fortnight's notice must be given to the Registrar, the fee of £5 5s. being also paid, and proofs submitted that the candidate has fulfilled the different requirements of the Society. He will then be summoned in due course to attend the examinations, which are held at Dublin on the second Wednesday and following days of January, April, July, and October. If unsuccessful, the candidate can try again after the lapse of six months on payment of £1 11s. 6d.

Further particulars respecting the Irish examinations, etc., are published in the Society's Calendar (1s. 8½d., post free), which can be obtained from the Registrar, 67, Lower Mount Street, Dublin.

HOW TO BECOME A DENTIST.

Dental students are registered at the office of the General Medical Council, 299, Oxford Street, London, W., in the same manner as medical students, and subject to the same regulations as regards preliminary examinations, but in the case of dental students professional study may commence by pupilage with a registered dental practitioner. Students who commenced their professional education by apprenticeship to dentists entitled to be registered or by attendance upon professional lectures before July 22, 1878 (when dental education became compulsory), shall not be required to produce evidence of having passed a preliminary examination. Candidates for a diploma in dental surgery shall produce certificates of having been engaged during four years in professional studies and of having received three years' instruction in mechanical dentistry from a registered practitioner. One year's *bond-fide* apprenticeship with a registered dental practitioner after being registered as a dental student may be counted as one of the four years of professional study. The three years of instruction in mechanical dentistry or any part of them may be taken by the dental student either before or after his registration as a student, but no year of such mechanical instruction shall be counted as one of the four years of professional study unless taken after registration.

For the sake of simplicity the various stages that have to be considered by anyone wishing to become a dental surgeon may be conveniently divided into three divisions: 1. The Preliminary Examination in General Education; 2. Professional Education which must extend over four years after registration; 3. The Examination.

(1) PRELIMINARY EDUCATION.

The General Medical Council requires that anyone applying for registration as a dental student shall have passed an examination in the following subjects:—

(a) English language, including grammar and composition.

(b) Latin, including grammar, translations from specified authors, and translations of easy passages not taken from such authors.

(c) Mathematics, comprising (a) arithmetic; (b) algebra as far as simple fractions inclusive; (c) geometry, the subject matter of Euclid, Books i., ii., and iii., with easy deductions.

(d) One of the following optional subjects:—(a) Greek, (β) French, (γ) German, (δ) Italian, (ε) any other modern language, (ζ) logic.

Marks not exceeding 5 per cent. of the total marks obtainable in this section of the examination may be assigned to candidates who show a competent knowledge of shorthand. All the subjects included in the Preliminary examination must be passed in at one time, but this rule does not apply to those who, previous to January, 1892, have passed a part of any preliminary examination recognised by the Council. On and after the first day of January, 1899, logic will be omitted from the list of optional subjects.

A complete list of the examining bodies both in Great Britain, the Colonies, and abroad, whose examinations in general education are recognised by the General Medical Council, can be obtained from the offices of the Council. It is anticipated that the standard of the Preliminary examination will be raised in 1900.

(2) PROFESSIONAL EDUCATION.

This consists of instruction in general surgery and medicine, dental surgery, and mechanics, and should be commenced by an apprenticeship to a registered dentist. The mechanical training must extend over three years. Too much importance cannot be attached to the student receiving a thorough training in dental mechanics. A student should register his name at the offices of the General Medical Council as soon as he commences his mechanical training, apply for a registration form, fill it in correctly, and send it with pass certificate of Preliminary examination to the Council's offices. In the case of those who commenced their professional education by apprenticeship to a dentist's, entitled to be registered or by attendance upon professional lectures before July 22, 1878, it is not necessary for them to produce a pass certificate of preliminary education. After three years' apprenticeship the hospital career should be entered upon by the student entering both a general and dental hospital. At this stage it is advisable for a student to register as a medical student, not

necessarily to take a medical and surgical qualification, but to ensure his being able to do so at some future time should he so desire. The work which he does at the general hospital for the dental qualification, and which is much the same as that required for the general qualification, will count as part of the medical curriculum. The importance of taking every advantage of the facilities afforded for obtaining a thorough grounding in both general and dental knowledge during the two years' hospital course cannot be too forcibly impressed upon students. It is the period that lays the foundation of success in after life; realising this, the schools generously offer, both in prizes and appointments, and through their several teachers, every encouragement for the student to acquire a thoroughly sound knowledge of the various subjects that he will not only have to pass in when examination time comes round, but will enable him in future to conduct his practice in such a manner as will make him in every way a worthy member of the profession.

(3) THE EXAMINATIONS.

There are four examining bodies in Great Britain which grant diplomas in dental surgery.

- (1) The Royal College of Surgeons, England.
- (2) The Royal College of Surgeons, Edinburgh.
- (3) The Faculty of Physicians and Surgeons, Glasgow.
- (4) The Royal College of Surgeons of Ireland.

The Royal College of Surgeons, England, demand three examinations, while those of Edinburgh, Glasgow, and Ireland demand two. In all other matters they only differ in minor details. The diploma of the Royal College of Surgeons, England, is the one most sought after, and is regarded as the best dental diploma in the world. Candidates going up for examination at this college must produce the following certificates.

PRELIMINARY SCIENCE EXAMINATION.

1. Of having received instruction at an institution recognised for the purpose, in chemistry, physics, and practical chemistry. This instruction may be taken prior to the date of registration as a dental student

FIRST PROFESSIONAL EXAMINATION.

2. Of having been engaged during a period of not less than three years in acquiring a practical familiarity with the details of mechanical dentistry, under the instruction of a competent practitioner, or under the direction of the superintendent of the mechanical department of a recognised dental hospital, where the arrangements for teaching mechanical dentistry are satisfactory to the board of examiners in dental surgery. In the case of qualified surgeons, evidence of a period of not less than two instead of three years of such instruction will be sufficient. This instruction may be taken prior to the date of registration as a dental student.

3. Of registration as a dental student by the General Medical Council, 299, Oxford Street, London, W.

4. Of having attended at a recognised dental hospital and school. (a) A course of lectures on the following: Dental metallurgy, practical dental metallurgy, dental mechanics, practical dental mechanics, including the manufacture and adjustment of six dentures and six crowns.

SECOND PROFESSIONAL EXAMINATION.

5. Of having been engaged during four years in the acquirement of professional knowledge subsequent to the date of registration as a dental student.

6. Of having attended, at a recognised dental hospital and school, a course of dental anatomy and physiology, a separate course of dental histology, including the preparation of microscopical sections, a course of dental surgery, a separate course of practical surgery, a course of not less than five lectures on the surgery of the mouth.

7. Of having attended, at a recognised dental hospital or in the department of a recognised general hospital, a practice of dental surgery during two years.

8. Of having attended, at a recognised medical school, a course of lectures on anatomy, physiology, practical physiology, surgery, medicine.

9. Of having performed dissections at a recognised medical school during not less than twelve months.

10. Of having attended, at a recognised hospital or hospitals, the practice of surgery and clinical lectures on surgery during two winter sessions.

11. Of being twenty-one years of age.

Certificates of professional studies will be required to show that students have attended the courses of professional study to the satisfaction of the teachers. The examinations are both oral and written in the above subjects. The attendance on the various lectures at both the general and dental hospitals and school can all be completed within the two years.

Besides the London dental schools and hospital the following are recognised in Great Britain:—

- Manchester.—Victoria Dental Hospital, Devonshire Street, All Saints.
 Liverpool.—Liverpool Dental Hospital and School of Dental Surgery.
 Birmingham.—Dental Hospital, 71, Newhall Street.
 Newcastle-on-Tyne.—Dental Hospital and School, 37, Nelson Street.
 Devon and Exeter Dental Hospital.
 Sheffield.—Dental Department, Sheffield Royal Hospital.
 Edinburgh.—Dental Hospital and School, 31, Chambers Street.
 Glasgow.—Dental Hospital, 5, St. Vincent Street.
 Ireland.—Dental Hospital of Ireland, Lincoln's Place, Dublin.

All information as to fees, etc., can be obtained by writing to the deans of the various hospitals and schools.

The important subject of students receiving a thorough mechanical training has of late years occupied the attention of the dental schools and those most competent to consider the matter, and with a view to correct what has long been a weak point in the dental education of this country, the principal dental schools have, for an additional fee, undertaken to teach dental mechanics. Not only should students receive a good training in dental mechanics, but they should likewise receive a thorough grounding in general mechanical principles.

This can only be acquired by a proper course of technical training. Realising this, several of the more prominent members of the dental profession established a recognised school, the Institute of Dental Technology and School of Mechanical Dentistry, London, where, under the guidance of skilled instructors in all the various branches of mechanics, dental students may obtain a thorough and comprehensive mechanical training. Two classes of students are admitted—those who take the three years' course in mechanics in accordance with the requirements of the dental diploma, and those who intend to become dental mechanics only. The latter have to serve an apprenticeship of five years. All particulars as to attendance, fees, etc., can be obtained from the principal, 4, Langham Chambers, All Souls' Place, London, W.

LONDON UNIVERSITY SCIENCE DEGREES.

For the sake of the increasing number of pharmaceutical students who are desirous of taking a degree in science, the following concise account of the procedure to be followed in connection with the degrees granted by the University of London is reprinted from the *Chemical News*:—

Candidates for any degree in this University must have passed the Matriculation examination. No exemption of this rule is allowed on account of degrees obtained or examinations passed at any other university. This and all other examinations of the University, together with the prizes, exhibitions, scholarships, and medals depending upon them, are open to women on exactly the same conditions as to men.

There are two examinations for matriculation in each year; one commencing on the second Monday in January, and the other on the second Monday in June.

The examination is conducted by means of printed papers; but the examiners are not precluded from putting, for the purpose of ascertaining the competence of the candidates to pass, *viva voce* questions to any candidate in the subjects in which they are appointed to examine. These examinations may be held not only at the University of London, but also, under special arrangement, in other parts of the United Kingdom, or in the Colonies.

Every candidate for the Matriculation examination must, not less than five weeks before the commencement of the examination, apply to the registrar for a form of entry, which must be returned not less than four weeks before the commencement of the examination, accompanied by a certificate showing that the candidate has completed his sixteenth year, and by his fee for the exami-

nation. As no candidate can be admitted after the list is closed, any candidate who may not have received a form of entry within a week after applying for it must communicate immediately with the registrar, stating the exact date of his application and the place where it was posted.

Every candidate entering for the Matriculation examination for the first time must pay a fee of £2 to the registrar. If a candidate withdraws his name, or fails to present himself at the examination, or fails to pass it, the fee shall not be returned to him, but he shall be allowed to enter for any subsequent Matriculation examination upon payment, at every such entry, of an additional fee of £1, provided that he comply with the regulations in the preceding paragraph.

Candidates are not approved by the examiners unless they have shown a competent knowledge in each of the following subjects:—Latin. Any one of the following languages:—Greek, French, German, Sanskrit, or Arabic. The English Language, and English History, with the Geography relating thereto. Mathematics. Mechanics. One of the following branches of Science:—Chemistry, Sound, Heat and Light, Magnetism and Electricity, Botany.

The Examination in Chemistry is—chemistry of the non-metallic elements; including their compounds, their chief physical and chemical characters, their preparation, and their characteristic tests.

A Pass Certificate, signed by the registrar, will be delivered to each successful candidate after the report of the examiners has been approved by the Senate.

If in the opinion of the examiners any candidates in the Honours division of not more than twenty years of age at the commencement of the examination possess sufficient merit, the first six among such candidates will receive an exhibition of £30 per annum for the next two years; the second among such candidates will receive an exhibition of £20 per annum for the next two years; and the third will receive an exhibition of £15 per annum for the next two years; such exhibitions are payable in quarterly instalments, provided that on receiving each instalment the exhibitor declares his intention of presenting himself either at the two examinations for B.A., or at the two examinations for B.Sc., or at the Intermediate examination in laws, or at the Preliminary Scientific M.B. examination and Intermediate examination in medicine, within three academical years from the time of his passing the Matriculation examination.

Under the same circumstances, the fourth among such candidates will receive a prize to the value of £10 in books, philosophical instruments, or money; and the fifth and sixth will each receive a prize to the value of £5 in books, philosophical instruments, or money.

Any candidate who may obtain a place in the Honours division at the Matriculation examination in January is admissible to the Intermediate examination either in arts or in science in the following July.

INTERMEDIATE EXAMINATION IN SCIENCE.

The Intermediate examination in science will commence on the second Monday in July.

No candidate (with the exception of such as have obtained Honours at the Matriculation examination in the preceding January) is admitted to the examination within one academical year of the time of his passing the Matriculation examination.

The fee for this examination is £5.

Examination for Honours.

Candidates for honours in chemistry will be examined in inorganic chemistry, treated more fully than in the Pass examination. In addition, they will be examined practically in simple qualitative analysis. This examination will consist of six hours' examination by two printed papers and of six hours' practical work.

In the examination for honours, the candidate, not being more than twenty-two years of age at the commencement of the Pass examination, who most distinguishes himself will receive an exhibition of £40 per annum for the next two years.

B.SC. EXAMINATION.

The B.Sc. examination will be held on the fourth Monday in October.

Candidates for this examination are required to have passed the Intermediate examination in science at least one academical year previously.

The fee for this examination is £5.

Examination for Honours.

For the examination for honours in chemistry two papers will be set and a two days' practical examination.

The candidate, being not more than twenty-three years of age, who most distinguishes himself in chemistry, will receive £50 per annum for the next two years, with the style of university scholar.

DOCTOR OF SCIENCE.

The examination for the degree of Doctor of Science takes place annually within the first twenty-one days of June.

No candidate is admitted to the examination for the degree of D.Sc. until after the expiration of two academical years from the time of his obtaining the degree of B.Sc. in the University.

Every candidate for this degree must state in writing the special subject within the purview of the Faculty of Science, as set out in the programme of the B.Sc. examination, upon a knowledge of which he rests his qualification for the doctorate; and with the form of entry he shall transmit an original dissertation or thesis (at least six copies), printed, type-written, or published in his own name, treating scientifically some special portion of the subject so stated, embodying the result of independent research, or showing evidence of his own work, whether conducted independently or under advice, and whether based on the discovery of new facts observed by himself, or of new relations of facts observed by others, or generally tending to the advancement of science. Every candidate may further specify any printed contribution or contributions to the advancement of science which he has at any time previously published. If the dissertation or thesis be approved by the examiners the candidate shall be required to present himself at the University upon such day or days within the first twenty-one days of June as may be notified to him, and shall, at the discretion of the examiners, be further tested, either orally or practically, or by printed questions, or by all of these methods, with reference both to the special subject selected by him and to the thesis.

PRELIMINARY SCIENTIFIC (M.B.) EXAMINATION.

This examination takes place twice in each year—once, for Pass and Honours, commencing on the second Monday in July; and once for Pass candidates only, commencing on the third Monday in January.

No candidate shall be admitted to this examination unless he shall have passed the Matriculation examination. Not less than five weeks before the commencement of the examination he must apply to the registrar for a form of entry, which must be returned not less than four weeks before the examination, accompanied with the candidate's fee.

The fee for this examination is £5.

NOTES ON MEDICAL EDUCATION.

When once it has been decided that medicine is to be one's career it is of the utmost importance to ascertain the best way of entering the profession. The general course of the medical student's career is very precisely defined for him by the regulations of the General Medical Council, which is the body established by Act of Parliament for the regulation of medical education and for the maintenance of the Register of qualified medical practitioners. It is not an examining nor an educational body, but concerns itself with the various examining bodies, of which there are more than twenty in the United Kingdom, and with the standard of the medical curriculum at each of the recognised educational institutions. No one can be legally qualified unless his name is on the Register, and the General Medical Council has decided that in order to become registered it is necessary to pass a satisfactory examination in medicine, surgery, and midwifery, and that this examination must be preceded by a course of study extending over a period of at least five years.

Every medical student must be registered by the General Medical Council at the commencement of his studentship, and must have passed a preliminary examination in general education. If he is studying at a medical school attached to some university, he will most likely utilise the matriculation examination for this purpose.

In this connection it is well to bear in mind that as a five years' medical curriculum is now compulsory on all students, it takes no longer to obtain a degree at a university than to obtain the diploma

of the collegiate bodies, and it will be an advantage to the student if he has passed the entrance examination (which is obligatory in all cases) at the particular university where he intends to graduate.

He must also produce evidence that he has commenced medical study. The Students' Register is kept by the Branch Registrars of the Medical Council, namely, in England, Mr. H. E. Allen, B.A., LL.B., 299, Oxford Street, London, W.; in Scotland, Mr. James Robertson, 48, George Square, Edinburgh; in Ireland, Mr. S. Wesley Wilson, 35, Dawson Street, Dublin.

It is difficult to give advice of general application as to the choice of a university or school, since so much depends upon the circumstances of the individual, his residence, family connections, and pecuniary resources. When the medical school to be attended has been selected, the candidate should put himself in communication with the Dean, who will always be found ready to give advice as to the mode of entry, and as to the cost of and the best way to prepare for the degree or diploma to which the candidate aspires.

It is impossible in the space available to give details as to the various requirements of the examining bodies and to the relative value of the different diplomas and degrees, but there is no doubt that the double qualification granted by the Conjoint Board of the London Royal Colleges is one of the most useful, as it not only qualifies for the Army and Poor Law appointments, but the London hospitals generally refuse to elect as physicians any who are not members of the Royal College of Physicians of London, or as surgeons those who are not Fellows of the Royal College of Surgeons of London, and consulting practice in the metropolis depends almost entirely upon the possession of a hospital appointment.

The cost of medical education naturally varies, though, according to the *British Medical Journal*, it should not be expected that a student would be able to pass through the prescribed curriculum and obtain the necessary degrees or diplomas for an expenditure of less than £1000. In former years it was sometimes possible for the student to earn something during the last year or two, but this has now become extremely difficult, and the attempt ought not to be encouraged. The five years now prescribed is all too short a period within which to crowd the immense number of subjects with which the student is expected to become familiar. There are of course scholarships at the universities and the other medical schools, but such prizes are for the few. The expenditure is made up from three principal sources—the fees charged by the medical schools for instruction, the fees charged by universities or corporations for granting of degrees or diplomas, and the expenditure on living. The last named is, of course, the most considerable and that which varies most according to the habits of the student, and the general cost of living ruling in the place in which his medical college or school is situated. The fees paid to medical schools for the full curriculum vary and range from a little under £100 to £150. From £30 to £50 must be added for various necessary additional expenses—for extra classes, materials used in practical work, instruments, books, and subscriptions to clubs. The fees to be paid for degrees or diplomas vary very much, but they may be set down at about £50. The cost of living may be assumed at about £100 per annum, and it is a mistake to attempt to cut down the expenses of living to a point below the general standard of the community to which the student for the time belongs.

For further details as to the requirements of the examining bodies and the particulars of the various medical schools, their number of beds available for clinical teaching, appointments open to students, the teaching staffs, etc., etc., we must refer our readers to our advertisement pages and also to the students' numbers of the *Lancet* and *British Medical Journal*, which naturally devote more space to these subjects than we have room for.

PHENOL SULPHORICINATE IN LARYNGEAL TUBERCULOSIS.—Phenol sulphoricinate is not a chemical compound, but a solution of pure phenol in the so-called sulphoricinic acid. The local application of phenol sulphoricinate produces a burning sensation lasting from half an hour to half a day. No toxic action or dangerous after effects were noticed. Solutions of 20 or 30 per cent., according to circumstances, were used by Magenau, who concludes that although not of great service in tubercular affections of the larynx, the remedy appears to be quite harmless and recommends further trials as favourable results are evidently possible with it.—*Munich. Med. Woch.*, xlv., 1018.

Where Pharmaceutical Students can Study.

LONDON SCHOOLS.

The following brief particulars concerning classes and courses of laboratory instruction suitable for pharmaceutical students are intended to give students a general idea of the facilities that are offered. Fuller particulars may be obtained in any case by writing to the Secretary of the School. In some towns not mentioned in the list classes are arranged in connection with local pharmaceutical associations or in public institutions:—

School of Pharmacy, 17, Bloomsbury Square, London, W.C.—**STAFF:** *Botany.*—Professor J. Reynolds Green, Sc.D., F.R.S., F.L.S., and Mr. E. C. Horrell. *Chemistry.*—Professor J. Norman Collie, Ph.D., F.R.S., F.I.C., and A. Lapworth, Ph.D., D.Sc. (Lond.). *Materia Medica and Pharmacy.*—Professor Henry G. Greenish, F.I.C., F.L.S., and Mr. F. A. Upsher Smith. Applications for admission should be addressed to the Secretary of the Pharmaceutical Society at the above address.

BOTANY.—The Elementary Course will extend from October 6, 1898, to the end of June, 1899, the lectures being delivered on Thursdays and Fridays at 12 o'clock. The laboratory work will be held on Friday mornings, commencing at half-past 9, and will be conducted by the demonstrator under the supervision of the professor. The Advanced Course will extend from October, 1898, to the end of March, 1899. From October to December lectures will be delivered on Thursdays and Fridays at 2 o'clock, and from January to March on Thursdays only, at the same hour. The laboratory work will be held on Thursday mornings from half-past 9 till 1; and will be conducted by the demonstrator under the direction of the professor. The laboratory work in connection with both courses will be so arranged as to illustrate and supplement the lectures, and it will include the dissection of plants and the practical study of their morphology; their histological features, the study of their structure by means of the microscope; the preparation and appropriate treatment of sections, and the methods of investigation; the practical study of the chief physiological processes; the features of the several natural orders comprised in the subjoined schedules, and the mode of representing them by means of diagrams and formulæ. It will include also the revision of the subject matter of the lectures. The gardens of the Royal Botanic Society, Regent's Park, will be open for purposes of study to all students of the School. **FEES:** Elementary course, £5 5s.; advanced course, £3 3s.

CHEMISTRY AND PHYSICS.—The lectures on elementary chemistry are delivered by the professor on Wednesday and Saturday, and those on physics by the assistant lecturer on Monday mornings at half-past 9 o'clock. The lectures on advanced chemistry will be on Monday and Tuesday at 12 o'clock, and those on physics by the assistant lecturer on Thursday at 12 o'clock. The Elementary Course, which commences in October and terminates at the end of June, has reference to the principles of chemistry as illustrated by the properties of the non-metals and metals, special attention being paid to those which are of importance in medicine and the arts. It also includes a consideration of the elements of organic chemistry, and of heat, besides those other parts of physics which are closely related to chemistry. The Advanced Course, which is more particularly intended for advanced students, commences in October, and terminates at the end of March. It includes lectures on the atomic theory and the determination of atomic weights, organic chemistry, and also lectures and demonstrations in light, electricity, and magnetism. All the lectures are fully illustrated by experiments. Revision classes will be held from time to time, as required. The lectures on physics will include practical demonstrations in the use of physical instruments. Elementary students are strongly recommended to enter in October, but in the case of a student who is unable to commence work in October and is

obliged to enter at a later date, the professor will be glad to render him every assistance in supervising his work in those portions of the subject which have already been discussed in the preceding lectures. FEES: Elementary course, £5 5s.; advanced course, £3 3s.

PRACTICAL CHEMISTRY.—The chemical laboratories are open from 9 a.m. until 5 p.m. daily. On Saturdays they are closed at 2 o'clock. These laboratories are fitted up with every convenience for the study of the principles of chemistry by personal experiment. They are specially designed for the student of pharmacy, but are equally well adapted for the acquirement of a knowledge of chemistry in its applications to medicine, manufactures, or analysis. A complete elementary course of instruction occupies about nine months, students working not less than three hours daily; a complete advanced course, including the higher branches of quantitative analysis, occupies about six months. FEES: Elementary course (3 hours daily), £12 12s.; advanced course, (3 hours daily) £9 9s.

MATERIA MEDICA.—The Elementary Course of lectures in this subject will be delivered on Tuesdays at half-past 9 o'clock, commencing on October 4, 1898, and extending to the end of June, 1899. Each lecture will be followed by practical work in the histological laboratory, which will be conducted by the demonstrator under the supervision of the professor. The Advanced Course of lectures will be delivered on Wednesdays at 12 o'clock, commencing on October 5, 1898, and terminating at the end of March, 1899. The lectures will be preceded by practical laboratory work. FEES, £3 3s. for each course,

PHARMACY.—The lectures on this subject will be delivered on Mondays and Tuesdays at half-past 2 p.m., commencing on October 4, 1898, and extending to the end of June, 1899. Each lecture will be followed by practical work in the laboratories. The subject matter will be divided into pharmacy and dispensing. The first of these divisions will include lectures on, and practical instruction in, the performance of all pharmaceutical operations, such as evaporation, distillation, sublimation, calcination, fusion, desiccation, disintegration, solution, dialysis, crystallisation, granulation, precipitation, decantation, filtration, clarification, infusion, digestion, decoction, maceration, percolation, and expression, as well as in the production of all classes of galenic preparations, such as medicated waters, dilute acids, collodions, confections, etc. Under dispensing will be included practice in the reading of prescriptions, the detection of errors and unusual doses, and systematic instruction in the weighing, measuring, compounding, and finishing off of medicines. All operations that can be performed at the dispensing counter, such as the various methods of coating pills, preparing tablets and tablet triturates, lozenges, suppositories, etc., will be practised by the student, who will thus be afforded an opportunity of acquiring a sound knowledge of this branch of his business. During the course of instruction in pharmacy and dispensing modern appliances for the pharmaceutical laboratory and the dispensing counter will be described, and, if possible, practically used, special attention being directed to such apparatus as the retail pharmacist may advantageously employ in the daily routine of his calling.—FEE: £6 6s.

PRIZES.—At the end of June bronze medals and certificates of honour are offered for competition by students who have attended the elementary course, and at the end of March silver medals and certificates of honour are open for competition by students who have attended the advanced course. The silver medallists are presented by Mr. Thomas Hanbury with a copy of 'Pharmacographia' and of 'Science Papers,' in memory of his brother, the late Daniel Hanbury, F.R.S. For particulars of scholarships see pp. 312 *et seq.*

Birkbeck Literary and Scientific Institution, Breams Buildings, Chancery Lane, E.C.—Complete courses are arranged for the instruction of students in chemistry, biology, and experimental physics, in conformity with the requirements of the Intermediate and Final B.Sc., the Preliminary Scientific (M.B.), and the Intermediate M.B. examinations of the University of London, of the Conjoint Examining Board of the Colleges of Physicians and Surgeons, and the Minor and Major examinations of the Pharmaceutical Society. Special attention is given to lecture experiments and to individual practical work in each subject. The chemical, biological, and physical laboratories have been recently much enlarged. They are excellently equipped, and accommoda-

tion is now provided for fifty students in each laboratory. Special prospectuses will be forwarded by the Secretary on application.

British Institute of Preventive Medicine, Chelsea Gardens, Grosvenor Road, S.W.—STAFF, Bacteriological Department, Allan Macfadyen, M.D., B.Sc.; R. T. Hewlett, M.D., M.R.C.P.; A. G. R. Foulerton, F.R.C.S., D.P.H. (Camb.). Chemical Department, A. Harden, Ph.D. Antitoxin Department, G. Dean, M.D.; A. Salter, M.D., D.P.H. Photo-Micrography, J. Barnard. The winter session will commence on October 3, and the summer session on May 1. There are courses of instruction in bacteriology lasting three months and six weeks (FEE £8 8s. and £5 5s. respectively), bacteriology in relation to hygiene, water analysis, photo-micrography, etc. A practical laboratory course illustrating the principles of hygiene will commence in October, FEE £15 15s. The laboratories in the new building are now in full working order and are open daily from 10 to 5 o'clock for instruction and research. The work is under the supervision of the director, A. Macfadyen, M.D., to whom application should be made for further particulars.

Brixton School of Chemistry and Pharmacy, 12, Knowle Road, Brixton, London.—PRINCIPAL, Dr. A. B. Griffiths, F.R.S. (Edin.), F.C.S. At this school day and evening classes are held for the Minor and Major examinations. Tuition is afforded in chemistry, botany, materia medica, pharmacy, physics, and prescription reading. Every student receives assistance in his work, and every endeavour is made to secure a successful issue. The school is fitted with the best appliances, and there are also collections of materia medica specimens, microscopic preparations of drugs, rare chemicals, essential oils, etc. Medals and certificates are awarded to successful students. There are also special classes for ladies preparing for the Apothecaries' Hall examination. Particular attention is paid to practical work (chemistry, botany, and dispensing).

City School of Chemistry and Pharmacy, 27, Chancery Lane, London, E.C.—STAFF: Mr. F. A. Hocking, B.Sc., Ph.C.; Mr. Dallas, M.A. (Honours); Mr. Lee, B.A., B.Sc. (Lond., with honours); Mr. M. J. Cole, etc. Day Classes are held in all subjects for the Minor examination, including chemistry, physics, and pharmacy, materia medica, botany, prescription-reading, microscopy, vegetable histology, analytical chemistry, practical pharmacy, Latin, mathematics, geology and biology (practical and theoretical), the courses beginning in January, April, June and October respectively. FEE for the six months' course, £12 12s. Evening Classes for the Minor are also held. Six months' FEE, £7 7s. The next term commences September 12, but students can join during September and October. An open Scholarship, tenable for six months, entitling the holder to free tuition, is awarded annually in October to a student reading for the Minor examination. Full details will be supplied by the Principal or Secretary.

Imperial College of Chemistry, 49 and 51, Imperial Buildings, Ludgate Circus, E.C.—PRINCIPAL, Mr. Frederick Davis. Classes (day, 10 to 5; evening 5 30 to 8) are held in chemistry, biology, botany, materia medica, microscopy, pharmacy, physiology, prescriptions, sanitary science, and hygiene. Minor FEES, £10 10s. Especial private tuition may be arranged for any desired subject. Major course, £6 6s. A thoroughly fitted pharmacy is now added to the College for practical work, and a department for experimental physics. The analysis of foods and drugs is now taught at this College.

Metropolitan College of Pharmacy, 162, Kennington Park Road, London, S.E.—PRINCIPAL, Mr. Watson Will. Demonstrators, Messrs. G. T. Branch, H. Lucas, and F. Filmer De Morgan. Secretary, Mr. W. S. Carver. Day Classes are held in chemistry (inorganic, organic, and practical), materia medica, pharmacy, botany, vegetable histology, and physics. Hours, from 9 a.m. to 6 p.m. There are three sessions, winter, from September 1 to December 31; spring, from January 1 to April 10; Summer, April 12 to July 24. FEES; Minor course, £10 10s.; Major course, £6 6s.; Major evening course, from September 1 to following July, FEE £12 12s.; Minor evening course, £3 3s. Evening classes (7 to 10 p.m.) are held in chemistry (inorganic, organic, and

practical), pharmacy, materia medica, botany, physics, prescription reading, and histology. Minor courses similar to day. Extra evenings may be taken for practical work.

South London School of Pharmacy, Limited, 325, Kennington Road, London, S.E.—STAFF; Dr. Muter, F.R.S. (Edin.), F.I.C., etc.; Mr. W. H. Dodd, F.C.S., etc.; Mr. W. F. Mawer, F.C.S., M.P.S.; Mr. F. Armstrong; Mr. J. Thomas, B.Sc. (Lond.), First Class Honours in Chem. and Physics; and Mr. A. C. M. Muter, A.I.C., F.C.S. The school premises include a chemical laboratory, fully fitted for both quantitative and qualitative analysis; a very complete museum of drugs, chemicals, and plants; and a laboratory for the manufacture of pharmaceutical preparations, fully fitted with all the necessary technical fittings, such as stills, steam-pans, etc., so that students can practically manufacture the preparations of the Pharmacopœia and gain knowledge not hitherto attainable outside the laboratory of a manufacturer. In this department is also a fully-furnished dispensary, where students can obtain thorough practice in the art of dispensing in all its branches. There are also rooms specially furnished with microscopes and all appliances for practical biology; and also with full sets of electrical, optical, and thermal instruments. The lecture rooms, etc., are in a separate building from the laboratories, so as to be free from fumes. The laboratories open at 9 a.m., and go on at intervals all day until 6 p.m., except between 1.30 and 2.30 p.m., when there is an interval. Work ceases at 1 p.m. on Saturdays. The session lasts from the beginning of October in each year until the middle of July in the following year. A fresh course of lectures (commencing at the foundation of each subject) is begun in October, January, and April. FEES.—Minor course: Lectures and classes in chemistry, chemical physics, botany, materia medica, Latin, and pharmacy, £5 5s. Major course: Lectures and classes in organic chemistry, physics, botany, and materia medica, £3 3s. No ordinary student can attend the theoretical classes without also taking the practical work, the fees in the practical department for both Minor and Major divisions being £3 3s. per month, and for the special extra academical tutorial term, open only to students of the school, £4 4s. for either Minor or Major. Compounding fees for every necessary subject either for Minor or Major (theoretical and practical): £12 12s. for the first term (about 3½ months), £8 8s. for a second, or any subsequent term. Students having once "compounded" can remain in the school as long as they please on payment of the practical fees only. No students are admitted to the school who have not passed the First examination of the Pharmaceutical Society or an equivalent preliminary examination.

The Students' Laboratory, 40, Lamb's Conduit Street, W.C.—TEACHERS: T. A. Ellwood, F.I.C., F.C.S.; C. E. Sage, F.C.S. M.P.S. In connection with this laboratory classes are held to prepare students for the examinations of the Pharmaceutical Society, the system employed being devised to ensure individual teaching and personal attention to each student in both practical and theoretical work. The laboratory is open every evening except Saturdays, from 6.30 to 9.30 p.m. FEES for three months: One night weekly, £1 11s. 6d.; two nights weekly, £2 17s. 6d.; three nights weekly, £4 4s.; four nights weekly, £5 5s.; five nights weekly, £6 6s. During the winter months a class is held for teaching more advanced practical work, the analysis of foods, drugs, water, and commercial products.

Westminster College of Chemistry and Pharmacy, Trinity Square, Borough, London, S.E.—PRINCIPALS, Mr. G. S. V. Wills, F.L.S., Ph.C., and Mr. H. Wootton, B.Sc. (Lond.) Secretary: Mr. E. Walden. Day Classes are held in chemistry and physics, materia medica, botany, pharmacy, and dispensing. The college is open from 9 to 5 daily, and the time not devoted to lectures and tutorial classes is occupied in practical work in the various subjects. FEES:—Minor complete course £8 8s.; six months, £12 12s.; twelve months, £15 15s. For the latter fee a student is taught until he can pass both Minor and Major examinations. Major course, three months, £6 6s.; six months £10 10s. Evening Classes, for the Preliminary, Minor, and Major examinations, and practical work are held every Tuesday, Wednesday, and Thursday from 7 till 9. FEE, Minor course, three months, 10s. 6d. It may be mentioned that the PEREIRA MEDAL was two years ago awarded to a student of this school, Mr. W. A. Knight, an honour of which the principals are justly proud.

PROVINCIAL SCHOOLS.

BARROW-IN-FURNESS.

Barrow-in-Furness Higher Grade School.—At the Barrow Higher Grade School technical classes are held on Monday, Tuesday, Thursday, and Friday evenings, commencing September 12, in theoretical and practical chemistry, physiology, and hygiene. Further particulars may be obtained from the Secretary, Mr. C. F. Preston, town clerk.

BIRMINGHAM.

Birmingham Municipal Technical School, Suffolk Street, Birmingham.—Day Classes are held in theoretical and practical chemistry for chemists and druggists. Teachers, Mr. C. J. Woodward, B.Sc., and Mr. W. Russell, F.I.C. FEE, 5s. per session. Evening Classes are held in botany. TEACHER, Mr. J. W. Oliver. FEE, 3s. 6d. per session; and also in physics. TEACHERS, Dr. Sumpner, and Mr. P. C. Coultas, A.R.C.Sc., etc. FEE, 5s. per session.

Central School of Pharmacy, 90, New Street, Birmingham.—Mr. F. Stokes Dewson holds classes for the pharmaceutical examinations—Major, Minor, and Preliminary. The classes are held day and evening. Practical pharmacy and dispensing receive special attention.

Mason University College, Birmingham.—TEACHERS: Professors Percy F. Frankland and Hillhouse, and Mr. Dencer Whittles. Day classes are held in chemistry, botany, materia medica, pharmacy, etc. FEES: Chemistry (from October to March and a weekly tutorial class) £5 5s.; organic chemistry suitable for Major students (April to June), £1 11s. 6d.; botany (spring and summer terms), £2 2s.; systematic botany (summer term), £1 1s.; materia medica and pharmacy, £1 1s.

Temple Chambers Tutorial Classes.—PRINCIPAL, Mr. F. H. Alcock, F.I.C., Pereira Medallist. Tutorial Classes for pharmaceutical students are held at the Analytical Laboratory, Temple Chambers, Broad Street Corner, Birmingham. The laboratories are conveniently arranged for the practical study of the subjects necessary for the Minor and Major qualifications. Special attention is paid to synthetical and analytical chemistry, pharmacy and dispensing, pharmacognosy, the assay of drugs and their preparations, microscopy, and vegetable histology. The fees are dependent upon the hours of attendance and subjects required. For full-time students the fees are 7 guineas per quarter. As each student works independently, he may begin when he pleases.

BRADFORD.

Bradford Technical College.—Head of Department and Lecturer in Chemistry, Mr. Walter M. Gardner; Assistant Lecturer and Demonstrator, Mr. A. B. Knaggs; Lecturer in Botany, Biology, and Materia Medica, Mr. W. West. Day and Evening Classes are held in chemistry (inorganic and organic), qualitative chemical analysis, quantitative chemical analysis, botany, practical botany, organic materia medica, pharmacy, and biology. A special pharmaceutical course has been arranged, including the above subjects and extending over two (evening) sessions. It is adapted for students who are preparing for the Minor examination of the Pharmaceutical Society, and an inclusive fee, at a reduced rate, is charged to students who enter for the full course.

BRISTOL.

University College.—TEACHERS: Professors Sydney Young, D.Sc. (Lond.), F.R.S.; A. P. Chattock, M.I.E.E.; C. Lloyd Morgan, F.G.S.; and Messrs. F. E. Francis, B.Sc., Ph.D.; E. Jackson, M.A., B.Sc., Ph.D.; L. N. Tyack; S. H. Reynolds, M.A.; G. Brebner; A. B. Prowse, M.A.; and F. W. Stoddart, F.I.C. Day and Evening Classes are held at the University College in chemistry (organic and inorganic), experimental physics, and botany. There are also chemical and physical laboratories.

CAMBRIDGE.

Cambridge Pharmaceutical Association.—Classes in botany and chemistry are held at the Technical Institute, from October to May, in conjunction with the Science and Art

Department of Kensington. Further information may be obtained from Mr. E. Saville Peck, 30, Trumpington Street, Cambridge.

EXETER.

Exeter School of Pharmacy, at the Exeter Technical and University Extension College.—PRINCIPAL, A. W. Clayden, M.A. Chemistry, W. H. Lewis, M.A. Pharmacy and Botany, A. H. Ware, M.P.S. Full instruction is given in all subjects required for the Minor examination. The Session commences in the first week of October and terminates at the end of June. INCLUSIVE FEE, £10 10s. The above fee is for full-time work during the whole Session, but arrangements may be made enabling advanced students to join at any time for a reduced fee. Evening classes are also held. For prospectus and particulars, apply to the Secretary of the College at the Albert Memorial Museum, Exeter.

LANCASTER.

Lancaster Municipal Technical School. The Storey Institute.—Instruction in elementary and organic chemistry by means of lectures, fully illustrated by experiments, classes, and of practical work in the laboratory, is given in connection with this school.—LECTURER, Dr. Schloesser, assisted by Mr. Ayrton. Lectures on botany, fully illustrated, are also given by Mr. W. Wyatt, Ph.C. Further particulars may be obtained from the principal, Dr. A. Schloesser.

LEEDS.

Leeds Technical School (in connection with the Leeds Institute of Science, Art, and Literature), Cookridge Street.—A large number of students in pharmacy attend this school. The courses in theoretical and practical chemistry are under Mr. R. E. Barnett, B.Sc., A.R.C.S., assisted by Mr. R. W. Ferguson, A.R.C.S. That in physics is under Mr. J. E. Tindall, B.Sc. Mr. N. Walker conducts the botany class. Practical work in chemistry, physics, and botany is offered in addition to the lecture courses. The lecture fees are from 2s. 6d. per session, and the laboratory fees from 7s. 6d. The classes are held in the evenings between 7 and 9.45. Prospectuses of the classes with other information may be obtained from Mr. Arthur Tait, Secretary.

LIVERPOOL.

Liverpool School of Pharmacy, 6, Sandon Terrace, Upper Duke Street, Liverpool.—PRINCIPAL, Mr. R. C. Cowley, assisted by demonstrators. Day Classes are held in all the subjects of the Minor and Major examinations. FEES: Minor course, £10 10s.; Major course, £9 9s. Once a week classes are held, one evening for juniors and one for advanced students. The fee for this class for a course is £3, or for the whole session £7 10s. The course of study in this school is controlled by the Council of the Liverpool Chemists' Association.

University College, Liverpool, School of Pharmacy, Brownlow Hill.—PRINCIPAL, Professor R. T. Glazebrook, M.A., F.R.S. DEAN, Professor A. M. Paterson, M.D. PROFESSORS AND LECTURERS, Chemistry: Professor J. Campbell Brown, D.Sc., F.C.S., F.I.C.; T. Lewis Bailey, Ph.D.; Charles A. Kohn, B.Sc., Ph.D.; A. W. Titherley, B.Sc., Ph.D. Physics: Professor Oliver J. Lodge, D.Sc., LL.D., F.R.S.; James L. Howard, D.Sc. Botany: Professor R. J. Harvey Gibson, M.A., F.L.S.; Charles E. Jones, B.Sc. Materia Medica: Professor W. Carter, LL.B., M.D., B.Sc., F.R.C.P.; Prosper H. Marsden, F.C.S. Pharmacy: Prosper H. Marsden, F.C.S. A complete courses of instruction for the examinations of the Pharmaceutical Society of Great Britain may be taken in University College. The session consists of a first course, beginning in October, and a second course, commencing in May. The Manchester Pharmaceutical Association Scholarship, of the annual value of about £26, may be held in this school. Lectures and practical instruction are provided in all the essential subjects, and there are well-equipped museums of chemical, botanical, and materia medica specimens. Courses may be taken out separately; or a composition fee of £17 may be paid, covering the entire Junior course. Students paying the composition fee are required to complete the course within three sessions from the date of payment. Applications for admission and all inquiries must be addressed to the Registrar, University College, Liverpool.

MANCHESTER.

Manchester College of Pharmacy, 225A and 227A, Oxford Street, Manchester.—PRINCIPAL, Mr. Charles Turner. Day Classes are held in prescription reading, and Latin, practical dispensing, pharmacy, materia medica, botany, chemistry and physics. FEES: Minor course (January to April), £9 9s.; (April to July), £9 9s.; (second Monday in August to January), £11 11s. Major course: £6 6s.; second Monday in August to January), £7 7s. Evening Classes are held in chemistry, Latin, physics, practical chemistry and dispensing, botany, materia medica, and pharmacy. The fees are, Minor course: (January to July), £4 4s.; (September to December), £3 3s. Major course: (January to July), £3 3s.; (second Monday in August to January), £2 10s. A Once a Week Class is held in practical chemistry, dispensing, pharmacy, chemistry, Latin, physics, botany, and materia medica. The fees for this class are: Minor course (January to July), £4 4s.; (August to December), £3, students under twenty pay two-thirds of these fees. Major course: (January to July), £3 3s.; (second Monday in August to December), £2 10s.

Northern College of Pharmacy, 100, Burlington Street, Manchester.—TEACHERS: Messrs. George Clayton and Frederick Lawson. The method of instruction comprises lectures and tutorial classes. Full Time and Afternoon Classes are held in organic and inorganic chemistry, physics (theoretical), practical chemistry, practical pharmacy, dispensing, theoretical pharmacy, botany, materia medica, prescription reading, theoretical chemistry, microscopy, and prescription Latin. FEES.—Minor course, (day), January to April, £9 9s.; April to July, £9 9s.; September to January, £10 10s.; (afternoon), January to July, £4 4s.; September to December, £2 10s. Major course, January to April, £5 5s.; April to July, £5 5s.; September to January, £6 6s. Evening Classes are held in theoretical chemistry, physics, Latin, practical chemistry, dispensing, botany, materia medica, microscopy, and pharmacy. The fees for these classes are: Minor course, January to July, £4 4s.; September to December, £2 10s. Major course, January to July, £3 12s. 6d.; September to January, £2 5s.

Owens College, Manchester.—PRINCIPAL, A. Hopkinson, LL.D. Pharmaceutical department. TEACHERS, Professors A. Schuster, H. B. Dixon, W. H. Perkin, D. J. Leech, and F. E. Weiss, Mr. W. Kirkby, and Mr. J. Grier. Day Classes are held in physics, chemistry (inorganic, organic and practical), materia medica, pharmacy, pharmaceutical chemistry, botany, practical botany, pharmacy law. The first year (October, 1898, to July, 1899) is devoted to the subjects for the Minor examination, and the second year (October, 1898, to March, 1899) to courses suitable for students preparing for the Major examination. FEES: A composition fee of £17 17s. admits to the College courses for the first year, and of £15 15s. for the second year. Students may pay for the classes separately. An entrance exhibition of £10 is awarded on the results of a competitive examination in elementary botany and chemistry. It is open to students entering for the full pharmaceutical course. Intending candidates must give notice to the Registrar on or before September 20. A prize of £5 will be offered at the end of the first year, for competition among students proceeding to the course for the Major examination. The Manchester Pharmaceutical Scholarship, value about £26, is also tenable at this College.

NEWCASTLE-ON-TYNE.

North of England School of Chemistry and Pharmacy, 55, Northumberland Street, Newcastle-on-Tyne.—PRINCIPAL, Mr. Frank R. Dudderidge, M.P.S. Day and Evening Classes are held in all subjects of the Minor and Major examinations. FEES: Full time classes, £8 8s.; evening classes, £3 3s.; Wednesday afternoon class, £3 3s. The fees are in each case per term of three months. A special weekly class for junior assistants and apprentices is held by Mr. Dudderidge. The fees for this class are £1 1s. for each subject, or £3 3s. for all. Apprentices are encouraged to take three or four consecutive winter courses of six months each, so as to prepare a sound groundwork of examination subjects. Classes for Medical and Veterinary Students: Chemistry, botany, materia medica, pharmacy, etc., are also held. PRIZES (competitive

examination at the end of each winter course), offered, of books, to apprentice students.

NOTTINGHAM.

University College, Nottingham.—By arrangement with the Nottingham and Notts Chemists' Association, a course of twenty experimentally illustrated lectures on pharmaceutical chemistry, extending over two terms and embracing the requirements of the Minor examination, will be delivered on Monday evenings at eight o'clock, by Dr. F. S. Kipping, F.R.S., assisted by Mr. R. M. Cavan, B.Sc., F.S.C. Each student will be entitled to three hours per week laboratory practice (or more by arrangement). FEE, 15s. per term. All students before going will be required to satisfy the authorities that they already possess a grounding in elementary chemistry. A class in botany will be held on Tuesday at 8 p.m., in the first and second term, by Professor Carr, M.A., assisted by Mr. E. A. Smith, B.Sc. FEE for the course 15s. Practical dispensing, to be arranged for the second term. A course of lectures on organic chemistry will be arranged for the third term. Further particulars can be obtained from Mr. A. Eberlin, Hon. Sec., 2, Chapel Bar, Nottingham. A prize fund to the value of £5 per annum, the gift of Messrs. Newball and Mason, Nottingham, is available, and will be distributed by the Council on the result of the session's work. All students joining these classes must be associates of the N.N.C.A.

PLYMOUTH.

Plymouth, Devonport, Stonehouse and District Chemists' Association, 7, Whimble Street, Plymouth.—Summer classes in botany are conducted by Mr. O. A. Reade from May to September inclusive. There are lectures at the rooms of the Association every Thursday at 8 p.m., on general morphology, histology, and outlines of classification, which are illustrated by microscope and lantern. Field botany every fourth Wednesday as arranged. Prizes are given annually for the best sets of herbaria collected locally. The winter classes for students which have hitherto been held under the auspices of this Association have now been transferred to the Municipal Technical Schools. Under this arrangement special classes will be held in physics, pharmacy and materia medica; such classes constituting together with those already held under Science and Art regulations a complete course of preparation for the Minor examination. Assuming that the pupil has previously passed his Preliminary examination, this course extends over three years as follows:—First year: Elementary botany; elementary inorganic chemistry; elementary inorganic chemistry, practical; elementary physics (special class). Second year: Advanced botany (special class); advanced inorganic chemistry; advanced inorganic chemistry, practical; theoretical pharmacy, and Pharmacy Act (special class). Third year: Dispensing with prescription Latin (special class); organic chemistry (special class; materia medica (special class); pharmaceutical preparations (special class).

READING.

Reading College.—Day and evening classes are held in connection with this college in mathematics and physics, pharmaceutical and agricultural chemistry, biology, botany, etc. The chemical laboratory is open daily from 10 a.m. to 5 p.m., and in order that Dr. Luxmoore may personally direct the work of all students, he requires each one to arrange with him at the beginning of the session or term the hours of attendance. Particulars may be procured from the Principal of the College.

SHEFFIELD.

Sheffield College of Pharmacy, 118, Princess Buildings, The Moor, Sheffield.—TEACHERS, Messrs. Robert B. Greaves and J. W. J. Turner. Day Classes are held in chemistry and physics, practical chemistry, botany, pharmacy, materia medica, prescription reading, organic chemistry, dispensing, and practical pharmacy. FEES, Minor (full course), £8 8s. (short course), £4 10s.; Major (full course), £7; (short course), £4. Evening Classes are held in botany, chemistry, and practical chemistry. The fee per term is £1 10s. inclusive. Winter session commences September 15, for evening students, and for ordinary day classes October 3.

Sheffield School of Pharmacy.—With a view to improving and extending pharmaceutical education in the district, the Council of the Sheffield Pharmaceutical and Chemical Society has made arrangements with the Sheffield University College authorities for the teaching of chemistry and botany, this being a preliminary step towards the establishment of a complete pharmaceutical curriculum in this district. The teaching of materia medica and pharmacy will for the present be carried on as heretofore at the Sheffield School of Pharmacy, Surrey Street, Sheffield. Students intending to take out either the elementary or advanced courses should send in their names without delay to the School Secretary, Mr. S. T. Rhoden, 33, Church Street, Sheffield, to whom all fees must be paid in advance. CHEMISTRY (PRACTICAL AND THEORETICAL).—On Wednesday evenings from 6 p.m. to 9 p.m. at University College, commencing Wednesday, October 12, 1898. Professor: W. Carleton Williams, B.Sc., F.I.C. Demonstrator: George Young, Ph.D., F.R.S.E. The chemistry course will consist chiefly of practical work in the laboratory, supplemented by about twenty lectures or demonstrations. As each student works independently in the laboratory the course of practical work will be arranged to suit the various requirements of every member of the class. Advanced students will work at quantitative analysis, organic preparations, and organic analysis. Fee for full course, from October to April, £1 10s. BOTANY (ELEMENTARY).—At University College on Tuesday evenings at 8 o'clock, to commence October 11, 1898. Lecturer: B. H. Bentley, B.A. A course of twenty lectures will be given dealing with the structure, physiology of numerous typical plants, including flowering plants, ferns, fungi, and algæ. Fee for full course, 10s. 6d. BOTANY (ADVANCED).—Professor A. Denny, F.L.S. Demonstrator: B. H. Bentley, B.A. A course of practical instruction for advanced students will be given in the Biological Laboratory, University College, on Thursday evenings, from 6.30 to 9.30 p.m., commencing October 13, 1898. Classes held in the Sheffield School of Pharmacy, 37, Surrey Street. MATERIA MEDICA.—Lecturer: John Austen. Assistant Lecturer E. C. Exell. A course of lectures and demonstrations in vegetable and animal materia medica will commence on Monday, October 17, at 8.15 p.m. The substances dealt with will be such as are official in the British Pharmacopœia and others in ordinary use in pharmacy. Students will be able to examine all specimens at the time they are under discussion. Practical work will form an important feature in the class; the use of the microscope as an aid in detecting adulterations and admixtures being illustrated; same instrument will also be used to show how the main facts vegetable histology may be demonstrated from drugs in everyday use. Students are invited to bring their microscopes and accessories on the evenings set apart for this purpose, as well as to report on any points of interest noted during home work. Fee for course, £1 1s. PHARMACY.—Lecturer: C. F. Carr. A series of twenty lectures will be delivered on Friday evenings, at 8.30 p.m., commencing October 14. The course will be divided into three divisions. (1) The description and explanation of pharmaceutical processes and operations by which galenic medicines are produced in the form in which they are prescribed by physicians, including desiccation, infusion, decoction, maceration, percolation, expression, filtration, evaporation, distillation, solution, saponification, disintegration, extraction, etc. (2) Chemistry of the Pharmacopœia, including alcohols, ethers, salts, and liquors, with explanations of the decomposition taking place in their manufacture. (3) Pharmacy laws, with special reference to the sale of poisons. FEE for the course, 10s. 6d. EXAMINATIONS AND PRIZES.—Examinations will be held at the end of each of these courses, both at University College and at the Sheffield School of Pharmacy. The examinations will be open to pharmaceutical students who have maintained a regular attendance and have satisfied the lecturers with their work. On the result of these examinations, prizes and certificates of merit will be awarded.

WOLVERHAMPTON.

Wolverhampton Technical School.—Classes in theoretical and practical chemistry are held in connection with this Institution nearly all the year round for the elementary, advanced, and honours examinations. There is also a class for students of botany. TEACHER: Mr. Whitehouse. Further particulars may be obtained from the Secretary.

SCOTTISH SCHOOLS.

ABERDEEN.

Robert Gordon's College.—Day and evening classes for the Minor Course are held in connection with the local pharmaceutical association, lectures on botany, materia medica, pharmacy, chemistry, prescription-reading and the poison laws being delivered daily during the term. Special subjects can be selected by students, for which proportional charges are made.

DUNDEE.

Technical Institute.—Classes are held in chemistry (theoretical and practical) and in materia medica. **TEACHERS:** Chemistry, Dr. Lumsden, J. K. Wood, B.Sc., J. Foggie, F.C.S. **Materia medica:** Robert Smith, B.Sc. Special arrangements are made for pharmaceutical students.

EDINBURGH.

Edinburgh Central School of Chemistry and Pharmacy, 26, Clyde Street.—**TEACHERS:** Wm. B. Cowie, Geo. Senter, and A. C. Cameron, assisted by competent demonstrators. Junior course for Minor (day and evening)—**Theoretical:** Courses of lectures are given on chemistry, physics, pharmacy, botany, materia medica, pharmaceutical Latin, and pharmacy law. **Practical:** Chemical analysis (inorganic, organic, and volumetric); physics (balance, hydrostatics, etc.); pharmacy and dispensing. **Senior course for Minor (day and evening).**—**Theoretical and practical:** In addition to junior course, thorough revision is given in all the required subjects. **Major course:** Special arrangements are made to suit the requirements of students. The full time courses commence in October, January, and April. The evening courses commence early in September. The course for "First" examination commences in October, January, and April. **FEE** per quarter for Minor or Major course, £8 8s. (day); £3 3s. (evening); and £1 1s. for "First" courses. These classes provide courses of study extending over six months (day) and over one year (evening), and are adapted for students entering with or without previous knowledge of the subjects required in the Minor and Major examinations.

Edinburgh Royal Dispensary and School of Pharmacy, West Richmond Street.—**TEACHERS:** William Duncan, W. G. Mackenzie, C. M. German, and G. Simpson, pharmaceutical chemists. The school premises, which were specially built and furnished for the teaching of pharmaceutical students, include chemical laboratories, lecture rooms, museums, and a dispensary, in which pupils have ample opportunities of gaining experience in practical pharmacy and dispensing. The session lasts from October to July, being divided into three terms, commencing October, January, and April. **FEES:** £8 8s. a term. **Chemistry:** The lectures are delivered on Mondays, Wednesdays, and Fridays, from 10 to 11. **Practical chemistry:** Daily, from 2 to 5. **Physics:** Mondays, Wednesdays, and Fridays, from 12 to 1. **Botany (including practical work):** Mondays, Wednesdays, and Fridays, from 11 to 12. **Microscopic work and lantern demonstrations:** Wednesdays, 9 to 10; and Thursdays, 5 to 6. **Materia medica:** Tuesdays and Thursdays, from 10 to 11. **Practical pharmacy and dispensing:** Daily, 9 to 10. **Theoretical pharmacy and prescription reading:** on Tuesdays and Thursdays, from 11 to 1. **Evening Classes** are also held on Mondays, Tuesdays, and Thursdays. **FEES:** £3 3s. a term.

GLASGOW.

Glasgow School of Pharmacy, 180, West Regent Street, Glasgow.—**PRINCIPAL,** John Lothian. **DEMONSTRATORS,** William Brown; Bertram Cockburn. **TEACHERS (Preliminary Class),** Walter Blythe, M.A.; A. Campbell Law. The school was last year transferred to more commodious premises and equipped on the most modern principles. For the Minor and Major examinations full courses of instruction by day classes commence October 3, and continue to the end of March. Short advanced classes are held from April to July and from the middle of August to the end of September in preparation for the July and October examinations. For the Minor, lectures in all the subjects are delivered in the mornings from 10 a.m. to 1 p.m., and a class is formed in practical phar-

macy. Practical chemistry classes are held in the afternoon from 2 p.m. to 5 p.m. The practical chemistry, botany and pharmacography classes for the Major examination are held every morning, and lectures for the same examination can be arranged. The evening classes for the Minor examination are conducted in three stages—junior, intermediate, and senior, so that students can enter at any time, the whole of the work in each of these sections being systematically covered. Evening classes for the First examination are held twice weekly, on Tuesday and Thursday evenings. **FEES,** Minor or Major day classes, £8 8s. per quarter; evening classes (3 evenings per week) £3 3s. per quarter; preliminary class, 10s. 6d.

Glasgow and West of Scotland School of Pharmacy (Central School of Pharmacy), 157, St. Vincent Street, Glasgow.—**PRINCIPALS:** T. Mackenzie, M.P.S.; T. S. Barrie, Ph.C. Assisted by J. Manson, M.P.S.; A. M. Ferguson, M.A. Day Classes are held in theoretical and practical chemistry, physics, botany, including vegetable histology, materia medica, prescription reading, theoretical and practical pharmacy, and dispensing. **FEES,** Minor or Major course, £8 8s. per quarter. Evening Classes are held on Tuesdays, Wednesdays, and Fridays for the Minor examination, and on Tuesdays, Thursdays, and Fridays for the Major. These classes include all the subjects taken in the day courses, both theoretical and practical. **FEES,** Minor and Major courses, £2 2s. two nights a week per quarter; £3 3s. three nights a week per quarter. Students do not require to have an elementary groundwork, as the subjects are taught from their foundation.

IRISH SCHOOLS.

BELFAST.

Belfast School of Applied Chemistry, Dublin Road, Belfast.—**STAFF:** Chemistry, Mr. S. Templeton, Assoc. R.C.Sc., F.I.C., Principal; botany, Mr. W. A. Rice, B.A.; materia medica and pharmacy, Mr. J. Harper, L.P.S.I., M.P.S. (Great Britain); preliminary subjects, Mr. J. T. Leslie. Full courses of instruction for the Minor and Irish Licence examinations begin in the last week of September and the first week of January. Day and evening classes. **FEES:** Chemistry (lectures and tutorial work), £2 2s.; practical chemistry (100 hours), £4 4s.; botany and materia medica, £2 2s.; pharmacy, £2 2s.; compounded fee for all subjects, £8 8s. Evening students, £2 2s. per quarter for two evenings weekly. Classes are also held for the Preliminary and Druggists' Licence.

DUBLIN.

School of Chemistry and Practical Pharmacy, 67, Lower Mount Street, Dublin.—**DIRECTOR,** Professor Tichborne, LL.D., F.I.C., assisted by Mr. P. Kelly, M.P.S.I. The Irish Pharmaceutical Council established this school about ten years ago in order to obviate the serious inconvenience caused to pharmaceutical students through the discontinuance of evening lectures by the medical schools. Everything in the way of chemistry likely to be of service to the pharmaceutical student in his profession is included in the course, which comprises the general principles of chemistry and chemical physics, qualitative chemistry, volumetric analysis, urine testing, public health chemistry, air analysis, etc. The school is a very popular one with students, and the accommodation has had to be extended from time to time, and, owing to the crowded state of the school recently, a number of additional benches have been provided.

School of Botany and Materia Medica, 67, Lower Mount Street, Dublin.—**DIRECTOR,** Professor Ninian Falkiner, M.B., Fellow and Examiner in Materia Medica, Royal College of Physicians, Ireland. The lectures are given twice a week in the evenings, but besides there are demonstrations in Trinity College Botanic Gardens. These classes are so highly prized that, although only three years in operation, over one hundred and thirty students have taken advantage of them.

PROCEEDINGS UNDER THE PHARMACY ACTS.

PHARMACEUTICAL SOCIETY *v.* ACME CHEMICAL CO., LTD.

The Acme Chemical Co., Ltd., Tonbridge, was summoned at the Tonbridge Petty Sessions on Tuesday, at the instance of the Pharmaceutical Society, for unlawfully selling poison otherwise than is provided in Section 17 of the Pharmacy Act, 1868.

Mr. H. A. Darbishire presided over the magisterial deliberations, and with him on the Bench were Viscount Hardinge, Captain Down, R.N., Colonel Henderson, Mr. C. Fitch Kemp, D.L., Mr. H. J. Wood, and Mr. J. Stanford.

Mr. Roland E. Vaughan Williams, barrister, instructed by Messrs. Flux, Thompson and Flux, solicitors to the Pharmaceutical Society, prosecuted, and Mr. A. H. Neve, jun., solicitor, Tonbridge, defended on behalf of the Company.

Mr. Neve, who entered a plea of not guilty, raised a preliminary objection. Under the section it was possible for four or five offences to have been committed, and he was entitled to have it distinctly stated in the summons what offence his clients were charged with.

The Bench waived this objection, and Counsel for the prosecution, in opening the case, said the summons was taken under Section 17 of the Pharmacy Act, an Act passed for the protection of the public. What he alleged against the company was that they sold one of the poisons contained in the first part of Schedule A of the Act, the particular poison being arsenic and its preparations, and he should prove, he thought, to their satisfaction, that two of the requirements of the Section had not been complied with. In the first place, the purchaser was unknown to the defendants who sold the arsenic; in the second place, he was not introduced to them; and more than that, no signature of the purchaser was affixed to any poison Book in the form F, as was required by the Act. He submitted that if he proved that, a conviction must follow. The defendants were a limited company carrying on business at Tonbridge in the manufacture of weed-killers. The weed-killer in question was a powder, and contained practically 70 per cent. of arsenic. The quantity bought was a tin containing 1 lb. 14 ozs., and of that 1 lb. 5 ozs. was pure arsenic. It was an exceedingly dangerous poison, and wherever an infringement of the Act was made it was the duty of the Society to take action. But the defendants were previously cautioned. On July 10, 1893, the Society's solicitors wrote a letter of caution, and the Company replied, undertaking to take every possible precaution in future against the infringement of the Act. Finding afterwards that the defendants were not doing so, however, the Society deemed it their duty to institute the present prosecution. Accordingly they instructed Mr. Moon, Clerk to the Registrar of the Society, to write a letter to the Company ordering one tin of weed-killer, and the tin containing the amount of arsenic that he had described was received by return of post on July 26. If he proved his case he did not think the Bench would feel that an infliction of the full penalty would be too severe, for although the defendants at first gave an undertaking to comply with the law, a mere undertaking like that was not sufficient to protect them if they disregarded it.

Charles Weston Langley Flux, solicitor to the Pharmaceutical Society, then proved the writing of the letters to the defendant company, and the receipt of the replies, the letters being produced and read out in Court.

Harry Moon, clerk to the Registrar of the Pharmaceutical Society, living at 1, St. Margaret's Road, Brockley, Kent, deposed to writing and receiving a tin of the weed-killer, produced. He was not asked to sign any book or form, and did not do so, and, so far as he knew, was not known to the defendant company.

Ernest John Eastes, 61, Chancery Lane, Fellow of the Institute of Chemistry and a pharmaceutical chemist, deposed to analysing the tin of weed-killer. He found that it contained 1 lb. 14 ozs. of a whitish powder, consisting mainly of a mixture of arsenic and caustic soda. There was 1 lb. 5 ozs. of arsenic, or 70 per cent. of the whole. There was sufficient arsenic, improperly distributed, to kill 4000 or 5000 people. It was very slightly coloured, and, in his opinion, not sufficiently to comply with the provisions of the Arsenic Act.

Mr. Neve addressed the Bench at considerable length on behalf of his clients. He maintained that both upon the law and facts the prosecution should fail. The Act was framed to deal with individuals dealing in poisons, and he argued that neither Section 17 nor any other portion of the Act could apply to corporate bodies. He cited, in support of his contention, a judgment in the Court of

Appeal, which was afterwards ratified in the House of Lords, which held that Sections 1 and 15 of the Act only applied to individuals and not corporate bodies, and contended that Section 17 was precisely the same. The Act stipulated that the purchaser must be known to the seller, but nothing was laid down as to how he should be known. In this case Mr. Moon had gained such a fame in connection with similar prosecutions that the Company knew who he was; therefore the poison was not sold to a man unknown to the Company.

Mr. Williams said he was bound to admit that Section 15 did not apply to a corporation or limited company, but in the case which had been cited by his friend, it was particularly laid down that Section 17 stood upon a different footing. Lord Selborne, the then highest judge in the land, expressed the firm opinion that Section 17 of the Act did apply to corporate bodies as well as individuals, and no judgment had ever been appealed against on that point since that expression of opinion.

No witnesses were called for the defence, and the Bench, after a brief retirement, announced, through the Chairman, that they were unanimously of opinion that there ought to be a conviction. The Company would therefore be fined £5 with costs.

Mr. Neve asked the Bench to state a case for a higher Court on the point as to the application of the words in the Section applying to a corporate body, and the Bench consented.

LETTERS TO THE EDITOR.

DEODORISING PROPERTIES OF OLEUM RUSCI.

Sir,—A weak solution of glue was exposed to the air until it became partially putrescent. The smell was neutralised by the addition of a few drops of the oleum rusci. Blotting-paper dipped in the solution and dried remains perfectly sweet.

Kew, August 31, 1898.

R. GOODWIN MUMBRAY.

FRENCH LAVENDER OIL AND THE B.P., 1898.

Sir,—With reference to the question of the specific gravity of French lavender oil, over which Mr. R. Wippell Gadd and Mr. John C. Umney are at variance, I quite agree with Mr. Umney as to the possibility of obtaining oils answering to the Pharmacopoeial requirements. In fact, during the past eighteen months I have not had one sample having a specific gravity below 0.885. The figures given in the following table were obtained with samples examined during the past six months:—

No.	Sp. gr. at 15° C.	Optical rotation, 100 Mm. tube.	Linalyl acetate.
1.....	0.8925	—5° 40'	30.8 per cent.
2.....	0.8887	—7° 45'	34.7 "
3.....	0.8884	—7° 30'	36.0 "
4.....	0.8865	—10° 0'	22.5 "

The first three samples are genuine oils, No. 4 is either a very poor sample or an adulterated one, and yet the sp. gr. is above the B.P. limit. Merely determining the specific gravity of French lavender oil is of little value, as mixtures of spike oil and turpentine oil can be prepared having the same sp. gr. as the genuine oil.

Liverpool, September 6, 1898.

EDWIN DOWZARD.

THE OBSERVATION OF SCIENTIFIC FACTS.

Sir,—Without wishing to preach a homily upon total abstinence, or in the least intending to carry on a correspondence upon the subject in your Journal, I cannot allow the uncalled for and possibly unintentional imputation cast by Mr. B. S. Proctor upon those who have the good sense and wisdom to become pledged abstainers to pass unquestioned. In the summary of his "Note on the Use of the Clinical Thermometer" (p. 266) Mr. Proctor distinctly infers that those who take total abstinence pledges are thereby incapacitated from being competent observers of scientific facts, "free from preconceived conclusions and vitiated results." Such an unjust reflection upon a very large, and I am glad to say increasing, class of the community hardly becomes one holding so responsible and influential a position as our friend in a business which of all others demands a clear head and a steady hand. As one of the "weak" individuals, I can only say, after many years' experience, that some of the cleverest and best assistants I have had have been pledged abstainers, and I would unhesitatingly

recommend any young man desiring to study his own best interest, mental and physical, to join the ranks of total abstainers, with the full assurance that it is a step he will never regret.

Brighton, September 3, 1898.

EDWIN B. VIZER.

* * Mr. Vizer's letter is published mainly for his own satisfaction—for unless we are open to be charged with total abstinence from perception, which is perhaps more frequently exercised than abstinence from alcohol—we fail to perceive that Mr. Proctor drew any inference casting imputation upon the class of pledged abstainers to which Mr. Vizer refers. Indeed, Mr. Vizer's letter appears to support the proposition that preconceived conclusions may vitiate the results of observation. [Ed., P. J.]

CHEMISTS' ASSISTANTS' UNION.

Sir,—Any assistant who has not yet received a copy of the rules of the above union can now do so by applying to the secretary. There is every indication that this movement is going to be a large and successful one, and gentlemen who intend to join are asked to send in their names at once, that they may be submitted for approval to the council meeting next Thursday, September 15. Nominations for provincial secretaries will also be submitted to the same meeting. Every town of more than 20,000 inhabitants will have its local secretary, and any gentleman who will kindly undertake the duties (which are not very onerous) is asked to communicate with me at once. A large general meeting will be held in London early in October (of which due notice will be given), at which it is hoped the work of this union will be thoroughly explained. Every assistant who can is expected to attend. I shall be happy to do all I can in supplying further information to those who write me.

Horse Shoe Hotel,
Tottenham Court Road, London.
September 6, 1898.

C. E. PICKERING,
Honorary Secretary.

ANSWERS TO QUERIES.

SANITARY INSPECTORS.—We have no information on the subject. [Reply to C. M. S.—14/26.]

EDELWEISS.—It is the *Leontopodium alpinum*, N.O. Compositæ. [Reply to D. D.—16/5.]

SOLVENTS FOR CELLULOID.—It is soluble in strong alcohol, ether, acetone, amyl acetate, etc. [Reply to H. J. P.—16/7.]

METHYLATED SPIRIT IN LINIMENT.—It is illegal to use the spirit in the case you mention. [Reply to REX.—16/9.]

CAPSICI FRUCTUS.—It is, of course, a printer's error in the B.P. monograph, and should read "two-celled fruits," not "wo-celled fruits." [Reply to BORLY.—16/8.]

GERMINATION OF SEEDS.—It has been observed occasionally and is probably due to exposure of the fruit to sunlight at the natural time of germination. [Reply to A. W.—15/33.]

MEDICAL BOOKS.—Possibly Alexander's 'Treatment of Epilepsy,' 7s. 6d.; Gower's 'Clinical Lectures on Nervous Diseases,' 7s. 6d.; Gower's 'Manual of Diseases of the Nervous System,' 35s.; or Gray's 'Treatise on Nervous and Mental Diseases,' 21s., will suit your purpose. [Reply to A. R.—15/24.]

PLATINOTYPE "P.O.P."—The letters P.O.P. are an abbreviation for printing-out paper, and have by custom been accepted as meaning a paper coated with an emulsion of chloride and an organic salt, generally the citrate of silver with some free nitrate of silver. The platinotype process is founded on the action of light on ferric oxalate, which reduces it to ferrous oxalate, which in turn acts on chloro-platinite of potash, giving a faint image, which is developed to full intensity by the reducing action of the ferrous oxalate when dissolved in the developer, which may be neutral potassium oxalate, or with additions, so that the term platinotype P.O.P. is not correct. The developing salts of the Platinotype Company are a special and secret preparation, but are generally supposed to be a mixture of neutral potassium oxalate, 4 parts, and potassium ortho-phosphate, 4 parts; this quantity should be dissolved in 100 parts water. [Reply to PHILOMEL.—15/27.]

COCA WINE.—Why do you assume that it need not be labelled "poison"? As a matter of fact it is a question whether in certain cases the sale ought not to be registered, as being a sale of cocaine—a poisonous vegetable alkaloid. [Reply to W. B. W.—16/3.]

MISCIBLE GINGERINE.—Dissolve it in proof spirit so as to make a strong tincture, then mix with light magnesium carbonate or calcium phosphate, in the proportion of one ounce to the pint, rubbing the powder to a smooth paste in a mortar with a little of the tincture, and adding the rest gradually. Then add an equal quantity of water, shake well at intervals for a few hours, allow to settle, decant, and filter if necessary. [Reply to W. E. G.—16/2.]

CLOUD NEGATIVES.—To obtain cloud negatives it is advisable to use colour-sensitive plates, such as the Ilford chromatic, or Edwards isochromatic, the medium rapidity should be chosen. The camera should be directed to the sky, preferably including about one inch of landscape at the bottom of the plate. The lens must be focussed for the clouds or infinity and a stop of F/11 or F/16, according to the brightness of the sky inserted. Under these conditions with an exposure of about $\frac{1}{50}$ of a second good results can be obtained for all ordinary clouds. When the clouds are very light, as in the cirrus, or cirro-stratus, commonly known as the mackerel or mare's-tail skies, then it is advisable to use a yellow screen so as to absorb of the blue light reflected from the sky, and thus give greater contrast in the negative. This yellow screen may be obtained commercially, or can be made by taking a lantern plate, fixing without exposing and developing, washing thoroughly, and then soaking for fifteen minutes in a saturated aqueous solution of picric acid, then rinsing and drying. This screen should be placed inside the camera behind the lens, and the exposure increased to about one-fifteenth of a second. The development of a cloud negative presents little difficulty. There should be a little more bromide in the developer, and the negative should not be developed too long so as to be too dense. To use a cloudy negative, that is, to print it into a landscape, first of all print the landscape on to a piece of paper, then with a pair of fine scissors carefully cut the sky portion of this print, this may be thrown away—as the landscape portion only is required. Print in the usual way the landscape on a piece of paper, remove the negative, and print from the printing frame. Adjust the cut out landscape or mask, as it is called, carefully over the cloud negative, having allowed the mask to blacken completely by exposure to light, and then place the cloud negative and mask on the landscape print, making the mask exactly coincide with the outlines of the landscape, and print not too deeply. If a white line shows at the join, cover up the cloud and landscape, and expose the horizon to light for a short time. [Reply to BENE.—15/26.]

OBITUARY.

WINTER.—On August 23, John Billingsby Winter, Chemist and Druggist, Manningtree. Aged 68.

THOMAS.—On August 25, Thomas Rees Thomas, Chemist and Druggist, Burry Port, South Wales. Aged 48. Mr. Thomas was an Associate of the Pharmaceutical Society.

WESTWATER.—On August 25, George Westwater, Chemist and Druggist, Lochgelly, N.B. Aged 39.

HADFIELD.—On August 27, William Perkins Hadfield, Pharmaceutical Chemist, Newark-on-Trent. Aged 86. Mr. Hadfield had been a member of the Pharmaceutical Society since 1853, and was the oldest and one of the most respected tradesmen in the town. He served his apprenticeship with Mr. R. M. Dale, Chemist, Nottingham, and afterwards was assistant to Mr. Snow, Chemist, Newark, whom he left to accept an appointment with the firm of Messrs. Hearon, McCulloch and Francis, Wholesale Druggists, London. Subsequently he returned to Newark and commenced in business on his own account at the corner of Bridge Street and the Market Place. He was one of the old Town Commissioners, a Director of the old Waterworks, and a Trustee of the Newark Minor Charities; he was also one of the originators of the Mechanics' Institution, Newark.

KITCHING.—On September 1, Charles Kitching, Chemist and Druggist, Oakengates, Salop. Aged 53.

KEMP.—On September 5, John Kemp, Chemist and Druggist, Lincoln. Aged 64.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Iodine in Cod-Liver Oil. E. Reboul describes in detail a method of determining the amount of iodine present in cod-liver oil. Into a 150 C.c. flask are introduced 25 Gm. oil, 25 Gm. alcoholic potassium hydroxide, and 10 Gm. KNO_3 . A reflux condenser is attached and the flask heated for one hour on a water-bath to effect saponification. The liquid is then evaporated to dryness in a porcelain capsule and afterwards calcined over a Bunsen burner. Potassium nitrate is added from time to time, until a white residue is obtained. The ash is dissolved in dilute hydrochloric acid, transferred to a 250 C.c. flask, and about 10 C.c. of ferric chloride solution are added, together with enough water to two-thirds fill the vessel. The latter is placed in communication with a flask containing 50 C.c. of a 5 per cent. solution of potassium iodide. The first vessel is heated and ebullition continued for a few minutes until the ferric chloride has displaced all the iodine which is absorbed by the potassium iodide solution. The free iodine is estimated in the usual way by means of centinormal sodium thiosulphate.—*Bull. de Phar. du Sud-Est.*, iii., 292.

Carl E. Smith recommends the following method of assaying crude carbolic acid for disinfecting purposes. Dilute 1 Gm. of sample to 100 C.c. with water, and, when mixed, measure 2 C.c. (=0.02 Gm. of sample) into a 100 C.c. stoppered flask. Add 10 C.c. of water, 12 C.c. of N/10 bromine solution and 2 C.c. of HCl. After half an hour's shaking add 2 C.c. KI test solution, avoiding loss of bromine; shake and run in N/10 $Na_2S_2O_3$ solution until the solution is decolorised. If cresols are present the solution becomes yellow again on standing, probably due to the breaking down of an addition product of tribrom-cresol and bromine or iodine. Thiosulphate must be added until, after prolonged shaking, the solution remains colourless. The number of C.c. required deducted from 12 gives the number of C.c. of N/10 bromine solution consumed by 0.02 Gm. of sample. The following table gives the volume of N/10 bromine solution required for 0.02 Gm. of sample containing 85 per cent. of phenol and cresols, in different ratios, and 10 per cent. of tar oils, the bromine absorbed by these being included:—

Chiefly Phenol	11.0 C.c.
Phenol $\frac{3}{4}$; Cresol $\frac{1}{4}$	10.65 C.c.
Phenol $\frac{2}{3}$; Cresol $\frac{1}{3}$	10.3 C.c.
Phenol $\frac{1}{2}$; Cresol $\frac{1}{2}$	9.95 C.c.
Chiefly Cresol	9.6 C.c.

The paper gives useful information concerning the calculation of results by the appearance of the precipitate that is formed during the process. The author prefers this modification of Koppeschaar's process, because the fractional distillation method is too lengthy for pharmaceutical purposes.—*Am. Journ. Pharm.*, lxx., 369.

Chemistry of Aloes. In a short but pithy article Alfred R. L. Dohme, Ph.D., sums up the results of investigations performed by himself, also by Professor Tschirch and his pupil, G. Pedersen, dealing with the chemistry of aloes. The following main points are brought forward:—(1) Socotrine, Curaçoa, and Cape aloes gave respectively 7.5, 18.5, and 4.5 per cent. of aloin. (2) Curaçoa aloes is as efficient as the Socotrine variety and is cheaper; moreover, it forms the greater portion of the so-called Socotrine aloes of commerce. (3) The resin of aloes is an ester, and varies according to the variety of aloes. The varying constituent is the acid, the alcoholic part—alo-resinotallol—is the same

in the two varieties so far examined, viz., Barbadoes and Cape aloes. (4) Aloin contains emodin, to which its laxative property is probably due. (5) Many laxative drugs, e.g., senna, cascara sagrada, rhubarb, buckthorn, besides aloes, owe their laxative properties to the emodin or some similar substance, derived from anthraquinone and isomeric with it. Work is now in progress to show the exact relationship of anthraquinone to the well-known laxatives.—*Am. Journ. Pharm.*, lxx., 398.

Germination of Spores. In order to clear up the contradictory statements of previous observers as to the effect of light on the germination of fern and moss spores, Fred de Forest Heald has attacked the subject experimentally. He shows that under ordinary conditions of temperature (19° to 21° C.) and inorganic nourishment, moss and liverwort spores are unable to germinate in the dark. The same kinds of spores when subjected to the more strongly refrangible rays of the spectrum behave the same as in darkness. Organic nourishment, in the form of either peptone or grape sugar, will cause moss spores to germinate even in complete darkness. Moss protonemata attain a considerable size in the dark by a saprophytic nourishment, although the vigour of growth is below the normal. Under the ordinary conditions mentioned above, fern spores cannot germinate in the dark, unless a higher temperature is attained (say 32° C.). On the other hand the spores of *Equisetum* germinate apparently as well in darkness as in light and at the ordinary temperature. Among plants employed in the investigation *Funaria hygrometrica*, *Bryum pendulum*, and *Mnium cuspidatum* represented mosses, and *Marchantia* the liverworts; *Equisetum arvense* furnished the spores for the experiments on the *Equisetums*, and among fern spores tried were those of *Ceratopteris thalictroides* and *Alsophila loddigesii*.—*Bot. Gazette*, xxvi., 25.

Test for Saffron. Henry Kraemer gives directions for distinguishing between crocus, carthamus, and calendula by means of the well-known sulphuric acid test. With crocus only the stigmas become blue immediately, and in half a minute the solution becomes blue, gradually changing first to a violet, then to a deep wine-red colour. The flowers of carthamus turn yellow; the solution remains colourless for a few minutes, then becomes yellow, and after a much longer time assumes a deep wine-red colour. Calendula flowers turn brown or blackish brown, as if charred, but the solution behaves much the same as carthamus.—*Am. Journ. Pharm.*, lxx., 386.

Foliar Structures of Pilularia. Duncan S. Johnson, of the John Hopkins University, has studied in detail the development of the foliar structures of *Pilularia globulifera*, and compared the results with those of *Marsilea quadrifolia*. He finds that the leaf of *Pilularia* develops, like *Marsilea* and many other leptosporangiate ferns, by a two-sided apical cell, arising on the right and left sides alternately of the dorsal surface of the stem, near the apex. No indication of a rudimentary lamina could be found in the leaf. The sporocarp of *Pilularia* is a branch of the leaf, arising in an anterior marginal cell at the base of the latter. He concludes that the sporocarp of *P. globulifera* is essentially the equivalent of a *Marsilea* sporocarp in which the number of sori has been reduced to two pairs, and will probably be found to correspond even more closely in development with those *Marsileas* like *M. polycarpa*, which also have a small number of sori. Morphologically, the capsule may be considered as equivalent to a branch of the leaf in which the marginal cells have given rise to sporangia instead of a lamina.—*Bot. Gazette*, xxvi., 1.

THE INFLUENCE OF CRYPTOGRAMS ON CHEMICAL ACTION.

At the meeting of the Apotheker Verein in Cologne Dr. Partheil delivered an interesting address on this subject. Commencing with the phenomenon of alcoholic fermentation—which has been known and applied from time immemorial, but not understood as involving disappearance of sugar with production of alcohol and carbonic acid until Lavoisier's time, when the change was represented by Gay Lussac by the equation $C_6H_{12}O_6 = 2C_2H_6O + 2CO_2$,—he pointed out that it was not until 1835 the influence of yeast as a living organism was recognised by Cagniard de Latour, and about the same time by Schwann. Pasteur detected the existence in the air of yeast germs which could be cultivated, and that observation led him to conclude that fermentation cannot take place without the aid of organisms. Still more recently Buchner has shown that this proposition is incorrect, and he has done much to establish Liebig's chemical theory of fermentation.

By triturating yeast with sand and pressing out the liquid contents of the cells, Buchner obtained an albuminoid product different from living protoplasm, which he calls zymase. It is capable of exciting fermentation, and its action is not hindered by chloroform. On adding alcohol to a solution of zymase, it is converted into an insoluble modification, and on heating the expressed liquid from yeast, flocculi of albumin separate at about 40°-50° C., the liquid then becoming inactive. The liquid also becomes inactive when kept for several days, but it can be dried in a vacuum at a temperature not exceeding 35 C., and obtained in the form of powder resembling dried egg albumin, and in that condition can be kept without change.

The liquid expressed from yeast causes the fermentation of cane malt, grape, and fruit sugar just in the same manner as yeast does, but it does not cause lactose or mannite to ferment. It also causes fermentation of glycogen, which is not the case with yeast according to Koch and Hosaenus.

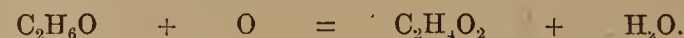
Various kinds of yeast capable of giving rise to different products by fermentation can be cultivated in the same manner that individuals are cultivated by selection, and this procedure has been followed in the production of wine from malt. But yeast, which produces the zymase capable of exciting alcoholic fermentation, is not the only fungus that has this capability. Thus, for instance, the *Bacillus fitzianus* produces ethyl-alcohol from glycerin; *Bacillus ethaceticus* ferments glycerin, mannite, arabinose or glyceric acid, with production of ethyl-alcohol and acetic acid; and the *Bacillus pneumoniae*, of Friedlander, acts in a similar manner upon saccharine solutions.

Many other bacilli are capable of producing alcohol, but the processes by which this is effected have not hitherto been turned to practical account. Some of the homologues of ethyl alcohol are produced in a similar manner. Normal butyl alcohol is produced from glycerin under the influence of *Bacillus butylicus*, as first shown by Fitz and since confirmed by Emmerling. Mould fungi can also excite alcoholic fermentation under certain conditions, and in the same manner as yeast, glycerin and succinic acid being produced together with alcohol, much in the same proportions as in yeast fermentation, and recently Emmerling has observed that this effect is produced by *Mucor racemosus*.

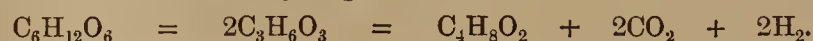
Passing to those cryptogams which produce acids, as in the case of mother of vinegar, first observed in 1837 by Kützing, who ascribed the action to *Ulvinia aceti*, Pasteur showed that this effect was dependent on the presence of *Mycoderma aceti*. In 1878 Hansen observed that acetous fermentation can be produced by several kinds of bacteria, and that it is not necessary to have a

specific ferment for each kind of fermentation as had been supposed. *Bacterium aceti* and *Bacterium pasteurianum* were examined by him morphologically, and subsequently he identified *B. kützingianum*, Henneberg, *B. oxydans*, and *B. acetosum* and Beijerinck *B. rancens*.

Chemically, the acetous fermentation is a process of oxidation represented by the equation—



Pasteur showed that the bacteria producing acetic acid can also convert acetic acid into carbonic acid and water, and the fact was confirmed by A. J. Brown in the case of *B. aceti*, thus opening a wide field for investigation of a practical tendency. Butyric fermentation of sugar was elucidated in 1861 by Pasteur, who showed that it took place in two consecutive stages. Lactic acid or calcium lactate is first produced, and under the influence of the "vibrion butyrique," lactic acid is broken up into butyric acid, carbonic dioxide, and hydrogen—

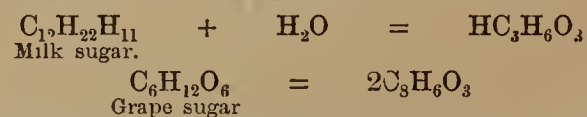


As an especially important feature of this process, Pasteur observed that the excitant of butyric fermentation is capable of living without air. The exact morphological investigation of it was carried out by Grazmowski, who gave it the name of *Clostridium butyricum*. In 1884, Hucppe showed that in butyric fermentation, as in the acetous fermentation, several distinct species are concerned. Beijerinck afterwards classed the butyl bacteria in the family of Granulobacter, and distinguished the excitant of butyl-alcohol fermentation as *Granulobacter butylicum*, from those producing butyric fermentation, *Gr. saccharobutylicum* and *Gr. lactobutylicum*. Emmerling obtained butyric acid from glycerin by fermentation under the influence of *Bacillus boeopricus*.

Oxalic acid is produced by various mould fungi; for instance, *Aspergillus niger*, as shown by Wehmer, and Zopf showed that it is produced by a typical yeast, *Saccharomyces hansenii*.

At a very early period nomadic herdsmen must have observed that the milk obtained from their cattle soon became sour when kept, and therefore lactic acid must have been familiar to them, but it was not until 1780 that Scheele observed the difference between it and acetic acid, and it was only in 1857 that Pasteur ascribed its production to the action of a peculiar organism. He showed that this organism is capable of turning milk sour, and he pointed out the difference in the action upon saccharine liquids as compared with alcoholic fermentation. But it was not until 1877 that Lister obtained a pure culture of the ferment producing lactic acid, and named it *Bacterium lactis*, which is probably identical with the *Bacillus acidi lactis* of Hueppe. Several other producers of lactic acid were identified by Hueppe, and among them *Micrococcus prodigiosus*.

The chemical process of lactic acid formation is not exactly represented by the following equations—



since the conversion is attended with an abundant evolution of gas, moreover different kinds of bacteria give rise to the production of different quantities of acid.

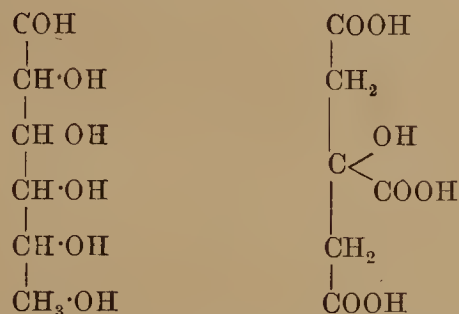
Of the two known isomeric forms of lactic acid, only the ethylidine compound, $CH_3-CH(OH)-COOH$ is produced by fermentation so far as is yet known, and of the three stereoisomeric forms of it the optically inactive acid is the one generally produced. In 1889, Nencki and Silber described an anaerobic fungus which produces dextralactic acid in saccharine solutions, and they named it *Micrococcus acidi paralactici*. In the following year

Schardinger found the *Bacillus acidi laevolactici*, which ferments dextrose, saccharose, lactose, and glycerin with production of laevolactic acid. Apparently the producers of laevolactic acid occur less frequently than those producing the dextro or the inactive acid. Some pathogenic fungi are capable of producing laevolactic acid, and sometimes the nature of the acid produced admits of the kind of fungus being inferred. Thus, for instance, Blachstein found that *Bacterium coli commune* produces dextrolactic acid in nutritive media containing peptone and glycose, while *Bacillus typhi abdominalis* produces, under the same conditions, laevolactic acid. But in regard to this point it is necessary to bear in mind that the kind of lactic acid produced depends upon the conditions of nutrition. Thus Péré found that when pepton was replaced by an ammonia salt both the above-mentioned kinds of bacteria produced laevolactic acid.

The production of citric acid from grape sugar by fermentation is especially interesting. It takes place, as Wehmer showed about five years since, under the influence of two organisms closely related to the mould fungi and resembling in appearance *Pencillium glaucum*. They are named *Citromyces glaber* and *C. pfefferianus*. Recently Wehmer has reported that *Pencillium luteum* and *Mucor pyriformis* are also capable of producing citric acid. From a chemical point of view this process is unique in giving rise to a product which contains an abnormal carbon chain, while all other kinds of fermentation give rise to acids with normal chain. The acid is produced abundantly from sugar, under the influence of the fungus with access of oxygen. From comparison of the empirical formulæ of dextrose and citric acid the process is apparently one of simple oxidation.



but when the constitutional formulæ are compared, it is evident that the change must be attended with transposition of at least one carbon atom.



The production of citric acid by fermentation is practically carried out at the Fabriques de Produits Chimiques de Thann et de Mulhouse.

Other instances of chemical processes excited by the influence of cryptogamic organisms are the production of nitrates by the nitrifying fungi, the breaking up of indican in the production of indigo by the *Bacillus indigogenus* into indigglucin, and indigo white, also the formation of carbon bisulphide by *Schizophyllum lobatum*.

Pasteur's observation that when spores of *Pencillium glaucum* are added to a solution of ammonium racemate mixed with a trace of phosphate, the liquid gradually becomes more and more laevorotatory and eventually contains only the laevorotatory salt, led him to conclude that some promoters of fermentation have a selective capacity. The mould fungus separates racemic acid into its optically different components, using up the one for its food and leaving the other unacted upon. Fischer and Thierfelder have observed exactly similar conditions in the behaviour of stereoisomeric hexoses towards yeast, and even unorganised

ferments manifest the same selective capacity. Such enzymes appear to have, in relation to the objects attacked by them, a configuration similar to that of a key to a lock.

Glyceric acid is affected by *Pencillium glaucum* exactly in the same manner as racemic acid, as shown by Lewkowitsch in 1883, and Frankland and Frew found that *Bacillus ethaceticus* acts in the opposite direction, consuming the laevo acid and leaving the dextro acid unacted upon.

Inactive lactic acid is, on the contrary, converted in the same manner into dextro lactic acid by *Pencillium glaucum*, and Lewkowitsch has also shown that inactive mandelic acid is converted into the dextro form by *Pencillium glaucum*, while *Saccharomyces ellipsoideus* yields the laevo acid. From inactive leucin Schulze and Likiernik obtained laevo leucin by the action of *Pencillium glaucum* and from inactive glutamic acid Schulze and Bosshard obtained laevo glutamic acid.

The doctrine that the production of organic compounds is the result of a peculiar vital force had long been overthrown by Wohler's synthesis of urea, when Pasteur again gave it some position in chemistry by his proposition that fermentation cannot take place without living organisms. Since then Buchner's discovery that alcoholic fermentation takes place without living yeast, and that the action of its zymase may be regarded as a purely chemical process, has begun to call in question what remains of that doctrine, and the question presents itself whether the effects produced by cryptogams will not turn out to be chemical processes set up by substances analogous to zymase.

"STARCH-FREE" GLUTEN PREPARATIONS.

BY A. J. COWNLEY.

The question that has been raised in the medical press and by Dr. Victor G. L. Fielden at the British Pharmaceutical Conference as to the quality of the various commercial preparations of gluten supplied for use in the dietary of diabetic patients suggests the advisability, in continuance of Dr. Paul's remarks at the Belfast meeting, of giving the results of the analyses that were made some time since of most of the commercial "glutens." These preparations were examined in Dr. Paul's laboratory for a high medical authority, who naturally was surprised and concerned at the large amount of starch which was found by analysis to be so discordant with the claims made for these so-called starch-free glutens. The following were the results obtained:—

Gluten Preparations.	Starch per cent.
Gluten Macaroni	65.2
Gluten Vermicelli	62.1
"Gluten"	62.1
Gluten Flour	61.2
Gluten Bread	37.4
Gluten Bread	63.0
Gluten Flour	2.8
Bran Biscuits	14.3
Gluten Flour	5.4
Gluten Flour	63.5
Bran Biscuits	19.8
Bran Biscuits	14.4
Bran Biscuits	6.7
Gluten Flour	63.4

It is evident from these analyses that there is much room for improvement in the preparation of diabetic gluten food, since the majority of the samples examined show the presence of an inordinate amount of amylaceous material. In this respect, indeed, many of the samples were very little different from ordinary wheaten flour.

PHOTO-MICROGRAPHY.—VII.

BY EDMUND J. SPITTA, L.R.C.P. LOND., M.R.C.S. ENG., F.R.A.S.

Before describing how to take an actual photograph with the microscope, it is first necessary to say a few words upon the subject of magnification. One frequently meets with the remark "magnified so many diameters," and we must all have heard of a microscope being able to magnify so many "hundreds of times." To explain the difference implied by these two terms, let us consider Fig. 1.

An enlarged image of the object A B C D, we will say, is cast upon a receiving screen at a given distance, and shown as E F G H. If, now, a pair of compasses be taken, it will be seen that E G is twice A B, G H twice B C, F H twice D C, and E F twice A D. It is not difficult to understand the dotted lines, L K M and O K P are drawn equally dividing E G and F H, and E F and G H respectively.

Then E L and L G each equal A B, G P and P H each equal B C; and so on with the other sides. A little more attention and it is evident that there are four squares, each equalling A B C D; so this object is said to be magnified four areas or four "times."

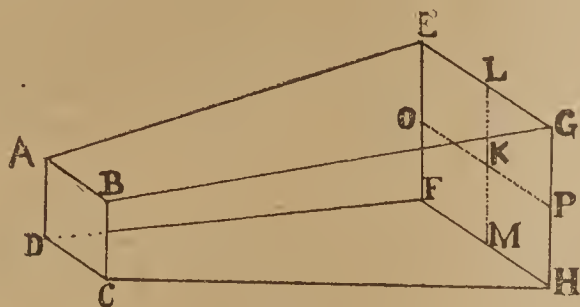


FIG. 1.

But it is equally obvious that A B C D is only magnified twice in each direction—twice from above downwards, and twice from side to side. Hence, when speaking in what is termed linear measure, the object is said to be magnified two diameters. This holds good for any magnification. Consider, for example, Fig. 2. Here the little square α is magnified five diameters in the amplified picture by its side, but the large picture has twenty-five little squares in it, so it is said to be twenty-five "times" as large.

For reasons which need not here be discussed, scientists always speak in linear measurement, employing the term "diameters" in

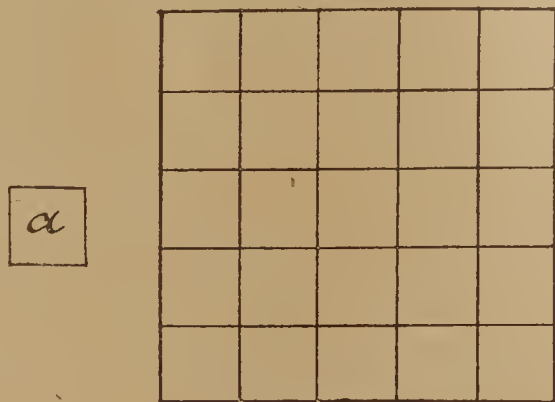


FIG. 2.

preference to using terms of superficial valuation, such as so many "areas" or so many "times." Objectives, therefore, as well as eye-pieces, are said to magnify in terms of diameters.

We now pass on to describe how to ascertain the amount of diameters an object is magnified when seen in the microscope or when photographed on the plate.

If we use apochromats this is a very simple matter, for each

objective is of an accurate focus, and so the initial magnifying power is easily known, and so, too, with each compensating eye-piece. Here follows a list of the amounts universally adopted for the standard magnifying power of objectives of different foci. It will be convenient for future reference:—

A lens of 1 inch or 24 Mm. focus magnifies 10.5 diameters.							
"	$\frac{2}{3}$	"	16	"	"	15.5	"
"	$\frac{1}{2}$	"	12	"	"	21.0	"
"	$\frac{1}{3}$	"	8	"	"	31.0	"
"	$\frac{1}{4}$	"	6	"	"	42.0	"
"	$\frac{1}{5}$	"	4	"	"	63.0	"
"	$\frac{1}{6}$	"	3	"	"	83.0	"
"	$\frac{1}{2}$	"	2	"	"	125.0	"

What this really means is that if any lens of exactly an inch focus is placed on the microscope and a piece of ground glass held at a distance from it of 10 inches, the magnification of the object is 10.5 diameters.

Now to calculate the final amount of the amplification of the image as seen in the microscope when the eye-piece is added it is only necessary to multiply the initial power of the lens by the initial power engraved on the eye-piece, and the result is the total amount of the magnification as seen by the normal eye when looking through the instrument. This, then, is the simple rule for visual purposes when using apochromats. But when we come to photo-micrography, where the image is projected on to the plate or the ground glass, another factor comes into play—it is the length of the camera extension employed. If the ground glass be placed at ten inches from the eye-piece it will be found, although the object is seen reversed, the resulting magnification is exactly similar to what is visually seen on looking down the instrument, and so equals the initial magnification of the objective multiplied by that of the eye-piece. But when the length of the camera extension is increased the amplification is then directly in accordance with the amount of the camera stretch beyond this ten inches. For example, if we place an object on the stage and use the inch objective with a six eye-piece we should find the object would be magnified 63 diameters on the ground glass held at 10 inches from the eye-piece; but if now it be removed to 20, inasmuch as 20 divided by 10 gives a quotient of 2 our 63 diameters' magnification would become 126. Similarly, if we drew out our camera 30 inches, as 30 divided by 10 gives a quotient of 3, our object would now be magnified 189 diameters. It is seen, therefore, to be a very simple matter to judge the amount of magnification an object has received when using the perfected system of the apochromatic series of lenses. This, be it understood, is not due to apochromatism considered as such, but because all objectives are really of the focus stated. But when employing achromatics, which are not so perfect in their focal lengths, both as respects the objective as well as the eye-piece, another method has to be employed.

Place any power—say an achromatic one inch, which very likely is really a two-third inch—on the microscope, and use first what is called an "A" eye-piece. Having procured a stage micrometer (which is only another name for a cover-glass ruled with lines by a diamond a definite distance apart and fixed on an ordinary 3 x 1 slip), and having focussed any two of the lines which are separated by an interval thought to be of convenient size, the ground glass is placed at a distance of 10 inches from the eye-piece. We then take a pair of compasses and measure directly the interval of those lines apart, and divide it by the distance which we know exists between the two lines on the micrometer. It is very obvious that the quotient thus obtained is the linear magnification produced by the lenses—the objective and the eye-piece—as they then stand. It is the same, in point of fact, as would be seen by the normal eye looking down the instrument through the eye-piece, save that it is reversed in position.

This process is repeated with each eye-piece, and with each objective in succession. It is now very evident that we can apply the figures thus obtained; whenever we use a similar combination of objective and eye-piece, always recollecting that the figures only apply to the camera length of ten inches. If this be increased the magnification is augmented in just the same way, and just the same manner as already explained when employing apochromatics. The photographer should do these computations for his photographically corrected achromatic objectives and his eye-pieces with the greatest of care, as when once done—provided the tube-length of the microscope is kept the same, and the camera length does not exceed ten inches—the results will be always correct.

Taking the Photograph.

We now proceed to show how to take a photograph with each power, and to make the explanation more comprehensive and explicit, it is proposed to take a series of well-known "test objects" as types of the different objects which lend themselves to photo-micrography.

We commence with the proboscis of a blow-fly, or ordinary blue-bottle, one of the most common test objects for an inch with an A or B eye-piece if using achromats, or an inch with a 4 or 6 compensating eye-piece if we elect to employ apochromatics. Either of these eye-pieces will furnish us with two reasonable sized photographs of this interesting object when using a 10-inch camera, but if we desire to photograph the finer details of its structure it will be necessary to substitute a half-inch in place of the inch, because its N. A. being greater will reveal more delicately the minutest details. So, too, we may have to employ a 1/6th to show distinctly some of the finest hairs which exist on the membrane that stretches between the two lobes of the organ, and we shall consider each separately. To commence with it is necessary to centre the limelight, which means that the brightest point of the lime shall be brought into the centre of the field of view in the optical axis of the microscope. This is effected by the milled-headed screws, which raise or lower the light or move it from side to side. This finished (with the microscope horizontal), the lowest power substage condenser (focus about $\frac{1}{2}$ inch, and N. A. 48) is placed in such a position as to give critical light. Shut now the iris diaphragm as closely as it will allow, and lower the condenser again until the minute aperture of the iris is seen with a low power eye-piece and 1-inch objective. Most probably the hole will not be central—if not, it must be made so by using the adjusting screws. Re-open now the iris, and re-obtain critical light. Adjust the lime once again till its brightest part is seen in the centre of the field. The image of the lime becomes now very objectionable, and far too bright for the eye to stand, so it is best at this juncture to place a green glass between it and the condenser. Lowering a condenser reduces its working aperture, but seeing the aperture of the condenser in use is higher than that of the inch objective, we may lower it until the field is equally illuminated without fear of losing definition. Still, if we desire, for some special effect or reason, to use the absolute critical image, we must broaden out the lime image by the use of the auxiliary lens, placing it in position as shown in the diagram (about two inches from the lime), moving the rack adjustment up and down and from side to side until the light is evenly distributed over the field. The iris may have to be reduced in aperture when using the inch objective or the object might suffer from what is called "flooding of light." It is not often in my experience that critical light is required to be used with so low a power, for the simple reason that an inch objective is mostly employed to give a general view of an object, the relation of the many

parts to the whole, rather than the details of any particular portion. The principal occasion with an inch objective for requiring critical light is when photographing the general appearance of a minute object like a diatom, in which case the camera may have to be specially increased in length, even perhaps to as much as six feet. Magnification then is the only object, for the N. A. of the inch is far too small to give much detail. Still, if it be desired to use the lens to the best advantage, critical light must be employed, and as the substage condenser will not spread out the light all over the entire field, the auxiliary condenser must be brought into use to do so effectually.

Having then centred the condenser and the lime, and broadened out the light with the paralysing if necessary, the green glass may be removed and the camera placed in its slides, taking care that the piece of brass tubing on the camera, which slips loosely into that portion attached to the microscope, does not touch it at any point of its circumference. The camera is then drawn out to 10 inches or more as desired. It is firmly fixed to the table by the wooden screws. Then, if we are not using the paralysing, we ask an assistant to turn the lime just a touch from side to side or up or down till we feel assured there is equal illumination; whereas if the auxiliary condenser has been employed, the same process must be adopted by shifting it by means of its two racks until the light is equally illuminated over the whole field as before described.

Focussing is the next operation. When employing the inch, it is best done at first with the coarse rack, being subsequently completed by the aid of the fine adjustment, which is turned (through the medium of the silk cord) by the brass handle running beside the camera. We then arrange the shutter so that it will drop a sufficient depth—such distance being regulated by the screw—to cover the entire substage condenser. The light is then temporarily turned down by means of the "cut-off" handle described when explaining the jet, whilst two plates are being "backed" previous to placing them in the dark slide, which, it may be here stated, can be done at once, even if they are not quite dry. The light is then again turned up, and, having given one final glance at the ground glass to make us feel assured the light has remained equally distributed over the field, and that the focus is perfect, the exposure is made. It is best to note the exact time by a watch for this object, under the circumstances narrated about two or three seconds. Note in lowering or raising the exposure shutter not to let it strike the microscope.

The second plate is then exposed in a similar manner, giving it double the time of the first, as by that means the operator is able to judge the more accurately the correct exposure.

It is possible when we have developed these pictures (about which I shall shortly speak), that although they are sharp there is still a lack of contrast; each negative looks, perhaps, flat, whilst the object does not "stand out" in the way it should. This is probably due to the fact that too much light has been admitted to the objective—it has been what is called "flooded." To obviate this we had better look at the object again and see if by shutting down the iris diaphragm a trifle we do not get a better contrasted effect. It must not be closed as to produce diffractive phenomena—such as bright lines around the hairs—for if so we obtain a photograph of optical phenomena, and not one of the proboscis of a blow-fly. If, however, we close our iris as much as we dare and yet are not satisfied with the picture on the ground glass, which experience will soon teach us to see at a glance, we must gently close the Davis diaphragm situated above the objective, just at the end of the microscopical tube. This must be used with much caution, for a very small amount of closing will produce

a great effect upon the picture, and it will be entirely spoilt if closed too much. If the objective be a good one, and the eye-piece equally so, and all extraneous light excluded from the camera at its juncture with the microscope, our picture should be now one full of brilliancy and sparkle.

Seeing that all the negatives will have to be developed much after the same fashion, it is desirable for once and for all to give the details of the process.

It will be best for the beginner to develop each of his plates separately, for which purpose he takes 3 drachms of each solution, details of which have already been given, 3 drops of bromide solution, filling up to 8 drachms with water. This is the proportion in ordinary cool weather, but when operations are conducted in summer months, when the heat of the dark room is very pronounced, it will be very necessary for the developing solutions to have stood for some hours in cold water, and it will be better to use $2\frac{1}{2}$ drachms of each solution with 3 drops of bromide, filling up to the ounce with water. The gas light of the dark room should be screened by two layers of ruby fabric, and if the burner be a very bright one, an additional one of yellow. Having wiped the backing off the plate, which is easily done by a rag—which should be kept in one corner of the sink—the negative is placed in its developing dish with the sensitive surface upwards, and the 8 drachms of developer flooded over it in one sweep. Till experience is gained it will be frequently found that the plate is not immediately uniformly covered. The dish then should be violently shaken laterally to ensure such a condition, for, if not, a stain will be produced on the final negative, hopeless to remove. The cover to the dish should be at once placed over it and not raised for, say, half a minute, one ruby fabric being removed from the gas. About this time, if the exposure be correct—in cold weather it may be considerably longer—just a faint outline of “something” appearing on the emulsion should be seen. I do not say this will always be the case, but I mean that within half a minute to one and a half minutes there should be some difference shown in the portions of the negative that has been exposed to the light, in contradistinction to the sides where the light has not reached. The re-covered dish is then rocked steadily to and fro, until slowly and uniformly the image appears. Notice should now be taken as to whether the background appears uniform. If the details rush up with great rapidity, it is a sure sign of over-exposure, and 3, 6, 9, or 12, or even 24 drops of the bromine solution should be rapidly added accordingly. If, however, the strongly-lighted portions of the picture appear grey at first, gradually deepening in density, and the whole picture comes out slowly, clearly, and uniformly, we may nearly always rest assured the exposure has been correct. On the other hand, if no picture comes for some minutes, and then exceedingly faintly, we may be equally certain the opposite condition of things obtains, and the exposure has been too short. Provided, first, that the exposure has been correct, we then continue rocking the developer over the negative, until the details, at first so bright and clear, fade into one common blackness over the whole plate. At this juncture it is raised from the dish and the back of the plate examined. We should expect to see the picture appearing there, not complete in detail, but an outlined effect. With correct exposure this effect is produced slowly, but with under-exposure very rapidly—an indication not to be overlooked. If, then, it comes slowly, we let it proceed by returning the plate to the dish, until, in point of fact, the picture can be moderately well seen on back although quite lost in blackness when looking at the front of the negative. Those commencing photo-micrography make here the frequent mistake of removing the plate too soon; it wants

much more development than an ordinary one. Presuming now the image is fairly well seen on the reverse side, the developer is poured off and the plate well washed under the tap. Washing completed, it is placed in the fixing solution, a bath composed of hyposulphite of soda and water. It is a convenient plan to obtain one of the large sweet jars used by pastrycooks, which are provided with a solid glass stopper surrounded with a band of cork, into which are placed the crystals of hyposulphite—commonly called “hypo”—to about one-third part of its depth, filling up to the brim with water. This is left for a few hours and forms a most convenient concentrated solution. Before taking a photograph the bottle is shaken, and two parts of the solution are added to one of water and put in the “fixing-bath dish.” Into this solution then we are supposed to have placed the developed and washed negative.

(To be continued.)

ON THE DETERMINATION OF ALCOHOL IN LIQUOR IODI FORTIS, B.P.

BY ALEX. GUNN, F.C.S.

Shortly after the publication of the new British Pharmacopœia, I had occasion to determine the spirit strengths of nearly all the preparations on which drawback was allowed. Among these were the two preparations of iodine, viz., liquor iodi fortis and tinct. iodi. These I had never before estimated by actual distillation, but on this occasion I tried to do so, and only succeeded after several attempts. I could find no reference in any books or journals to the estimation of alcohol in the presence of iodine, and it occurred to me that a reliable method would make a useful note for reference, and might, moreover, be of some educational interest, inasmuch as it would show students how some troublesome reactions may be brought under control.

Fixation of the iodine with a fixed alkali such as potash or soda naturally occurs to one as a likely method. But here it will be seen that the formation of iodoform on warming will at once vitiate the results. Sodium hyposulphite also suggests itself as a likely method until it comes to the actual distillation. Much sulphurous acid being formed on heating, the specific gravity of the spirituous distillate would of course be erroneous. These two substances, however, may be used together in such a way as to avoid any sensible decomposition, and thus ensure an accurate determination of the spirit. First of all add just sufficient of a strong aqueous solution of sodium hyposulphite to decolorise, and then a sufficiency of caustic potash to use up all sulphurous acid formed. This sufficiency will be found to be rather a large quantity. If 50 C.c. liq. iodi fort. have been used it will be necessary after decolorising with the hyposulphite to use at least 10 grammes of the potash, or it will save weighing if about $3\frac{1}{2}$ inches of the caustic potash in sticks is used. Distillation may then be proceeded with, and the usual calculations made.

Some little time after deciding upon this process for the determination of alcohol in iodine preparations, I had a conversation with one of the Chemical Staff of Somerset House, and was informed by him that that was the process they used.

It is possible that there is a slight decomposition even with this process, the distillate having a peculiar smell. At all events it meets the Revenue Authorities on their own ground, and that is a matter of some little comfort to the exporter.

These experiments were conducted in the analytical laboratory of Messrs. Lorimer and Company, Islington, N., to whom my thanks are due.

JOHN RADCLIFFE, M.D.

FOUNDER OF THE RADCLIFFE LIBRARY, OXFORD.

(Concluded from page 269.)

In 1710 Radcliffe thought of retiring, but was dissuaded from carrying out his purpose by the remonstrances of no less a personage than the Archbishop of York. In 1711 he lost one of his boon-companions of rank and station, Lord Craven, to whom he seems to have been much attached. His Lordship fell a victim to "excessive drinking," much of it done in Radcliffe's jovial company and enlivened by Radcliffe's pleasantry. Lord Craven's libations had brought on a malady of which Radcliffe cured him. It is observable that Radcliffe did not so much forbid him to drink as insist that while drinking he should take plenty of exercise. The noble patient seems to have neglected this monition, and, after his recovery, drinking harder than ever, he died accordingly. Pittis prints a curious letter on Lord Craven's melancholy end, written by Radcliffe to their common friend and boon-companion, the Duke of Beaufort. He holds up Lord Craven's fate as a warning to his Grace. But here again it is observable that he does not admonish the Duke to give up his libations. Such advice would have seemed odd from one who, though a physician, was a confirmed toper. What he does advise his Grace is to avoid Lord Craven's fate "by letting the exercises of the field share with the pleasures of the bottle."

In the same year Radcliffe had to prescribe for a new patient whose name and fame outweigh those of all the Lord Cravens and Dukes of Beaufort that ever existed. This was Jonathan Swift, then in London, hand-and-glove with Harley and Bolingbroke, and helping their Tory politics with his powerful pen. Radcliffe was probably made known to Swift by Arbuthnot, who was now Queen Anne's principal physician, and who knew Radcliffe well. Indeed, in his 'History of John Bull,' when the illness of John Bull's mother (she stood for the Church of England) is being debated by the Faculty, Radcliffe is introduced by name as High Church champion, with Garth, of the Dispensary, as Low Church ditto, and lays down the law in characteristically trenchant fashion. There are several references to Radcliffe in the 'Journal to Stella' for 1711, when Swift consulted him for the dizziness in his head and his other infirmities. "I took no snuff at all, but some herb snuff prescribed by Dr. Radcliffe." And, again, "I still drink Dr. Radcliffe's bitter, and shall continue it." In another entry of the 'Journal to Stella' Swift speaks with a slight acerbity of Radcliffe for a proceeding which is eminently significant of his high-handed and despotic ways as a physician. When Harley was stabbed at the Council Table by Guiscard, the Minister's own surgeon dressed the wound before Radcliffe was called in. But "that puppy Radcliffe," as Swift calls him in his wrath, would not meet Harley's surgeon in consultation, and, says Swift, "will admit none but his own surgeon." So that Harley, he adds, "has not been well looked after."

Swift's reference to Dr. Radcliffe's bitter suggests a few remarks. Like some other prominent physicians of his day, Radcliffe manufactured and procured to be vended, doubtless with great pecuniary profit to himself, specifics for which his name procured eager purchasers. As it happens, a placard or bill giving an account of Radcliffe's bitter, which Swift used, is in the library of the British Museum. It is surmounted by an elaborate engraving of the British lion and unicorn, with a figure representing Hygeia, and announces the varied promise of "Dr. Radcliffe's Royal Tincture, or the General Rectifier of the Nerves, Head, and Stomach. It corrects all irregularities of the head and stomach occasioned by hard drinking or otherwise." But it is commended to drinkers not only as a remedy for their excesses but as an aid to indulgence, for "these drops make the best purl in the world, in beer, ale, or wine, or purl royal in sack." Lastly, and to conclude, "Merchants and shopkeepers may be supplied with these drops, with good allowance to sell again, at Lloyd's Coffee House, Lombard Street, London, Price 1s. a bottle." Such were of the devices by which, in the reign of Queen Anne, the most fashionable, most successful, and the wealthiest physician in London did not disdain to add to his enormous professional gains.

A glimpse of Radcliffe's domestic hospitalities is afforded by the account of a banquet which he gave in 1712 to Prince Eugene, Marlborough's Eugene. The peace party had carried the day in the councils of Queen Anne, and Marlborough, as one of the heads of the war party, had been dismissed from all his employments. Eugene, Marlborough's old colleague in the field, came to London to see if he could not turn the tide in the direction of war

again. He brought with him a nephew, who fell ill, and Radcliffe was called in, but too late. Eugene, however, took to him, and was present at a dinner given in his honour by Radcliffe, who invited a party of his aristocratic friends to meet the distinguished foreigner. Radcliffe resolved to make the dinner a truly English one. "Ragouts and kickshaws" were rigidly excluded from the fare, which consisted of "barons of beef, jiggets of mutton, legs of pork, and other such substantial British dishes for the first course." Radcliffe's English guests, accustomed to dressed dishes, were surprised; but Eugene professed himself highly pleased with the entertainment, especially with some "beer seven years old," which was handed round with the wine, and which possibly had been sent from Badminton by the Duke of Beaufort.

In 1713 Radcliffe took a step which he had long been meditating. Years before he had bought an estate in the vicinity of the little town of Buckingham, the constituency of which he "nursed" in the usual way with an eye to representing it some day in the House of Commons. He succeeded very easily, as may be supposed. Two short, blunt, unimportant speeches of his are all that have been preserved, but his attendance in the House was more frequent than his oratory, and at last he determined to relax his professional exertions. He had taken a great fancy to his junior, Dr. Mead, though Mead was a Whig and as erudite as he himself was the reverse. He made many of his patients over to Mead, who succeeded him as chief London physician.

1714 was the closing year both of Radcliffe and of Queen Anne. During its course a severe blow was dealt him by the death of another of his friends and boon-companions, the Duke of Beaufort. His Grace was a very seasoned cask, and, unlike Lord Craven, took plenty of exercise in the hunting field. "His strength was unimpaired by the strongest liquors," and yet he died of a "draught of oat ale"—some brew no doubt peculiar to Badminton—taken when he was rather overheated. Radcliffe was called in, but again too late, and on seeing him, predicted, accurately we are asked to believe, that the medicines which other physicians had administered to him would kill him in six hours. His Grace's demise affected Radcliffe deeply. According to his biographer he assured a select circle of fellow-topers, assembled at the "Bull's Head" in Clare Market, that "he had lost the only person whom he took pleasure in conversing with. It was high time to retire from the world, to make his will, and set his house in order, for he had notice within that told him his abode in the world could not be twelve months longer." A prophecy which, if ever really made, was certainly fulfilled.

In this melancholy mood Radcliffe retired from London and practice to a rural home which he had made for himself at Carshalton, in Surrey. Doubtless one of the objects of this removal was to be out of the way of convivial temptation. A life of carousing had told on him. Gout had made a victim of him, and it became a case, baffling even his skill, of "physician cure thyself." One of his few visitors from the great world of London was Mead, who owed so much to him. Mr. Jeafferson quotes, from "The Lansdowne MSS. Brit. Mus.," as reported by Bishop Kennett, the following anecdote of Mead's intimacy with Radcliffe:—

"I remember what Dr. Mead has told to several of his friends, that he fell much into the favour of Dr. Radcliffe a few years before his death, and visited him often at Carshalton, where he observed upon occasion that there was no Bible to be found in the house. Dr. Mead had a mind to supply that defect without taking any notice of it; and therefore one day carried down with him a beautiful Bible which he had lately bought, which had lain in a closet of King William for His Majesty's own use, and left it as a curiosity that he had picked up by the way. When Dr. Mead made the last visit to him he found that Dr. R. had read in it as far as the middle of the Book of Exodus, from whence it might be inferred that he had never before read the Scriptures; as I doubt must be inferred of Dr. Linacre, from the account given by Sir John Clarke."

Radcliffe's library was, no doubt, the smallest possible—a great contrast to Mead's; but it is curious that so strenuous a High Churchman should not have in his possession a copy of the Bible.

On August 1, 1714, occurred that familiar event, the death of Queen Anne, from suppressed gout, ending in erysipelas and fever. Her illness was aggravated by the political and palace intrigues which shook her nerves during the last days of her life and reign. Of course, when the crisis arrived, many people thought of Radcliffe. London gossip said that he had been called in by authority,

but did not obey the summons. One of Swift's London correspondents, who kept him informed of what was said to be going on, wrote to him thus on July 31, the day before the Queen's death: "Radcliffe was sent for to Carshalton about noon, by order of Council, but said he had taken physic and could not come." So strong was the belief in his skill that, the same correspondent adds: "In all probability he had saved her life, for I am told the late Lord Gower had been often in the same condition with the gout in his head, and Radcliffe kept him alive many years after." That "the Council" sent for Radcliffe is improbable. The account given by his biographer, Pittis, is that two hours before the Queen's death, her favourite, Lady Masham, sent for him, after Mead, who with Arbuthnot, Sloane, and others was in attendance on Anne, had reported to him that her recovery was hopeless. According to Pittis, Radcliffe himself was prostrate at the time with gout in the head and stomach. But he sent word by the messenger that he would attend Her Majesty, if he had "proper orders for so doing," evidently hinting that he did not take his orders from an unofficial female like the Masham. He added "that from the Queen's known antipathy to him, his presence would do her more harm than good, and since her case was desperate, he was reluctant to disturb her last moments," concluding his message with the characteristic remark that "it would be an act of compassion to let Her Majesty die as easily as possible."

There was, however, an impression in the public mind that Radcliffe had been sent for by authority to the Queen, and had refused to go. He was a professed Jacobite, and the hopes of the Jacobites had been excited by the news that the Queen was dangerously ill. Hence, as some people suspected, a disloyal neglect of his sovereign. Letters were sent to him threatening him with assassination for having allowed the Queen to die when he could have saved her, an intimation which was very complimentary to his curative skill, but which added great perturbation of mind to his physical sufferings. Worse even than threatening letters, a motion was made in the House of Commons that he should attend in his place to be censured for having disobeyed a summons from the President of the Council, the Duke of Ormond, to attend her late Majesty in her extremity. Unkindest cut of all, the motion was made by an old friend and boon-companion, Sir John Pakington, with whom he had voted on many a division when our glorious Constitution in Church and State was assailed. Radcliffe, however, found an animated defender in another M.P. and friend, a certain "Tom Chapman," otherwise unknown to fame. Probably he proved that the charge against Radcliffe was baseless. In any case the matter was allowed to drop. Sir John Pakington's motion elicited from Radcliffe a letter to a common friend, in which he spoke of his devotion to Anne. "Ill as I was," he wrote, "I would have went (*sic*) to the Queen in a horse litter, had either Her Majesty or those in commission next to her have commanded me so to do." The letter contains one passage which is remarkable as indicating that on this occasion, if on this occasion only, Radcliffe did not indulge in his usual jeers at the physicians who had attended the patient. His friend and *protégé*—Mead—had fortunately been one of them. "I must do," he said, "that justice to the physicians who attended her in her last illness, from a sight of the method that was taken for her preservation, transmitted me by Dr. Mead, as to declare nothing was omitted for her preservation; but the people about her (the plagues of Egypt fall on them!) put it out of the power of physic to be of any benefit to her." Radcliffe concluded with a message to Sir John Pakington. He was to be told that "his zeal for Her Majesty will not excuse his ill-usage of a friend who has drunk many a hundred bottles with him." If Radcliffe had not drunk so many hundreds of bottles his years might, perchance, have approximated to those of the abstemious Sir Hans Sloane; as it was, he died at 64.

He lingered on in pain and comparative solitude at Carshalton for weeks and months. Reviewing his past career, he was visited by pangs of remorse not only for those carousals which had seemed so pleasant at the time, but for the bad example which he, a leading physician, had set to the young men of rank and station, whom by his presence and participation he had encouraged in drinking habits, with results fatal to some of them. Pittis prints a letter full of penitent thoughts which, a fortnight before his death, he addressed to one of his favourite boon-companions among the nobility, Lord Denbigh. "Your Lordship knows," he wrote, "how far an air of jollity has obtained among you and your acquaintances, and how many of them in a few years have died martyrs to excess. Let me conjure

you, therefore, for the good of your own soul, the preservation of your health, and the benefit of the public, to deny yourself the destructive liberties you have hitherto taken, and of which I must confess, with a heart full of sorrow, I have been too great a partaker in your company. You are to consider (would that I had done so!) that man was born to nobler exercises than those of eating and drinking." These, Radcliffe said in conclusion, are "the words of a dying man, who fears that he has been in a great measure an abettor and an encourager of your intemperance." The letter, it may be added, contains some devoutly-applied Scriptural texts, which indicate that Radcliffe's perusal of the Bible in his latter days had proceeded considerably further than "the middle of Exodus."

Radcliffe's will was made on September 13. On the following November 1, exactly three months after the demise of Queen Anne, he died of apoplexy, according to the carefully written notice of him in the 'Dictionary of National Biography,' but Pittis avers that he "fell a victim to the ingratitude of a thankless world and the fury of the gout." His body "lay in state" at Carshalton. Whether any or many visitors came from London to look at it we are not informed; but the magnificent benefactions in his will to his *alma mater*, Oxford University, were known to its authorities before his remains were transferred thither towards the end of the month. All that the Vice-Chancellor and his colleagues could do in the way of academic processions and oratory, with tolling of bells and so forth, was done to give him a public university funeral when his remains were borne with great pomp and solemnity to St. Mary's, where they were laid "near the north-west corner of the present organ gallery."

His principal bequests were to Oxford University, while he did not, in spite of posthumous calumnies to the contrary, forget his duty to his nearest relations. Among his letters printed by Pittis is one to his unmarried sister (he had another married), in which he expressed regret for having neglected them during his lifetime, but now made amends. He left her £500 a year, and the married sister £1000 a year. Nephews, friends, servants, executors, etc., had liberal legacies left them. Two thoughtful and kindly bequests were made to the inmates of St. Bartholomew's Hospital, of which he was a Governor, one of £500 a year for ever, to help in "mending their diet," another, also perpetual, "for buying of linen."

But the great bulk of his large fortune, consisting of money and of lands and houses in Yorkshire, Northamptonshire, Bucks, and Surrey, was left to his *alma mater*. He bequeathed £40,000 to build a library in Oxford—readers of our notice of Garth may remember his sarcasm at a bequest made for such an object by a man so little bookish as Radcliffe—with £150 a year for the salary of the librarian, and another yearly £100 for the purchase of books. The Radcliffe Library, one of the finest buildings in Oxford, was opened in 1749, and furnished mainly with medical and scientific books. The building has since been annexed to the Bodleian as a reading room, when the contents of the library, greatly increased in the course of years, were transferred to a building specially affected to them in the new University Museum. It is now a magnificent collection of books on medical, physical, natural, biological and general science, kept up to date, easily accessible, and has given a considerable impulse to scientific study at Oxford.

Though as a practical physician, depending almost wholly on his own common sense and intuitive medical sagacity, Radcliffe was indifferent to the literature of medicine and the theories of it broached either at home or abroad, he seems to have tacitly recognised the possible value of a knowledge of both wider than his own. Mead was familiar with the current theories of medicine as well as proficient in its practice, and among his professional brethren Mead was the favoured friend of Radcliffe, who, it has been often said, respected him for the erudition which he himself lacked. Then, on the Continent, among Radcliffe's contemporaries, there was Boerhave at Leyden, who enjoyed a European reputation, was consulted by patients of all countries, attracted to him many young English medical students, and Radcliffe could not despise Boerhave as he despised such of his professional brethren in England as "Nurse Gibbons" and the "touting" Sir Edward Hamey. Whether influenced by these considerations or possibly by a suggestion of Mead's, Radcliffe resolved that for select Oxford alumni studying medicine, there should be made some provision which might enable them to know what was doing in medical science abroad. For this purpose he made over for ever to his own first and favourite Oxford College—University—his Yorkshire estates, for the founda-

tion of two travelling fellowships of £300 a year each and tenable for ten years, to be given to carefully selected alumni studying medicine at Oxford. At present there are three such Radcliffe travelling fellowships, with an annual income of £200 each and tenable for only three years instead of the original ten. Besides this he left £5000 to enlarge the buildings of University College. Any surplus accruing from the Yorkshire estates after the foregoing objects were effected was to be applied to the purchase of advowsons to be given to members of University College. Finally, mention of minor benefactions to Oxford and to individuals being omitted, he left, after payment of his specified bequests, all his estates in the various counties already enumerated to trustees to be applied to such useful purposes as they in their discretion should think best. And well have the Radcliffe trustees fulfilled their duty, remembering the claims both of philanthropy and science. With the funds at their disposal was built the Oxford Public Infirmary, opened for the reception of patients in 1779, and the Radcliffe Observatory at Oxford, supplied with all the instruments and appliances of modern astronomy, and a dwelling house for the Observer, always an astronomer of promise. Of the Radcliffe Observatory, which has done much to advance the study of astronomy at Oxford, Dr. Munk, writing in 1884, says, "it is one of the buildings first asked for by foreigners who visit Oxford." Nor did the Radcliffe trustees forget, when opportunity offered, the London Royal College of Physicians, of which Radcliffe was so distinguished a member. When it migrated from Warwick Lane to its present domicile in Pall Mall East the Radcliffe trustees gave £2000 towards the £30,000 which the new building cost. There hangs Sir Godfrey Kneller's portrait of Radcliffe, and there is preserved the gold-headed cane with which in his hand Radcliffe mounted so many thousands of stairs, and which after him was proudly carried by Mead, Askew, Pitcairn, and Matthew Baillie, in succession, being finally presented to the College by Mrs. Baillie. Exploring the MS. Annals of the College, Dr. Munk made the discovery, one not at all surprising, that Radcliffe came often into collision with its authorities. But his faults, his egotism, his arrogance, rightly deserve to be condoned in consideration of the noble and useful institutions, which through his beneficent and munificent disposition of his wealth, John Radcliffe enriched his *alma mater*, the great University on the Isis.

THE VALUE OF PHOTOGRAPHIC RESIDUES.*

BY PROFESSOR ALEXANDER LAINER.

From correspondence, as well as from communications to home and foreign professional papers, I continue to hear complaints concerning the small sums paid to photographers for their silver residues. About a month ago a Hungarian photographer wrote to me that he had received only fl. 25 (£2 1s. 8d.) for three and a half kilos of silver chloride and eight kilos of paper ash, although these residues may have been worth fl. 100 (£8 6s. 8d.).

In my 'Guide to the Rational Collection of Silver, Gold, and Platinum Photographic Residues and the Determination of their Value,' there is a complete account of all the best methods of recovering the precious metals from photographic baths and washing waters. On page 2 there is a table of the theoretical and actual amount of silver contained in chloride-of-silver residues, likewise of the actual amount of silver contained in the trimmings of various kinds of silver paper. The following remarks will render these more complete:—

A kilogramme of dry, pure chloride of silver contains 750 grammes of metallic silver, which, at the market price of silver at the time of the publication of my book, was worth fl. 37 to fl. 38 (£3 1s. 8d. to £3 3s. 4d.).† In practice it has been found that chloride-of-silver residues, sent by photographers to the refiners, never contain this amount of metallic silver. In the following eight samples of silver residues I have calculated the actual amount of silver present per kilo:—

1. 645 grammes Ag.	5. 453 grammes Ag.
2. 687 " "	6. 541 " "
3. 475 " "	7. 673 " "
4. 628 " "	8. 627 " "

* Translated from the *Photographische Correspondenz* for the *British Journal of Photography*.

† One kilogramme of silver could then be sold for fl. 47 (£3 18s. 4d.), or bought for fl. 50 (£4 3s. 4d.).

The average amount of silver in these eight samples is 600 grammes, being equal to fl. 28 per kilogramme of chloride residue. But there is no reason why the photographer's residues should not be of the richest kind, if they are collected rationally. In the examples given, the largest amount of silver per kilogramme was 687 grammes, which was worth fl. 32 (£2 13s. 4d.). According to this, the three and a half kilogrammes of chloride residues, to which we have referred, should be worth fl. 112 (£9 6s. 8d.), if carefully collected and dried.

For precipitation of the silver chloride hydrochloric acid is preferable to common salt. Paper coated with emulsion, if washed in hard water, often gives an extraordinary amount of calcium salts, which is again soluble in hydrochloric acid. Silver is usually precipitated as sulphide from fixing baths by means of liver of sulphur. Herr Weiss received fl. 26.45 (£2 4s.) for a kilogramme of silver sulphide obtained in this way. This return compares less favourably, because there is usually a large amount of sulphur mixed with the silver sulphide, and therefore the value of the silver obtained from Ag₂S is less than from silver chloride. Nevertheless, the sum of fl. 26 per kilo for sulphide residues is well worth attention, and the various fixing baths should never be thrown away, which unfortunately is too often the case even in large establishments. Some employé or assistant in the business would, doubtless, be very glad to look after the waste, if some portion of the returns were given him for the trouble. We should mention here that sulphide of lead is also precipitated where combined toning and fixing baths are used; consequently the entire residue would contain, besides sulphide of silver, sulphide of lead, sulphur, a little sulphide of gold, and oxide of aluminium. Those photographers to whom the smell of sulphuretted hydrogen is objectionable I would recommend to use zinc dust for precipitating silver from the fixing baths.

The proportion of silver contained in the ash from silver papers varies very considerably. From practical experience the amount varies from 39 to 600 grammes per kilo, or in money from fl. 1.70 to fl. 27 per kilo (2s. 10d. to £2 5s.). From this it is evident that the value of the ash depends upon the source of supply. It may also be of interest to the professional photographer to know the value of the trimmings from collodio-chloride paper. As no particulars are to hand for reference, I have ascertained the amount of silver in a weighed quantity of unfixed collodio-chloride paper trimmings, and have found that 1 kilogramme gives 211 grammes of ash, which latter contains 56 grammes of silver. Consequently, 1 kilogramme of collodio-chloride trimmings is worth 1 krone (10s.), and 1 kilogramme of ash 5 kronen (£2 10s.).

It should also be remembered that a considerable amount of silver may be lost in burning the paper without proper appliances. It would therefore appear preferable to send the paper direct to the refiners, or to fix out the silver in old fixing baths. The silver can easily be recovered from old fixing baths.

The professional photographer is not so much at the mercy of the refiner as is usually supposed, and should observe certain rules, which I would summarise as follows:—

1. The residues should be collected in the purest form, and should be free from foreign substances, such as corks, etc.
2. The residues should be well dried by exposure to air before storage.
3. Chloride, sulphide, metallic silver, etc., should each be kept separate and stored apart.
4. Reliable average samples should be taken of each kind of residue and kept in bottles. Samples should be sent to the refiners for determination of the quantity of fine silver contained. The cost of these tests is small.
5. Before sending the residues to the refiner they should be weighed. The total value may then be ascertained from the sample tests. (Rule 4.)

The complaints to which we have referred may not cease if these rules are observed, but the latter will be of service to the professional photographer and to well-known reliable refiners. The publication of exact returns and of further particulars will bring about more regular conditions in the valuation of residues.

We would mention, in conclusion, that it is desirable to divide the residues in equal parts and send them to different refineries. Considerable difference will be found in the amount returned from each, notwithstanding the equality in value of the parcels sent.

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.*

Acidum Carbolicum.—This is the hydroxyl derivative of the hydrocarbon benzene, and in this respect is comparable to ordinary alcohol, which is the hydroxyl derivative of the hydrocarbon ethane.



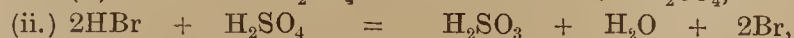
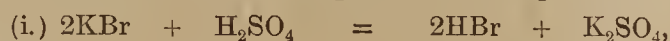
The term phenol is used not only to describe this particular body but also in an extended sense to include the hydroxyl derivatives of the benzene series, just as the term alcohol comprises the hydroxyl derivatives of the paraffin series, although in popular language the term alcohol is used to indicate the alcohol with which we are most familiar, viz., ethyl alcohol. The name carbolie acid, although phenol is not a true acid, is derived from its behaviour with bases, NaOH, e.g., with which it reacts to form the sodium compound known as sodium carbolate or phenate—



A similar reaction does not occur with ethyl alcohol or its homologues of the paraffin series, and this is due to the different influence exerted upon the hydroxyl groups by the hydrocarbon residues, phenyl and ethyl. Phenyl is electro-negative and it influences the associated hydroxyl group in such a manner as to make the hydrogen atom more easily replaceable by electro-positive elements like sodium. The acidifying influence of the C_6H_5 group is, however, not powerful enough to enable phenol to decompose sodium carbonate like the true acids. In the organic acids note that their behaviour as such is due to the carboxyl group $-CO \cdot OH$, in which the hydroxyl is associated with the strongly electro-negative group carbonyl CO. The term carboxyl, applied to the $-CO \cdot OH$ group, is obtained by combining the names of its two constituents, *carbonyl* and *hydroxyl*. Cresol, the body referred to in the last official test, is a homologue of phenol, one atom of hydrogen in the benzene nucleus being replaced by methyl CH_3 . Cresol being a di-substitution product of benzene, $C_6H_4 \cdot CH_3 \cdot OH$ exists in three isomeric forms, known as ortho-, meta-, and para-cresol. Compare in your text-book the chapter on di-substitution products of benzene. Note that the three names *alcohol*, *phenol*, and *cresol* end in *ol*: this termination is used in chemical nomenclature to indicate that these substances contain the hydroxyl group (OH).

Acidum Citricum.—The two colour tests for tartaric acid occurring as an impurity in citric acid will be discussed under Acidum Tartaricum.

Acidum Hydrobromicum.—Note that although hydrobromic acid is liberated from bromides by the action of sulphuric acid this does not provide a practical means of preparing a pure solution of HBr, because when heat is applied to distil the hydrobromic acid this body is oxidised by the sulphuric acid with liberation of bromine, the sulphuric acid being reduced to sulphurous acid.



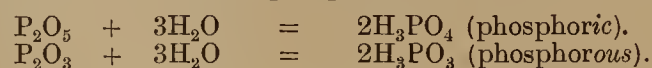
The reaction (ii.) does not take place when the sulphuric acid is well diluted. We cannot, however, avoid the difficulty by distilling a dilute solution of KBr and H_2SO_4 , because the HBr is so soluble in water that it would only be expelled by concentrating the liquor until the limit was approached for oxidation of the HBr to commence. By using strong phosphoric acid, the hydrobromic acid can be obtained by distillation, since there is no secondary reaction between these two acids.

Acidum Hydrochloricum.—No difficulty occurs in the use of sulphuric acid—which is much cheaper than phosphoric—for the preparation of this acid, analogous to that mentioned under acidum hydrobromicum, because hydrochloric acid is not decomposed by the strongest sulphuric acid. Hydrochloric acid is a much more stable body than hydrobromic acid, while hydriodic is less stable than the latter, in accordance with the gradation of

properties observable among the three halogen elements. The test for chlorine depends upon the displacement of iodine by chlorine and subsequent formation of blue iodide of starch



Acidum Phosphoricum Concentratum.—When phosphorus is burned in air the main product is the pentoxide P_2O_5 , known also as phosphoric *anhydride*, because it combines with *water* to form phosphoric acid. At the same time one always obtains some of the lower oxide, P_2O_3 , known as trioxide or phosphorous anhydride, because it forms with water phosphorous acid.

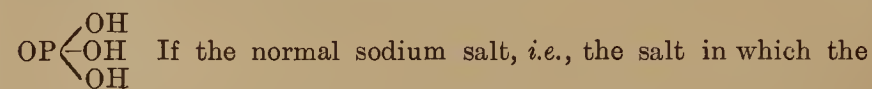


The formation of ortho-phosphoric acid, H_3PO_4 , does not occur completely when the anhydride is merely added to water, for this body takes up successively one, two, and three molecules of water, forming the three acids distinguished by the prefixes meta-, pyro-, and ortho-, the last being the official acid.

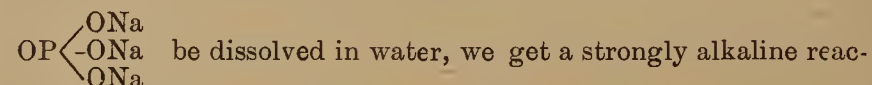


The complete hydration of the anhydride to the ortho acid is hastened by boiling, and a little nitric acid also aids the process besides providing for the oxidation of any phosphorous (see *ante*) to phosphoric acid. Nitric acid is one of the most commonly used oxidising agents. The products of its reduction are volatile, and any excess is easily removed by evaporation. Many other oxidising agents would convert the phosphorous to phosphoric acid, e.g., potassium permanganate. The reduction products of this, viz., the potassium and manganese salts, are not volatile, and could not be easily removed from the phosphoric acid.

Note that the strength of phosphoric acid solutions cannot be determined by titration with standard alkali, like hydrochloric and nitric acids, for example, because a sharp colour reaction to indicate the termination of the process cannot be obtained. This phenomenon is noticed with other polybasic acids, and is due to the varying facility with which the hydrogen atoms of such acid are successively replaced by bases. Phosphoric acid is a tribasic acid, as shown by its constitutional formula—



whole of the hydrogen is replaced by sodium, Na_3PO_4 or



tion, due probably to the dissociation of this phosphate, thus—



Even this di-sodium hydrogen phosphate Na_2HPO_4 has an alkaline reaction (see Sodii Phosphas, B.P.), although it is an acid salt in constitution, i.e., still contains replaceable hydrogen. The entrance of the two sodium atoms has, however, so weakened the acid character of the remaining hydrogen atom that it no longer responds like an acid to the indicators employed. A very good explanation of these facts is furnished by the ionic theory, and students who wish to know more about it should consult Ostwald's 'Foundations of Analytical Chemistry.' The quantitative test in the Pharmacopœia is based upon the formation of lead phosphate. An excess of lead oxide is employed, and since the phosphate may be regarded as a combination of PbO and P_2O_5 , the increase in weight described in the Pharmacopœia is due to phosphoric anhydride, which remains combined with the lead oxide after the water has been driven off by heat. Now since



it is evident that one molecular weight of P_2O_5 (141) is equivalent to two molecular weights of H_3PO_4 ($97.32 \times 2 = 194.64$). The observed increase in weight required by the official test, viz., 0.48 Gm., therefore indicates 0.663 Gm. H_3PO_4 in the 1 Gm. of acidum phosphoricum concentratum added to the lead oxide, for

$$0.48 : 0.663 :: 141 : 194.64,$$

and this, of course, is equal to 66.3 per cent.

* NOTE.—This series of articles should be read in conjunction with the series referring to the 1885 B.P., and published in the P. J. during 1897 and the earlier portion of the current

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PUBLIC OPINION OF POISON LAW.

ON several occasions recently it has been necessary to point out various misconceptions in regard to the law regulating the sale of poisons and to the circumstances by which the administration of the law is rendered less effectual in securing its prime object—the safety of the public. Such misconceptions are met with in both Houses of Parliament, in the law courts and, above all, in the public press where the dangers arising from poisons and the measures supposed to be desirable for averting those dangers have, for some few weeks past, been frequently discussed. Among the most noteworthy of the articles which have appeared on the subject is one in the *Buchan Observer* of September 6, under the head of “The Free Sale of Deadly Poisons.” It is evidently written with a desire to point out the need for better regulation of the sale of articles which are dangerous by reason of their poisonous nature and it deals with the facts relating to some conspicuous cases of poisoning by accident, suicide and murder in a manner calculated to convince any ordinary reader that the facilities for obtaining poisonous articles are far too great. As a deduction from those facts the statement is made that “if you want to poison yourself you will still find no difficulty in buying dangerous drugs. Some poisons are cheaper than a four-pound loaf and as easily obtained. You have only to take a bottle for them, and if the chemist won't supply you the oilman will.” That is the gist of the writer's argument that there is need for more suitable regulation of the sale of poisons. In a sense there is much truth in his statement of the case, but it expresses only part of the truth. It ignores the fact that many dangerous drugs are not poisons within the meaning of the law, and consequently their sale is not regulated in the manner that would conduce to the prevention of accident or misuse.

A conspicuous instance of such a dangerous article that is not a poison within the meaning of the Pharmacy Act of this country is carbolic acid. The number of deaths caused

by it are annually greater than in the case of any other poisonous article, and many years ago the Council of the Pharmaceutical Society came to the conclusion that it ought to be added to the Schedule of Poisons coming under the operation of the Act. That conclusion was formed in the exercise of the public duty imposed upon the Council, but in order to become effective it was requisite that the conclusion arrived at by the Council should be approved by the Privy Council. That approval was not granted, nor has it been granted up to this time, notwithstanding several repetitions of the recommendation that carbolic acid should be added to the legal Poison Schedule, supported by the opinions of coroners' juries and medical authorities. There is probably little doubt that the reason for withholding approval of the recommendation is the fact that carbolic acid has been largely used as a disinfectant agent, and some fear may be entertained that if it were added to the Poison Schedule, its use for disinfecting purposes might be interfered with. Similar considerations have given rise to objections to add to the Schedule other poisonous articles which are largely used for various technical purposes. It is this difficulty of providing for the safety of the public without interference with technical occupations or hindering trade, that has had most influence in delaying the extension of the Poison Schedule. But now that the desirability of further protection against the dangers of poisonous articles has found strong expression in Parliament, there is reason for anticipating that an appropriate measure will be introduced during the coming session to meet the requirements of the case.

In regard to the Bill introduced in the House of Lords last session, the writer of the article in the *Buchan Observer* assumes that its intention was to further regulate the sale of poisonous articles in the manner which he considers to be necessary. In that assumption he is mistaken, for the provisions of the Bill were of such a nature that the sale of the articles in question would practically have been left in exactly the same position they have been—open to any person—without regard for the principle established by the passing of the Pharmacy Act, that the seller of articles, dangerous by reason of their poisonous nature, should be sufficiently conversant with their nature and dangers to be a safe medium for their supply to the public. Such persons alone are fit to be entrusted with the retail sale of articles which require to be labelled “Poison,” because their acquaintance with the nature of poisonous articles enables them to exercise discretion in their sale which cannot be expected of a grocer or an oilman. Even with such a limitation of the sale of poisonous articles—which does not in any way partake of the nature of a monopoly in favour of the sellers—there is actually no restriction of sale. Drugs or medicinal preparations of a poisonous or dangerous nature can be obtained from legally qualified chemists and druggists, with all requisite facility, under the conditions prescribed by law, with the object of preventing accident or misuse, to as great an extent as that may be possible, and with provision for tracing the purchaser in cases where improper use is made of the articles obtained. The kind of business carried on by grocers or oilmen and general dealers in household commodities is not adapted for the observance of such precautionary measures as are indispensable in the retail sale of poisons, or other articles which are sufficiently dangerous to be included in the Poison Schedule.

ANNOTATIONS.

LICENCES FOR THE SALE OF MEDICATED WINE are frequently applied for by chemists and druggists, and these applications appear to be a source of perplexity to the licensing magistrates, many of whom are not, perhaps, aware of the fact that the sale of medicated wine properly so-called is not held by the Excise authorities to require a licence, or, rather, they allow such wine to be sold without one. But many of the preparations sold as medicated wine are really of a different character, and they come within the description that they are capable of being consumed as beverages. For the sale of such preparations an Excise licence is absolutely necessary. In a recent number of the *British Medical Journal*, Dr. F. Coley, of Newcastle-upon-Tyne, writes to protest as a medical man against the general use of these preparations. He points out, in regard to coca wine, for instance, that even assuming the presence of cocaine in amount sufficient to produce effect, the use of it to relieve nerve fatigue is attended with considerable danger and is likely to lead to a pernicious abuse of the drug, with disastrous results. Another combination which he condemns as utterly absurd from a therapeutic point of view is the combination of meat extract, malt extract, and port wine, frequently recommended as a nutritive preparation, and even prescribed by medical men, who, Dr. Coley supposes, have become oblivious of physiology, and have thus been attracted by a formula which is more plausible than sound.

"ROUGH ON RATS," a preparation understood to contain a considerable proportion of arsenic, has caused the death of a young woman at Rotherhithe, who appears to have taken it voluntarily. According to the medical evidence at the inquest the actual cause of death was phosphorus poisoning, and the jury added to the verdict a rider to the effect that the attention of the Home Secretary should be directed to the unrestricted sale of poisons, with a view to something being done speedily to restrict such sale. So far as phosphorus is concerned there is, of course, no restriction upon its sale, but if arsenic were also present in the preparation that caused death the sale ought to have been registered, etc., in accordance with Part I. of the Poison Schedule. That, however, does not appear to have been done in this case. Commenting on the affair, a correspondent of the *Morning* remarks that a child can obtain "Rough on Rats" with the greatest ease, "whereas anyone going to a chemist and asking for a grain of phosphorus, pure and simple, would, without a doubt, be refused." Exception may be taken to both these statements, which are probably only partially correct. So far as chemists generally are concerned, it may be taken for granted that the greatest discretion is exercised in selling any substance of a poisonous nature; at the same time it would be unreasonable for a chemist to refuse to sell pure phosphorus or any other poisonous substance if a satisfactory reason were given for requiring it.

AS TO REMEDIES for the indiscriminate sale of rat poisons, etc., the writer referred to above mentions three, suggested to him by "a leading firm of manufacturing chemists." He would, first, include all poisonous drugs in the Schedule, and rigidly enforce the regulations provided by it. Secondly, where poisonous chemicals are necessary for trade purposes, he would make it obligatory on the workman purchasing them to produce an authorisation signed by his employer. Lastly, he would prohibit the sale of rat-bane *et hoc genus omne*. Continuing, he somewhat incorrectly observes that when a man wishes to poison a dog "he

must, under the present law, take it to a proper person to be put down. Let, in the case of vermin, a similar requisition of a expert be enforced. In conclusion, it should be added that to absolutely prevent people poisoning themselves is impossible, and not to be expected. What is not done at present, and what is needful to a degree, is to make the necessary means as inaccessible as can be managed, without in any way handicapping legitimate sales."

AN OVERDOSE OF SULPHONAL has caused the death of a woman at Kilburn who had been taken to the Hampstead Workhouse infirmary during an attack of illness, and remained there until August 22, when she took her discharge. The master of the workhouse persuaded her to leave behind a bottle of sulphonal tablets and a bottle of "phosphorine" which belonged to her, but she returned the same day, and claimed them. She then took a lodging in Palmerston Road, Kilburn. She complained of sleeplessness, and sent out for some more sulphonal tablets. After having taken some of them she went to sleep, and never regained consciousness. Dr. Cunningham, who attended her, said that sulphonal was regarded as a safe drug, but deceased probably took seventy-five grains. She was in a weak condition, and death was due to syncope, brought on by congestion of the lungs and an overdose of sulphonal. The jury returned a verdict of "death by misadventure." The increasing number of fatalities following the use of sulphonal seems to indicate the desirability of doing whatever is possible to check its indiscriminate use by persons who resort to the use of the drug without proper medical advice.

A SERIES OF FRAUDS that are not of a nature to reassure persons who may fall ill in Paris is reported by the *Morning Post* as having just been discovered. A chemist is stated to have recently purchased the goodwill of a shop in a populous quarter of the French capital, and he had not conducted the business for many days before he found, no little to his astonishment, that were he to sell his goods at the prices charged by his predecessor he would be providing the district with medicines at a constant loss to himself. On the other hand, to raise the tariff would be to lose his customers. "Confronted by this dilemma, he made a careful investigation of the methods which had enabled his predecessor to realise a handsome profit by making up prescriptions at what seemed to be less than cost price. The mystery proved to be simple in the extreme. The prescriptions never contained the ingredients of which they were supposed to be composed. Such of them as were costly were either omitted purely and simply or replaced by another and cheaper substance." The police have, it is stated, been put in possession of these facts, and their inquiries seem to indicate that frauds of this nature are comparatively common. This we imagine to be far from correct, however, and the probability is that the tale has been invented by the wags of the quarter, who are said to declare that the customers of the cheap chemist derived at least as much benefit from his fraudulent medicines as they would have done had they been genuine.

A WARNING TO CHEMISTS has been sent to the lay press by Mr. Robert J. Downes, President of the Pharmaceutical Society of Ireland, who states that what purports to be a medical prescription ordering a drug which is used for criminal purposes, is being taken to chemists to be dispensed. The drug specified is in Part I of the Poison Schedule, and it is pointed out that any chemist supplying it runs a very serious risk if he supplies it not knowing the medical man who orders it or the signature of the person to whose order he supplies

it. It is of the utmost importance that chemists should pay heed to such warnings as this, as nothing is easier than for a person with a smattering of medical knowledge to write what is apparently a genuine medical prescription for drugs required for criminal purposes. When the initials on a prescription are illegible or unfamiliar, great circumspection should invariably be exercised by chemists before dispensing it.

THE DEADLY DANGERS OF THE DRUG STORE are exercising the minds of some American journalists, who may or may not be exaggerating in the reports on which they enlarge. For example, the *New York World*, commenting on a coming meeting of druggists, asserts that serious and fatal mistakes in the compounding of prescriptions are continually made. In one case referred to, an individual is said to have brought a suit for damages against a firm of druggists at Pittsfield, Mass., for the death of his child. "He claims that he took a prescription to the store for syrup of ipecac., and that through someone's mistake laudanum was given, causing the death of his child." In another case an action for damages has been brought against a druggist, E. Lynn, at Canfield, Ohio, by a person who alleges that "some powerful poison" was sold him instead of tannin. The readers of the paper are next told that the wave of suicides and murders now sweeping over New York City is fostered by the chaotic condition in which the drug business is at present. The Druggists' League says the poison law is ignored, the liquor law undermined, and efforts made to protect the health of the public and the lives of the citizens, rich and poor alike, are ridiculed, misrepresented and maligned by opponents.

"THE RED DEVIL" is said to be "calisaya," a disguised intoxicant containing cochineal, 60 grains; quinine sulphate, 60 grains; alcohol, 1 quart; syrup, 1 quart; oil of coriander, 5 minims; oil of orange, 1 drachm; oil of cassia, 2 minims; water, 4 quarts. "Calisaya is a very dangerous disguised intoxicant, according to the League, and is taken by men, women, and children as a tonic. Constant indulgence results in paresis, cirrhosis of the liver, diabetes and death." A statement issued by the League says:—"Coca wine is stronger and worse still in its effects than calisaya. Whiskey and other liquors are not strong enough to tempt the confirmed coca wine and calisaya drinkers to give them up. Poisons for prospective suicides and dangerous drugs for drug fiends are easily obtained, as carbolic acid, Paris green, morphine, opium, chloral, chloroform, cocaine, and many others. Unless the strong hand of the law prevents the greed of unscrupulous men, druggists will always be found to sell these drugs and poisons. Not satisfied with encroaching upon the confectionery, candy, cigar, stationery, grocery, and many other businesses, the druggists are entering in ever-increasing numbers the liquor trade under the specious plea of selling liquor for medicinal uses. Small wonder that so many drug clerks are addicted to drugs or liquors to stimulate their energies when working fourteen, sixteen, and even eighteen hours a day." These facts may, of course, be as asserted, but why do the druggists of the district thus expose their own weaknesses, instead of setting to work steadily to overcome them, in a quiet and non-public way?

THE TRADE PROSPECTS IN CHINA AND JAPAN are dealt with in a recent issue of the *Pharmaceutical Era* by Mr. W. A. Peairs, the prospects of trade in drugs and medicines being the principal object of a tour of investigation in those countries. In China, Hong Kong is considered to lead the way in the wholesale drug

business, the large houses having branches in Shanghai, where a very good retail business is done. Some of the native stores manufacture their own preparations, one firm making an extensive line of tablets, the manager, who was trained to the business in the United States, having adopted many of the ideas prevalent there. If exporters or manufacturers at home expect to build up a profitable trade in China, or elsewhere in the East, it is held to be a positive necessity for them to have a representative on the ground all the time, as success depends upon attention to the many petty details which agents or wholesale houses cannot be expected to attend to.

WITH REGARD TO JAPAN, Mr. Peairs states that there is no country that claims to be a power that has such peculiar laws regarding pharmacy as Japan, the first step of a traveller being not to secure customers, as in other places, but to ascertain whether the Government will allow his products to be imported. If it is desired to interest one of the large native wholesale houses in certain products formal application must be made to the local government, giving the exact formulæ, proportions, directions for use, etc., and samples of the medicines must accompany the application to be analysed by the Government chemists. Any medicine found to be of the ordinary patent variety with no injurious ingredients, no opium or forms of the same, may be sold by native dealers, who must, however, affix a stamp, value 10 per cent. of the selling price. Should the chemists find any of the mentioned objectionable matters, it is classed as a dangerous compound, must be marked so, and sold only by orders of a medical man. The drug business of Japan is stated to be very large, drug stores abounding everywhere, it being estimated that there are more wholesale drug stores in that country than in all the rest of Asia combined. A large line of patents is manufactured, embracing remedies for all manner of disease. Mr. Peairs finds that the Japanese are great imitators, but there is no originality among them, the inventive genius being comparatively an unknown quantity. The bed-rock from which all great businesses are built up—commercial honour—is said to be lacking, a Japanese having no compunction whatever in breaking any contract he may have made. On the other hand the Chinaman will live up to his bargain, even if it breaks him. After personal investigation, Mr. Peairs is of opinion that, while Japan is by far the most intelligent, still, owing to the laws that govern her, she is not to be compared in any way to the prospects that loom up from China.

HONEY DEW.—H. W. Brice, writing to the *Bee-Keepers' Record*, xvi., 129, combats the idea that "honey dew" is either a dew or an excretion from aphides. A microscopical examination of thickly-coated leaves of the lime and sycamore revealed not more than three or four insects per leaf, while an hour after collection, the insects having been removed, the beads of honey dew were much thicker than when first gathered. He concludes that under certain climatic conditions the cells of the leaves of some trees become surcharged with saccharine matter, which on a change of temperature is unable to become absorbed with sufficient rapidity by the channels through which it flows, thus causing a rupture of the cells, or a copious exudation through the pores of the leaf. Being of a thick, glutinous nature, its evaporation is retarded, and aphidæ are attracted in the same manner as bees. The fact that "dew" gathered from the sycamore and the oak is much darker than that from the lime is held to prove that it partakes of the nature of the tree and not of the insects.

British Association.

THE PHYSICS OF SMELL.

Professor Ayrton, in his address as President of the Mathematical and Physical Section of the British Association, gave especial prominence to the following consideration of the mode in which the perception of smell is produced, and described some investigations of the subject by himself.

Of the three senses which enable us to detect the presence of things at a distance—viz., seeing, hearing, and smelling—the first two are highly cultivated in man, and probably for that reason the laws of the propagation of the disturbances which affect the eyes and ears have been the subject of much investigation. To many animals the sense of smell is of far greater importance than those of seeing or hearing, and even in the human brain, a whole segment—a small one in modern man, it is true—is devoted to the olfactory fibres, but the laws of the production and propagation of smell have received practically no attention from the physicist. For some time past it has, therefore, seemed to me to be of theoretical and practical importance to examine more fully into the physics of smell. Various other occupations have hitherto prevented my advancing much beyond the threshold of the subject, but, as it seems to me to open up what is practically a new field of inquiry for the physicist, I take this opportunity of putting on record some facts that have been already elucidated.

Various odoriferous substances have been employed in the experiments, and for several of these I am indebted to Mr. W. J. Pope. Although the physicist has been allowing the mechanical side of the subject to lie dormant, the chemist, I find, has been analysing flowers and other bodies used in the manufacture of scents, and then synthetically preparing the odoriferous constituents. In this way, Mr. Pope informs me, there has been added to the list of manufactured articles, during the past seven years or so, vanillin, heliotropin, artificial musk, irone, and ionone, which give the perfume of the violet; citral, that of lemongrass; coumarin, that of hay, and various others.

If it be a proof of civilisation to retain but a remnant of a sense which is so keen in many types of dogs, then I may pride myself on having reached a very high state of civilisation. But with the present investigation in view this pride has been of a very empty character, since I have been compelled to reject my own nose as quite lacking the sensitiveness that should characterise a philosophical measuring instrument. The ladies of my family, on the contrary, possess a nasal quickness which formerly seemed to me to be rather of the nature of a defect, since, at any rate in towns, there are so many more disagreeable odours than attractive ones. But on the present occasion their power of detecting slight smells, and the repugnance which they show in the case of so many of them, have stood me in good stead, and made it possible to put before you the following modest contribution to the subject.

There is a generally accepted idea that metals have smells, since if you take up a piece of metal at random, or a coin out of your pocket, a smell can generally be detected. But I find that, as commercial aluminium, brass, bronze, copper, German silver, gold, iron, silver, phosphor-bronze, steel, tin, and zinc are more and more carefully cleaned, they become more and more alike in emitting no smell, and, indeed, when they are very clean it seems impossible with the nose, even if it be a good one, to distinguish any one of these metals from the rest, or even to detect its presence. Brass, iron, and steel are the last to lose their characteristic odour with cleaning, and for some time I was not sure whether the last two could be rendered absolutely odourless, in consequence of the difficulty of placing them close to the nose without breathing on them, which, as explained later on, evolves the characteristic "copper" and "iron" smell. But experiment shows that, when very considerable care is taken both in the cleaning and the smelling, no odour can be detected even with iron or steel.

Contrary, then, to what is usually believed, metals appear to have no smell *per se*. Why, then, do several of them generally possess smells? The answer is simple; for I find that handling a piece of metal is one of the most efficient ways of causing it to acquire its characteristic smell, so that the mere fact of lifting up a piece of brass or iron to smell it may cause it to apparently acquire a metallic odour, even if it had none before. This experiment may be easily tried thus:—Clean a penny very carefully until all sense of odour is gone; then hold it in the hand for a few

seconds, and it will smell—of copper, as we usually say. Leave it for a short time on a clean piece of paper, and it will be found that the metallic smell has entirely disappeared, or at any rate is not so strong as the smell of the paper on which it rests. The smell produced by the contact of the hand with the bronze will be marked if the closed hand containing it be only opened sufficiently for the nose to be inserted, and it can be still further increased by rubbing the coin between the fingers.

All the metals enumerated above, with the exception of gold and silver, can be made to produce a smell when thus treated, but the smells evolved by the various metals are quite different. Aluminium, tin, and zinc, I find, smell much the same when rubbed with the fingers, the odour, however, being quite different from that produced by brass, bronze, copper, German silver, and phosphor-bronze, which all give the characteristic "copper" smell. Iron and steel give the strong "iron" smell, which, again, is quite different from that evolved by the other metals. In making these experiments it is important to carefully wash the hands after touching each metal to free them from the odour of that metal. It is also necessary to wait for a short time on each occasion after drying the hands, since it is not until they become again moist with perspiration that they are operative in bringing out the so-called smell of metals.

That the hands, when comparatively dry, do not bring out the smell of metals, is in itself a disproof of the current idea that metals acquire a smell when slightly warmed. And this I have further tested by heating up specimens of all the above-mentioned metals to 120° Fahrenheit, in the sun, and finding that they acquire no smell when quite clean and untouched with the hands.

Again, dealing with the copper group, or with aluminium, no smell is produced by rubbing any one of them with dry table salt, strong brine, or with wet salt, provided that a piece of linen is used as the rubber; but if the finger be substituted for the linen to rub on brine, a smell is observed with copper and German silver, this smell, however, being rather like that of soda; and whether dry salt, brine, or wet salt be rubbed on aluminium, a smell is noticed if the finger be used as the rubber, this smell being very marked in the case of the brine or wet salt. Again, although even when linen soaked in brine, or having wet salt on it, is used to rub tin, iron, or steel, a faint smell is noticed; this is much increased when the finger is substituted for the piece of linen.

As a further illustration of the part played by the skin in causing metallic smells, it may be mentioned that the explanation of certain entirely contradictory results, which were obtained in the early part of the investigation, when linen soaked in strong brine was rubbed on aluminium, was ultimately traced to one layer of moist linen of the thickness of a pocket-handkerchief, allowing the finger to act through it, so that an odour was sometimes noticed on rubbing aluminium with the piece of linen soaked in brine. For it was found that when two or more layers of the same linen soaked in the same brine were employed to separate the finger from the aluminium during the rubbing, no smell could be detected.

From the preceding it seems that the smell in these cases is evolved partly by contact with the finger, partly by the action of the solution of salt, and partly by the rubbing of the solid particles of salt against the metals. That the friction of solid particles against metals is operative in evolving smells is also illustrated by the smell noticed when iron is filed, or when aluminium, iron, or steel is cleaned with glass-paper or emery-paper in the air. Indeed, the smell thus evolved by aluminium Mrs. Ayrton finds particularly offensive. A slight smell is also noticed if iron or steel be rubbed in the air with even a clean piece of dry linen, and each specimen of the copper group, with the exception of the phosphor-bronze, which was tried in this way, give rise to a faint, rather agreeable smell. No indication of odour could, however, be thus produced with aluminium or zinc when both the metals and the linen rubber were quite clean. It should, however, be borne in mind that all these experiments, where very slight smells are noticed, and especially when the odour rapidly disappears on the cessation of the operation that produced it, are attended with a certain amount of doubt, for the linen rubber cannot be freed from the characteristic smell of "clean linen," no matter how carefully it may be washed.

Before, then, a metal can evolve a smell, chemical action must apparently take place, for rubbing the metal probably frees metallic particles, and facilitates the chemical action to which I shall refer. All chemical actions, however, in which metals take part do not produce smell; for example, no smell but that of soda, or of sugar, respectively, can be detected on rubbing any single

one of the series of metals that I have enumerated with a lump of wet soda, or a lump of wet sugar, although chemical action certainly takes place. Again, no metallic smell is observable when dilute nitric acid is rubbed on copper, German silver, phosphor-bronze, tin, or zinc, although the chemical action is very marked in the case of some of these metals. Weak vinegar or a weak solution of ammonia are also equally inoperative. On the other hand, merely breathing on brass, copper, iron, steel, or zinc, which has been rendered practically odourless by cleaning, produces a very distinct smell, while a very thin film of water placed on iron or steel evolves a still stronger odour. Such a film, however, produces but little effect with any of the metals except these two, and if the whole series is lightly touched in succession with the tongue, the iron and steel smell as strongly as when breathed on, the German silver more strongly than when breathed on, or covered with a water film, and the other metals hardly at all.

Now, as regards the explanation of these metallic smells, which have hitherto been attributed to the metals themselves. This, I think, may be found in the odours produced when the metals are rubbed with linen soaked in dilute sulphuric acid. For here, apart from any contact of the metal with the skin, the aluminium, tin, and zinc are found to smell alike; the copper group also smell alike, and the iron and steel give rise to the characteristic "iron" smell, which, in this case, can be detected some feet away. Now, it is known that when hydrogen is evolved by the action of sulphuric acid on iron, the gas has a very unpleasant smell, and this, Dr. Tilden tells me, is due to the presence of hydrocarbons, and especially of paraffin. I have been, therefore, led to think that the smell of iron or steel when held in the hand is really due to the hydrocarbons to which this operation gives rise; and it is probable that no metallic particles, even in the form of vapour, reach the nose or even leave the metal. Hence, although smell may not, like sound, be propagated by vibration, it seems probable that particles of the metal with which we have been accustomed to associate the particular smell may no more come into contact with the olfactory nerves than a sounding musical instrument strikes against the drum of the ear.

And the same sort of result may occur when a metal is rubbed, for, although in that case particles may very likely be detached, it seems possible that the function of these metallic particles may be to act on the moisture of the air, and liberate hydrogen similarly contaminated; and that in this case also it is the impurities which produce the smell, and not the particles of the metal with which we have been accustomed to associate it.

This view I put forward tentatively, and to further elucidate the matter I am about to begin a series of smell tests in various gases, artificially dried, with metals as pure as can be obtained.

I next come to the diffusion of smell. From the experience we have of the considerable distance at which a good nose can detect a smell, and the quickness with which the opening of a bottle of scent, for example, can be detected at a distance, I imagined that tubes not less than 15 or 20 feet in length would be required for ascertaining, even roughly, the velocity at which a smell travels. But experiment soon showed that when the space through which a smell had to pass was screened from draughts, it diffused with surprising slowness, and that feet could be replaced by inches in deciding on the lengths of the tubes to be used. These are made of glass, which are relatively easy to free from remanent smells.

When the room and tube had been freed from smell by strong currents of air blown through them, the tube was corked up at one end and taken outside to have another cork, to which was attached some odoriferous substance inserted at the other end. The tube was now brought back to the odourless room, and placed in a fixed horizontal or vertical position, and the unscented stopper was withdrawn. As a rule, immediately after the removal of the stopper, a smell was observed, which had been transmitted very quickly through the tube by the act of corking up the other end with the stopper carrying the odoriferous material. This first whiff, however, lasted only a very short time, and then a long period elapsed before any further smell could be detected at the free end of the tube, whether that end was left open or closed between times. Finally, however, after, for example, about eighteen minutes in the case of a three-foot horizontal tube, having a large cotton-wool sponge saturated with oil of limes attached to one cork, the smell became definite and recognisable.

It would, therefore, appear that the passage of smell is generally far more due to the actual motion of the air containing it than

to the diffusion of the odoriferous substance through the air. And, as a striking illustration of this, the following is interesting:—After the stopper had been in contact with the odoriferous substance for some time it, of course, acquired a smell itself, which gradually spread in the room in which the experiment was made. And although this smell was due simply to the exposed part of the stopper, while the air inside the tube was at one end in contact with a mass of the odoriferous substance itself, the only place where the smell could not be detected during the course of the experiment was the space inside the open end of the glass tube. And, what seemed very surprising, it was found necessary, in several cases, to blow air through the room to clear out the smell which emanated from the outside of the stopper before the smell coming along the tube from the mass of odoriferous substance which was inside it at the other end could be detected. A further proof of the important part played by the motion of the air in diffusing smell was the fact that a strong smell at the free end of the tube could at any time be caused by merely loosening the stopper to which the scented sponge was attached; for sniffing at the free end then made a draught through the tube which brought the scent with it.

Further, although the glass tubes were coated outside with a thick layer of non-heat-conducting material, so as to check the formation of convection currents, due to difference in the inside and outside temperature, caused by handling, the rate of travel of a smell from a given odoriferous material was found to be much quicker when the tube was vertical than when it was horizontal. But this, I am inclined to think, may have been caused by a small convection current which still was produced in spite of these precautions.

For, as suggested by Dr. Ramsay several years ago, a substance must have a molecular weight at least fifteen times that of hydrogen to produce a sensation of smell at all, and further, since camphor, with which many of my experiments have been made, has, when vaporised, a density about five times that of the air, it seems unlikely that scent vapour should diffuse much more quickly upwards through a vertical column of air than through a horizontal one. At the same time, not only are the tests with the glass tubes very striking, but the general impression which exists that smells rise, indeed, the very fact that the nasal channels of animals open downwards, tends to show that, whether due to draughts or not, smells have really a tendency to ascend. And the following result obtained with glass tubes closed at one end with stoppers carrying respectively camphor, menthol, oil of limes, etc., and at the other end with corks, is instructive on this point. For, on uncorking such a tube after it had been closed for a long time and allowing the odour to stream out of it through the open air towards the experimenter's face, it was always found that the tube had to be brought much closer when the scent stream was poured downwards than when she was in a vertical position and it was allowed to ascend, although, when it was poured downwards, the experimenter brought her nose into as favourable a position as possible for receiving the smell, by lying down with her head thrown well back.

As an illustration of the inefficiency of diffusion alone to convey a smell you will find that if you hold your breath, without in any way closing your nose either externally or by contracting the nasal muscles, you will experience no smelling sensation even when the nose is held close to pepper, or a strong solution of ammonia, or even when camphor on a minute tube is introduced high up into the nostril. Mere diffusion from the lower nasal cavity into the upper cannot apparently take place with sufficient ease to produce the sense of smell, so that an actual stream of air through the upper portion of the nose seems necessary even when the nose is a very sensitive one. This stream, for substances placed outside the nose, is produced by breathing in, no smell being detected while breathing out. On the other hand, if a substance be placed inside the mouth, its flavour is recognised when the air is forced outwards through the nostrils—that is, at each expiration. Hence we may experience alternately two totally different smells by placing one substance outside the nose and the other in the mouth, the one smell being noticed in inhaling and the other in exhaling. And the latter can be increased by smacking the lips, which, I think, has really for its object the forcing of more air through the nostrils at each expiration.

Experiments on the propagation of smells in a vacuum have also been commenced in my laboratory, and the results are no less surprising than those obtained with the propagation in air. A U tube, seven inches high, had the odoriferous substance placed

inside it at the top of one limb, and a very good vacuum could be made by allowing mercury to flow out of the tube. Then the two limbs were separated by raising the mercury column, and air being admitted at the top of the other limb, without its coming into contact with the odoriferous substance, the nose was applied at the top of this limb.

When liquids like ammoniated lavender, smelling salts, solution of musk, and amyl acetate were employed, and various devices were used for introducing the liquid and preventing its splashing when it boiled on exhausting the air, it was found that the time that it was necessary to leave the two limbs connected for a smell to be just observable was reduced from a few minutes or seconds when the tube was filled with air to less than half a second for a good vacuum; with solid camphor it was reduced from twenty minutes to one second, and when moist rose leaves were used, from fifty minutes to two seconds. But with solid particles of musk the time was not reduced below twenty minutes by taking away the air, while with dried lavender flowers and dried woodruff leaves no smell could be detected after the two limbs had been connected for many hours, and a good vacuum maintained. These experiments are, of course, somewhat complicated by variations in the amount of odorous surface exposed, but they seem to indicate that with these particular dried substances either the rate of evolution of the scent, or its rate of propagation, or both, are very slow even in a good vacuum.

I have also carried out some tests on the power of different substances to absorb various scents from the air. Lard, it is well known, is used to absorb the perfume from flowers in the commercial manufacture of scents, perhaps because it has little odour of its own, and because the scent can be easily distilled from it. But if lard, wool, linen, blotting-paper, silk, etc., be shut up for some hours in a box at equal distances from jasmine flowers, dried woodruff leaves, or from a solution of ammonia, I find that it is not the lard, but the blotting-paper, that smells most strongly when the articles are removed from the box. On the other hand, when solid natural musk is employed it is the wool that alone acquires much smell, even after the box has been shut up for days.

Another noteworthy fact is the comparatively rapid rate at which grains of natural musk are found to lose their fragrance when exposed to the air. The popular statement, therefore, that a grain of musk will scent a room for years supplies but another example of the contrast between text-book information and laboratory experience.

The power of a smell to cling to a substance seems to depend neither on the intensity of the smell nor on the ease with which it travels through a closed space. Musk has but a faint smell, but the recollection of the greeting of a rich Oriental survives many washings of the hands. The smell of rose leaves, again, is but faint, and it travels very slowly through air in a tube; and yet the experiments on its propagation in the glass vacuum apparatus were rendered extremely troublesome, by the difficulty experienced in removing the traces of the smell from the glass between the successive tests. Rubbing its surface was quite ineffectual, and even the mercury had to be occasionally shaken up with alcohol to free it from the remanent smell. In fact we found, as Moore put it:

"You may break, you may shatter the vase if you will,
But the scent of the roses will cling to it still."

This absorption of scents by glass, and the ease with which I found that jasmine flowers could be distinguished from woodruff leaves, even when each was enclosed in a series of three envelopes specially prepared from glazed paper, and when many precautions were taken to prevent an odour being given to any of the envelopes in the operation of closing, as well as to prevent its diffusion through the joins in the paper, led me to try whether an actual transpiration through glass could be detected with the nose. For this object a number of extremely thin glass bulbs were blown from soda and from lead glass, so thin that they exhibited colours like a soap bubble, and felt, when gently touched, like very thin oiled silk, and after a little ammoniated lavender, amyl nitrite, ethyl sulphide, mercaptan, solution of musk, oil of peppermint, and propylamine had been introduced into them respectively, they were hermetically sealed and placed separately in glass stoppered bottles.

In some cases, on removing the stopper from a bottle after many hours, a faint odour could be detected, but so, generally, could a minute flaw after much searching; the crack, however, being so slight that it did not allow sufficient passage of the air to prevent the bulb subsequently breaking, presumably from changes of

atmospheric pressure. And in those cases where a smell was detected without any flaw being found in the glass, the subsequent breaking of the bulb put an end to further testing. The question, therefore, remains unanswered.

In presenting this brief introduction to the physics of smell, I have aimed at indicating the vast territory that waits to be explored. That it will be found to contain mines of theoretical wealth there can be no doubt; while it is probable that a luxuriant growth of technical application would spring up later on. Already, for example, Mrs. Ayrton unintentionally picks out inferior glass by the repugnance she shows at drinking water out of certain cheap tumblers. To conclude, I may say that one of my fondest hopes is that an inquiry into the physics of smell may add another to the list of wide regions of knowledge opened up by the theoretical physicist in his search for answers to the questions of the technical man.

PHARMACY IN AUSTRALASIA.

[From our Melbourne Correspondent.]

ALTHOUGH NOT SUBJECT to the same amount of worry and uncertainty which the publication of the new Pharmacopœia seems to have entailed on you in the old country, Victorian pharmacists are nevertheless desirous that some specific understanding should be arrived at in the matter, and with that object in view the Victorian Pharmacy Board, as I think I have already mentioned, recently approached the Government with a recommendation that the 1898 Pharmacopœia should be formally gazetted as coming into operation in this colony on and after January 1, 1899. Since then, however, the medical profession have displayed some interest in the matter, and a special meeting, convened by Dr. Kent Hughes, of the British Medical Association, was held on July 13, to consider the question. Messrs. Francis and Lacey, who represented the Pharmacy Board, urged that in the interests of up-country pharmacists, who had not the same facilities of information as their metropolitan brethren, the date originally proposed should be adhered to. The medicos, however, seemed to consider that the mysteries of the new edition could or should be mastered in a shorter period of study; and eventually the following resolution was adopted:—"That it be agreed that the British Pharmacopœia for 1898 be used generally, on and after the 1st October next; that all prescriptions up to that date be dispensed from the Pharmacopœia of 1885, unless otherwise marked, and after that date all prescriptions to be dispensed from the new volume, unless otherwise marked." Dr. Kent Hughes was authorised to interview the Chief Secretary on the subject, and it remains to be seen which of the dates suggested will recommend itself to Governmental wisdom. In any case pharmacists are gratified that the medicos, no less than themselves, have thus evidenced their desire of having a definite understanding arrived at on the subject.

THE PHARMACY BOARD OF VICTORIA and the Government have recently been in negotiation, in connection with the legal business of the former. It appears, however, that the Attorney-General (Mr. Isaacs), while proposing that the legal business of the Board should in future be conducted by the Crown Law Department, the cost of such work to be deducted from the amount of the Government grant, stipulated that future prosecutions would only be undertaken under the sole control, supervision, and discretion of the Law Department. Naturally, as you may understand, the Board have declined to give themselves the "happy despatch" which the acceptance of these terms would involve, and, to quote from the official report in the *Australasian Journal of Pharmacy*, "the matter remains as formerly."

IN MY NEXT LETTER I may be able to give you further particulars in connection with the proposed amendment of our Poisons Act, 1890, the inefficiency of which has recently been so forcibly exemplified in connection with the Pink Pills case. An amending Bill was introduced into the Legislative Assembly on June 9, and read a first time, but has not yet been circulated. As the Bill was introduced by the Chief Secretary himself you will see that we have good reason to hope for the carrying of a measure that will place legitimate pharmacy on a higher, and illegitimate dabbling in poisonous preparations on a lower, plane than ever before in the colony.

AT THE ANNUAL MEETING of the Melbourne Dental College and Australian College of Dentistry, held on July 14, Messrs. J. Iliffe, McGregor, and Hall, the retiring members of Council, were re-elected. Among the recent successful applicants for registration by the Dental Board was a Mr. H. Hedley Ham, L.D.S. of England. Dentistry, as an organisation, is still almost in its infancy in this colony, but has made great strides in advance during the past year. An amendment of the Dental Act, now under consideration, will, when passed through Parliament, place matters on a sound foundation.

AN IMPORTANT TRADE MARK CASE was instituted in the District Court, Melbourne, on July 11, by the well-known firm of manufacturing chemists, Messrs. Felton, Grimwade and Co., against Mary Smith and John George Smith, Prahran (a suburb of Melbourne), against whom it was alleged that they were selling their own brand of fluid magnesia in bottles bearing the embossed words "Felton, Grimwade and Co, Melbourne, Kruse's Prize Medal Fluid Magnesia." From the evidence of Mr. F. S. Grimwade it appeared that while the defendants' label covered one side of the bottle, hiding the words "Kruse's prize medal fluid magnesia," the embossed words on the back of the bottle, "Felton, Grimwade and Co., Melbourne," were not covered; and it was urged that the public were thus being deceived into thinking that the defendants' fluid magnesia was Kruse's, manufactured by Felton, Grimwade and Co., the original proprietors. Further evidence was brought to show that the defendants had been warned against utilising the prosecutors' bottles in the manner objected to. The defendant J. G. Smith asserted that although he had put up his magnesia in Felton, Grimwade's bottles he had no intention of deceiving anyone. The other defendant was his wife, and the proprietor of the business. The Court decided that a breach of the Act had been committed, and Mary Smith was fined 1s., in default of six hours' imprisonment, with £15 15s. costs; and J. G. Smith £5, in default one month's imprisonment. A stay of seven days was granted. I do not know how witnesses' fees are regulated in your English Courts, but the following anecdote might give some of your budding pharmacists a "wrinkle." At one of our Suburban Courts (Carlton) the other day, a witness describing himself as a chemist's assistant claimed 10s. for expenses. He admitted only being a relieving assistant, but was also a student at the College of Pharmacy. "But you don't get paid for studying?" remarked the chairman of the Bench. "No, but I pay fees for the privilege of studying, sir," replied the witness. Result, an allowance of 3s.

OWING TO SOME LEGAL INFORMALITY the New South Wales Pharmaceutical Society has had to call another special meeting to adopt the proposed alteration in, or substitution for, Article 4 of their Articles of Association, regulating the admission to membership. The result was practically the same as before, 17 voting for and 5 against the motion. A somewhat novel protest against the chairman's ruling that the motion was carried was taken by Mr. Bellamey, who held that a three-fourths majority was required, "and that meant that there must be four votes for every vote against"!

THERE BEING APPARENTLY NO POSSIBILITY of the N.S.W. pharmacists succeeding in inducing the Government to supply the necessary funds for the establishment of an educational institution on the lines of the Melbourne College of Pharmacy, negotiations have been going on with the University authorities on the subject, and the proposals, made by the latter have now been definitely accepted by the Society. According to this convention, students under the Pharmacy Board will be permitted to attend the University lectures and examinations without matriculation, under the following regulations;—

"It shall be open to any non-matriculated student, who has attended the full courses of lectures upon any subject, to compete for honours or pass in the regular examinations upon his subject, and to have his name published and recorded in the regular class lists with a distinguishing mark; but he shall be incapable of holding any scholarship or receiving any prize of those already established for students proceeding to a degree. Each such student shall be entitled to receive a certificate of attendance upon the lectures or laboratory practice in the subjects which he has selected, and proficiency therein as ascertained by the regular and ordinary examinations within the University."

The courses of lectures which it is proposed shall be attended by students under the Pharmacy Board are as follows:—

Botany.—Fee, £2 2s.; Lent term, 11 a.m.; forty lectures. *Inorganic Chemistry*.—Fee, £6 6s.; Lent term, 12 noon, forty lectures; Trinity term, 11 a.m., forty

lectures. *Organic Chemistry*.—Fee, £3 3s.; Michaelmas term, 11 a.m., forty lectures. *Practical Chemistry*.—Fee, £5 5s.; Trinity term, 9 a.m. till 11 a.m., ninety hours. *Materia Medica*.—Fee, £3 3s.; Michaelmas term, 12 noon, fifty lectures. Total fees, £19 19s.

The course of lectures and the concluding examination may be taken altogether in one year, or in two or three years, or a greater number, at the option of the student. The annual examinations in all subjects are held in December, after the conclusion of the lectures. Those who fail to pass the annual December examination in any subject may, if the examiners think fit, be allowed a deferred examination in March. For every deferred examination a student is required to pay a fee of £2. Class examinations are also held during the courses of lectures to test the progress of students. No certificates are given for these, but only for the regular annual examinations.

THE NAME OF MR. LIONEL NELL, a chemist, at present in the employ of Mr. H. A. Rose, George Street, Sydney, well deserves to be recorded in your pages. In recognition of the plucky aid he has on several occasions given to the police Mr. Nell was recently handed, at the Inspector-General's office, a valuable open-faced keyless watch, bearing the following inscription:—"Presented to Mr. Lionel Nell by the Government of New South Wales in recognition of valuable services in aiding the police in the arrest of criminals, April, 1898." Later on this testimonial was supplemented by a gold chain and locket, bearing a suitable inscription, presented by the police themselves. Needless to say, during the presentations warm encomiums were passed on Mr. Nell for his gallant conduct in several instances, and there is no doubt that should he be in business on his own account he can rely for patronage on at least one section of the community, and that will not be the criminals.

ACCORDING TO THE ARRANGEMENT made when the N.S.W. Pharmacy Board was appointed by the Government about a year ago, two members recently had to retire by "lot," and the vacancies thus caused be filled by means of an election on the part of the registered pharmacists of the colony. Strange to say, the first "victims" were Mr. Williams, the President of the Pharmaceutical Society, and Mr. Butcher, a former President. That both of these gentlemen command the confidence of the craft has been evidenced by their re-election against two other candidates in the field, the voting resulting as follows: Williams, 193; Butcher, 175; Wells, 144; Kose, 141.

PHARMACY IN IRELAND.

[From our Dublin Correspondent.]

THE LOCAL GOVERNMENT BOARD has issued a new order regarding the supply of medicines to workhouses. The new Pharmacopœia has been adopted as indicating the standard by which drugs are to be ordered, and no drugs outside it will be sanctioned. The medical officers of the Unions are, it appears, to have no discretion in regard to the ordering of proprietary medicines, whether they are quack, so-called patents or not. A more useful part of the new rules provides for the periodical analysis of all medicines supplied. If some rule could be devised by which the prices for medicines could be submitted to experts, it would be no harm either. In tenders for the supplying of drugs to public institutions it is the complaint that a common practice is to estimate for the less commonly used drugs at prices much lower than they can be purchased by the contractors, and to "put it on" in the case of those in frequent demand. The Local Government Board would be doing a service if they could devise a scheme for putting an end to this system.

SEVERAL DRUGGISTS IN THE SOUTH were last week charged with selling linseed meal adulterated with ground linseed cake and foreign farinaceous matter, amongst them being Messrs. Quinlan and Nunan, of Newcastle West, who were each fined and condemned in costs.

DUBLIN HAS BEEN VISITED during the last few days by a representative of the P.A.T.A., whose mission is to consolidate the metropolitan pharmacists into a direct branch of the English brotherhood of chemists. Already there is a kindred association in Dublin, but it is worked on a more or less independent basis,

and it is to merge this Society into the parent organisation that the effort is being made. The next meeting of the Irish Association will be held in October, when the committee will report progress and draw up a code of rules for the future conduct of the body.

MR. H. C. BACKHOUSE, chemist and druggist, Dundalk, has been re-elected a member of the Harbour Board of that town.

FOR BEAUTIFUL ECCENTRICITY commend us to the Local Government Board, whose auditor has surcharged the Guardians of the Rathkeale Union the sum of £30 expended on medical appliances because the requisition therefor had not been made out in the proper form. The medical officer explained that time did not admit on the occasion to wait for the fortnightly meeting of the Dispensing Committee before ordering the articles, and that had he done so and the patient died in the interim he would have been liable to a criminal prosecution.

THE 'RATHMINES NEWS' is responsible for the statement that a syndicate has been formed for the purpose of starting a new wholesale drug and chemical establishment in Dublin, and that some of the best known and respected members of the trade are interested in the project. Up to the present the flotation has been kept a secret, and this is the first inkling of the matter received by the general body of pharmacists.

IN CONNECTION WITH THE TROUBLE recently in the Listowel Union over the selection of Mrs. English, pharmacist, Mullingar, as drug and medicine contractor to the workhouse, the Local Government Board, finding friendly advice and admonition thrown away, have written a sharp official letter, warning the guardians that if they appoint Mrs. English to be their contractor they must be prepared to abide by the consequences—a dire threat, only appreciated in its full import by those who have had legal experiences with the Local Government Board. The guardians have accepted the situation and have appointed the lady to be their contractor, but *nous allons*.

NEW REMEDIES.

TREATMENT OF PSORIASIS WITH HYDROGEN PEROXIDE.—A successful case is reported by E. Luton, in which a case of psoriasis was cured by washing with 20 per cent. hydrogen peroxide solution. Injections of 1 C.c. of the following mixture was also used and found eminently satisfactory: 10 per cent. sodium phosphate solution, 75 grammes; 20 per cent. peroxide of hydrogen solution, 25 grammes.—*Pharm. Centralh.*, xxxix., after *Les Nouveaux Remèdes*, 118.

PHOSPHOTE—Is the name given by J. Brissouet to a creosote compound which is obtained by the action of one molecule of phosphorus oxychloride on three molecules of creosote in the presence of an alkali. For instance, commercial sodium hydrate, 12, and creosote, 37, are mixed with water, 35, and gradually mixed in the cold with phosphorus oxychloride, 153. The oily product is well washed with water and diluted soda solution and then dried.—*Pharm. Ztg.*, xliii., 346, after *Ztschr. f. angew. Chem.*

AMMONIATED ACETANILIDE POWDER.—Acetanilide, 25; ammonium carbonate, 10; sodium bicarbonate, 5; milk sugar, 60. This hygroscopic powder is said to have a stimulating effect on the heart and circulation instead of the depression produced by acetanilide alone. It is employed in dysmenorrhœa, gastralgia, hyperacidity of stomach, and atonic dyspepsia.—*Zeit. d. allg. oest. Apoth. Ver.*, lii., 328, through *Apoth. Ztg.*

ARGENTAMINE IN OPHTHALMIC PRACTICE.—Hoor has employed argentamine in his clinic almost exclusively for several years in 328 cases of conjunctival diseases. In all cases good results were obtained and the remedy proved superior to silver nitrate, being less irritant, penetrating deeper, and acting more powerfully as an antiseptic. A five per cent. aqueous solution was employed, being painted on the surface or dropped into the eye twice daily. It may, if needed, be applied more frequently. Black stains produced by its use may be removed with potassium iodide.—*Therapist*, vii., 99, after *Wien Med. Woch.*

PHARMACEUTICAL SOCIETY OF IRELAND.

The monthly meeting of the Council was held on Wednesday, the 7th inst., at 67, Lower Mount Street, Dublin, at 3 o'clock. The PRESIDENT, Mr. R. J. Downes, was in the chair, and the other members who attended were the Vice-President (Mr. Beggs), Mr. Grindley (Treasurer), and Messrs. Wells, Kelly, Porter, Bernard, Conyngham, Hayes, and Dr. Walsh.—A letter of apology was read from Professor Tichborne.—The PRESIDENT reported that he attended the Health Congress, which had a very successful series of meetings in Dublin. Amongst the papers read was one by Professor Tichborne on the Food and Drugs Act, which was a matter of considerable interest, especially on account of the reference in the paper to the omission by the Government to provide in the recent Bill for the establishment of Boards of Reference, and the suggestion that there should be boards of administration for local purposes in different sections of the United Kingdom. He (the President) supported the recommendations of the paper. The paper also criticised the Local Government Board for not requiring the preparations of the new Pharmacopœia to be supplied to union workhouses, and it was interesting to be authoritatively informed that that work had been compiled as a book of reference exclusively with regard to the requirements of medical men and analysts, the pharmaceutical chemist being completely ignored. The paper which he (the President) read was very favourably received, and would be printed in the 'Proceedings of the Congress.' Professor Moore, who was in the chair at the sectional meeting at which his paper was read, pronounced it the most important that had been read in the section, and at once moved the adoption of the recommendations which it contained; the motion was seconded by Professor Thrift, and the recommendations were afterwards adopted at the final general meeting of the Congress, and would go forward with the weight of its approval to the Lord Chancellor of England and the Chief Secretary for Ireland, and would, he hoped, have some influence upon future legislation. The discussions on both papers were fully reported in the *Pharmaceutical Journal* and *British and Colonial Druggist*.—Mr. GRINDLEY moved that the paper read by the President at the Health Congress be inserted in the minutes.—Mr. WELLS seconded the motion.—Mr. CONYNGHAM thought that the motion should also apply to the paper read by Professor Tichborne at the Congress.—Mr. HAYES: Is it not unusual to enter papers read at other places on the minutes of the Council? Mr. WELLS: The President's paper was read at the request of the Council and on behalf of the Society.—Mr. HAYES said he did not mean in the slightest degree to undervalue the paper.—Mr. BERNARD: Would it not meet the difficulty to attach a copy of the paper to the minutes?—Mr. WELLS said that was what would be done.—Mr. KELLY, as having been present, referred to the favourable manner in which the President's paper was received by Professor Moore.—The motion was then put and unanimously agreed to.

BRITISH PHARMACEUTICAL CONFERENCE.

—The VICE-PRESIDENT reported on behalf of the delegates to the British Pharmaceutical Conference. The Council were well represented by Messrs. Conyngham, Wells, Kelly, Dr. Walsh, O'Connor, Johnston, and Montgomery. They were very well treated and had a most enjoyable time; and as far as he could see the relations between the members of the Conference were harmony itself. All seemed to take a deep interest in the papers that were read, and the lecture halls were well attended every morning.—Mr. CONYNGHAM: I think the papers were above the average in point of merit.—Mr. WELLS said very good papers were contributed by Mr. Kelly and Mr. Doran, and the pharmaceutical papers were put off to the end in order that the discussions upon them might be as full as possible.—The PRESIDENT said he had received the following letter, which he thought should be read to the Council:—

14, Hardman Street, Liverpool,
September 1, 1898.

Dear Sir,—I regret that we had not the pleasure of your company at Belfast during the Conference week, but no doubt you will have gathered that the meeting was a most successful and pleasant one. I have requested Messrs. Lafayette and Co. to send addressed to you a photograph of the Conference group, and trust it will be the pleasure of your Council to accept the same from me as a memento of the recent meeting in Ireland, and of the courtesy shown to us on that occasion.

Believe me,
Dear sir,
Faithfully yours,

R. J. Downes, Esq.

CHARLES SYMES.

He (the President) wrote in reply to Dr. Symes, saying that he should have great pleasure in placing his letter and the photograph before the Council, by whom he was certain that they would be received and acknowledged with thanks.—Mr. CONYNGHAM moved that the photograph be received, and that the best thanks of the Council be returned to Dr. Symes.—The VICE-PRESIDENT seconded the motion, which was unanimously agreed to.

PHOTOGRAPHS OF PAST PRESIDENTS.

Mr. BERNARD said that some time since a wish was expressed by members of the Council to have photographs of former Presidents of the Society; and in consequence he wrote to Lady Martin, who was a daughter of the late Sir Dominic Corrigan, Bart., and she had been kind enough to present to the Council the fine engraving of the first President of the Society which the members had now before them. He had great pleasure in moving that the best thanks of the Council be tendered to Lady Martin for the engraving and that it be suitably framed.—The VICE-PRESIDENT seconded the motion, which was unanimously agreed to.—The PRESIDENT remarked that they had only a sketch likeness of Dr. Aquila Smith, another of their Presidents. He thought the collection of portraits should include their first treasurer, Mr. Hodgson.—The VICE-PRESIDENT: Certainly. He took the deepest interest in the Society from the very first.

CERTIFICATES.

A letter from Mr. Richard Hobson, of London, asked the Council to accept certificates of a six months' course of lectures attended by him in the Westminster College of Chemistry and Pharmacy. The writer stated that he had only recently become aware that that college was not one of the institutions whose certificates were recognised by the Society; and he added that its certificates were accepted by the Pharmaceutical Society of Great Britain, the College of Surgeons, and other examining bodies in England.—The PRESIDENT: We have never granted applications of this sort. We have only granted applications for recognition made on the part of the school itself.—Mr. WELLS: I think that college applied to us, and we would not put it on the list.—VICE-PRESIDENT: Have we not passed a resolution that we will not increase the number of schools whose certificates we recognise?—Mr. HAYES said that applications like the present on the part of individuals had been granted before. What did the bye-law say?—Mr. WELLS: We may add any school we like.—Mr. HAYES: But can we not recognise an application unless the school has been added?—Mr. WELLS: No.—Mr. HAYES said the Westminster College was one of the best schools in England.—Mr. CONYNGHAM: We should not be bound by too strict a law in the matter. We are here for the advantage of the public and of students.—Mr. WELLS: The answer to that is that we have in past times put schools on our list that afterwards turned out not to be up to our standard, and we have no control over any of the schools that we recognise.—The PRESIDENT: I do not think we should accede to an application of this sort from an individual.—The application was refused.—A letter from Dr. David Huey submitted a certificate from the Apothecaries' Hall, and asked that he should be registered as a pharmaceutical chemist.—The application was refused, the Council holding that the applicant's qualification was insufficient.

DONATIONS OF BOOKS.

Donations were received from Mr. W. Martindale, of a copy of the 'Extra Pharmacopœia,' and from the United States Department of Agriculture of a copy of a Bulletin on the Principal Poisonous Plants of the United States.—On the motion of Mr. GRINDLEY, seconded by Mr. WELLS, thanks were voted to the donors.

ELECTION OF EXAMINERS.

On the motion of the VICE-PRESIDENT, seconded by Mr. WELLS, Dr. M. R. WHITLA was re-elected Examiner for the Practical Pharmacy Division of the Licence Examination.—An election was held of an Examiner to conduct the Pharmaceutical and General Chemistry Division of the Licence Examination. There were ten candidates.—On the motion of Dr. WALSH, seconded by Mr. CONYNGHAM, Mr. A. Forbes Watson, B.Sc., of Westmoreland Street, Dublin, was elected.—The PRESIDENT then brought forward a series of resolutions for the purpose of

AMENDING THE REGULATIONS RELATING TO THE ANNUAL MEETING,

with the result, after a short discussion, that the following

amendments were agreed to. The concluding sentence of Regulation 4 relating to the voting papers now reads:—

Each paper is to contain the names of the outgoing members of Council eligible for re-election and of those nominated under Regulation 9.

To Regulation 5 there has been added:—

Should a voter initial more than seven names his paper shall be cancelled. The Scrutineers of the ballot shall be two members of the Council nominated at the September meeting, with the President or Vice-President and the proposer or seconder of each new candidate. They shall meet at twelve o'clock on the day of the annual meeting to count the votes and deliver to the Registrar a record of the voting. The names of the elected shall be declared by the President at the annual meeting.

TIME OF EXAMINATIONS.

—The PRESIDENT moved a resolution standing in the name of Professor Tichborne that in future all the examinations should commence at 10 o'clock a.m.—Mr. WELLS thought it would be a hardship to oblige candidates to come up from the country the night before the first day of examination.—Mr. HAYES was of a similar opinion.—The proposal was not pressed.—A motion of the PRESIDENT to alter the hour for commencing the Preliminary examination fell through, not being seconded.

ELECTION OF MEMBERS AND ASSOCIATES.

—On the motion of Mr. GRINDLEY, seconded by Mr. WELLS, the following were elected members of the Society:—Mr. John Armstedt Ray, Rathgar, Dublin; and Mr. John Marlborough Whelan, Galway.—The following were nominated for membership:—Mr. James B. Bolger, Maryborough; Mr. John Cope-thorne, Skibbereen; Mr. William J. Savage, Newry; Mr. J. C. Payne, Belfast; and Mr. H. R. Rutherford, Ballybay.—On the motion of Mr. GRINDLEY, seconded by Mr. WELLS, the following were elected associate druggists:—Mr. Thomas Dunning, Kille-naule; and Mr. James Moughty, Ballinacargy.—The Council then adjourned.

EXTRACTS FROM CONSULAR REPORTS.

THE CHEMICAL PRODUCTS imported into St. Petersburg during 1897, owing to the development of native production, were supplied in considerably diminished quantities, the value in 1896 being £1,483,000, whereas in the following year the import only realised £1,352,000, a reduction of £131,000. The importation of such articles as sulphuric acid and soda, classified under the above heading, however, was greater than in 1896. The recent abolition of customs duties on chemical products and various agricultural implements, Consul-General Michell thinks, should result in a larger importation of these articles into Russia, and should not be lost sight of by British manufacturers.

THE PEOPLE OF BARBADOS are hoping that the Manjak industry, which is at present in its infancy, may tend to help the island out of its industrial troubles. "Manjak" is a bituminous substance, and is a species of asphalt. It varies in quality, being sold to local agents at from £3 10s. to £7 10s. per ton. The less valuable kinds of manjak are used for insulating purposes, but the superior qualities are said to be chiefly used for varnish. The export has risen from 878 tons in 1896, to 1880 tons in 1897, and it is hoped that in the future manjak may become an important item of export, and provide fresh employment to the overflowing population of the island.

THE STOCK OF OLIVE OIL at Gallipoli on June 30, 1897, was 3750 Imperial tuns, while on the same date this year it stood at 1800 Imperial tuns. The price per gallon of oil of the first quality on the first-named date is stated to have been £31 10s., and on June 30, 1898, £35 15s.

THE SULPHUR INDUSTRY at the Oliveto Citra mines, in the province of Salerno, Italy, has suffered greatly of late years owing to the use of explosives other than gunpowder, but recently there has been a boom in this mineral owing to its use in making chemical wood-pulp for paper-mills. The boom has inspired confidence in the owners of the mines, and they consider themselves justified in inviting foreign capital to extend their undertaking. The large amount of sulphur used in the immediate and surrounding country for agricultural purposes forms in itself a considerable

local market for the company's output. The chemical analysis of samples from the mines give from 60 to 75 per cent. of pure sulphur, which has been found to be very easily reducible to an impalpable powder.

BRITISH MEDICAL MEN and other foreign practitioners are evidently not wanted by the authorities in Italy. The Italian law states that "Foreign physicians and surgeons with diplomas of any university or foreign medical school have the right to exercise their profession among all foreigners inhabiting the kingdom without even having to register their titles in the municipal office where they reside, but they must exhibit their diplomas when required to do so by the local authorities." Thus a British medical man may attend strangers residing in or visiting Italy, but may not attend Italians unless he chooses to qualify as an Italian doctor. The delegates of the Italian medical associations at their meeting in Rome passed resolutions to the effect (1) That all foreign medical men who desire to practise in Italy must undergo all the examinations required by the present University regulations from the students of the Medico-Chirurgical Faculty by which they acquire the diploma for practice. (2) That a strict revision of the individual diploma of the present foreign medical practitioners be made, and efficacious oversight be kept over them to see that they do not practise, except among their own countrymen.

AS CONSUL NEVILLE-ROLFE points out, if these resolutions ever become law British medical practitioners must acquire sufficient knowledge of Italian to pass the medical and surgical examinations, which is no easy matter. Then the words "among his own countrymen" would narrow a man's practice down to a much lower level than the existing Act, which allows him to practise with the subjects or citizens of all the powers except Italy. The same delegates, when at Rome, also stated that there are 1500 foreign medical men practising in Italy. This, according to the British Consul, is an absurd figure, for, assuming that there are ten nationalities represented, and that all of them had as many representatives practising in Italy as Great Britain, viz., 29 (which is notoriously not the case), they would then only amount to 290.

ANOTHER MEDICAL GRIEVANCE in Italy is the way in which British doctors are assessed for income tax. A case recently came before the British Consulate, where the Syndic of a small neighbouring town, himself a doctor, caused his British colleague to receive a demand note for 230 lire for income tax. The Britisher lives in an hotel in the town and picks up an occasional fee, but it is predicated that his professional income cannot be sufficient to meet his expenses, which must be provided for out of his private means, which are not liable to the Italian income tax. His only resource is to pay and appeal, when, if an abatement is obtained, its amount will be swallowed up in costs, and the Syndic will triumph over his colleague, whom he looks upon as a poacher on his preserves.

ORANGES AND ESSENTIAL OIL, owing to the frost which greatly damaged the orange produce of Florida and to the scanty crop in Spain in 1897, commands the highest price ever known at Reggio, Italy, especially the orange fruit, which reached £3 per 1000 fruit, while the essential oil was sold at 6s. 6d. per lb. Olive oil sold at £5 5s. per 100 kilos., as against £3 10s. for the same quantity sold the previous year.

THE SPONGE FISHERIES at Castellamare were so fortunate during the year 1897, and were able to pay so good a dividend, that next season the number of fishing boats will be nearly doubled.

RUSSIAN VITICULTURISTS, farmers, fruit-growers and sugar beet-root growers have lately been giving special attention to the benefits accruing from the use of Chilian nitrate of soda. The newspapers in both North and South Russia have published articles on the subject, while an active propaganda by means of circulars and pamphlets is reported to be spreading throughout the country. According to the report of Acting-Consul General Mackie, orders in the rapidly-growing trade in nitrates are going almost exclusively to Germany, where Russians find they can buy on three or six months' credit as cheaply as they can from England upon cash against bills of lading, otherwise the Russians prefer to do business with English firms.

LETTERS TO THE EDITOR.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

THE BRITISH PHARMACOPEIA, 1898.

Sir,—In perusing the new B.P., I observed the following apparent omissions and errors.

1. It is not stated under acid. lactic. and acid. phosph. concent. that the percentage strength is "by weight." This is expressly done in the case of every other acid, both strong and diluted.

2. Creosote is stated to be "freely soluble in . . . glycerin," and to "rotate the plane of a ray of polarised light to the left." These are directly the reverse of its previous "characters."

3. Liq. Calcis Sacch. In this preparation the calc. hydroxide is not directed to be washed and consequently the presence of chlorides is disregarded.

Now that the sugar is used in solution the washing of the hydroxide would bring the two liquors into line as regards purity. Why chlorides are objectionable in liquor calcis and not in liquor calcis sacch. seems an anomaly.

4. Potass. Sulphas. Under "tests" it says "It should yield no characteristic reaction with the tests for . . . chlorides or nitrates, and only the slightest reactions with the tests for chlorides." The first "chlorides" should be carbonates, I think, as under sod. sulphas, where the tests are practically the same.

5. Tr. Pruni Virg.—If this tincture is to be 1 in 5 no allowance has been made for the condensation of the water and alcohol, as has been done in every case (except tr. quin. amm.), where a condensed menstruum is not ordered.

I only observed one typographical omission. It occurs in the description of capsicum. As a literary production the 1898 Pharmacopœia is a distinct advance on that of 1885, which was teeming with errors and omissions.

Glasgow, September 8, 1898.

THOMAS DUNLOP.

THE VARNISH FOR PILULA PHOSPHORI, B.P., 1898.

Sir,—Under the head of "Pilula Phosphori, B.P., 1898," we are instructed to varnish the resulting pills, but in no place in the book is there mentioned what kind of varnish should be used. This is an important omission, for a common pill varnish which is much used by dispensers is made by dissolving sandarac or spent-tolu balsam (residue after making the syrupus toltanus) in ether, and I have seen repeated failures to obtain good-looking pills when this solution has been used. It exercises a solvent action upon them and is very penetrating. Would it not have been better to have stated that a varnish made with an alcohol solvent should be used? When covered with a suitable varnish I believe that these pills are to be preferred to those which are covered with "plaster."

Birmingham, September 12, 1898.

F. H. ALCOCK.

BITARTRATE OF POTASSIUM AND THE B.P., 1898.

Sir,—The molecular weight of bitartrate of potassium is 186.75 (calculating from the 1898 B.P. atomic weights). The B.P. says: "Each gramme of the dry salt should require for neutralisation at least 5.2 cubic centimetres of the volumetric solution of sodium hydroxide." ∴ $186.75 \times 5.2 = 97.11$ per cent. bitartrate of potassium, and yet, in the same paragraph, this figure is contradicted, as follows: "The total amount of impurities should not exceed $2\frac{1}{2}$ per cent. of the dried salt." We therefore have two limits allowed by the 1898 B.P., 97.11 per cent. and 97.5 per cent., differing by 0.39 per cent., and the question arises which of these is to be taken as the correct limit?

Liverpool, September 10, 1898.

EDWIN DOWZARD.

OBITUARY.

BURGESS.—On September 9, James Stanley Burgess, Chemist and Druggist, Salford. Aged 52.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Colloidal Gold.

By reducing a faintly alkaline solution of a gold salt with formaldehyde solution, and then submitting it to dialysis, Zzigmody has succeeded in obtaining gold in a colloidal condition. It is soluble in water, forming a ruby-red solution which leaves a brilliant residue of gold on evaporation. The metal is precipitated on the addition of sodium chloride, and is deposited on the positive pole on submitting the liquid to electrolysis.—*Chem. Zeit.*, xii., 332.

By condensing with dimethylaniline the ethylal or methylal produced on oxidising methyl alcohol mixtures of ethylic or methylic alcohols with potassium bichromate and sulphuric acid.

A. Trillat obtains from the latter tetra-methyl-diamido-diphenylmethane, which, on oxidation, gives a persistent blue colour, becoming more intense on warming. Ethylic alcohol gives a body which, under like conditions, gives a blue colour that is fugitive on warming. The detection of methyl alcohol in spirit, based on these reactions, is conducted as follows: Twenty C.c. of the alcohol are mixed in a flask with 300 C.c. of distilled water and 30 Gm. of potassium dichromate. When cold 100 Gm. of 20 per cent. sulphuric acid are added, and the mixture, after standing for an hour, is distilled, the first fraction being rejected. The distillate is exactly neutralised with soda, and again distilled almost to dryness. The distillate is diluted to 400 C.c.; 100 C.c. of this is taken and introduced into a small flask with 2 C.c. of pure dimethyl-aniline and 1 C.c. of 10 per cent. sulphuric acid. The flask is hermetically sealed and heated on the water bath to 65° to 70° C. for five hours. The liquid is then made alkaline and excess of dimethyl-aniline driven off with a current of steam. A small portion of the liquid is then acidulated with acetic acid and oxidised by means of lead dioxide suspended in water.—*Comptes rendus*, cxxvii., 234.

Bacteria and Dust.

Ncisser has lately published the results of an interesting research on the dispersing of pathogenic organisms by means of minute currents of air below that of a sensible current. He finds that the bacilli of diphtheria, typhoid, plague, cholera, and pneumonia are incapable of being carried as atmospheric dust. *Staphylococcus pyogenes aureus*, and *B. pyogenes*, *B. anthracis*, *B. tuberculosis*, are, however, capable of being so conveyed. These results have an important bearing on the question of efficient disinfection.—*Journ. State Med.*, vi. 310, and 330.

Iron in Plants.

Some years ago Molisch showed that the prevailing opinion that iron was an essential constituent of chlorophyll was incorrect, and Stoklasa later demonstrated that iron is not present in chloro-lecithin. The latter investigator now finds that the metal exists in the plants in the form of an organic compound, which possesses similar properties and constituents to the hæmatogen of animals, as isolated by Bunge. It is, however, richer in iron than that body. Originally it is chiefly stored up in the embryo or endosperm. During germination it is drawn upon to form the nucleus of the cells of the young organs; after this the plant procures it from its environment, and if it be deprived of the metal it dies. In those plants grown in a medium free from iron no vegetable hæmatogen can be detected. The

presence of iron in the nutritive pabulum is as essential to the chlorophyll-free fungi as to highly developed plants, and is, like phosphorus, an essential constituent of the cellular nucleus.—*Comptes rendus*, cxxvii., 232.

Therapeutic Activity of Ergot.

E. M. Houghton states in the course of a communication to the Michigan State Medical Society on a proprietary preparation of ergot, "ergot aseptic," that much of the ergot of commerce is deficient in active principles. He confirms the statement of Kobert and Gruenfeld that the most satisfactory test of the activity of the drug is that obtained by means of feeding fowls with it. When the drug is active, a very marked darkening of the combs and wattles is produced in fowls thus fed, and ultimately gangrene and sloughing off of these parts result. By this test the author finds that from 50 to 75 per cent. of the drug or its preparations are unfit for medicinal use. During the past three years he has examined several hundred samples by this method, and has rejected as more or less inert those representing in the aggregate two thousand pounds of the drug.—*Therapeut. Gazette* [3], xiv., 433.

M. de Toledo advocates this simple method of preparing bougies without the use of a urethral mould. The drug, iodoform for example, is massed in the ordinary way with powdered gum acacia and honey, to form a stiff mass,

which is weighed out into 1 gramme pieces and then rolled out into pointed cylinders on the pill machine in the ordinary way. In the meanwhile equal parts of white wax and cacao butter are melted together in a test tube; the bougies are impaled on a needle, plunged into the melted wax and withdrawn, finally cooled on a plate. The result is a bougie of firm consistence which is easy to use.—*L'Union Pharm.*, xxxix., 337.

Tunisian Beeswax.

From the results obtained from the examination of a large number of specimens of genuine Tunisian beeswax, Bertainchand and Marcille (*Bullet. de la Direction de l'Agricult. et du Commerce de la Régence*) find that this product gives analytical figures which show considerable divergence from the accepted standards for English and French beeswax, both in the free acid number and ester number and the iodine absorption. In thirty-three samples examined the lowest and highest figures obtained in each of these critical tests were: Free acid number, 17.4 to 20.6; ester number, 69.7 to 70.5; iodine absorption index, 6.7 to 17.12. The lowest melting point was 61° C., the highest 64° C.; in specific gravity the specimens ranged from 0.9685 to 0.972. From these data the waxes, although perfectly pure, would be regarded as adulterated if judged by the accepted standards.—*Moniteur Scient.* [4], xii., 533.

Iodo-Spongine.

Harnack finds that iodine occurs in common sponges in the form of an albuminous compound, the yield being 1.5 to 1.6 per cent. Iodo-spongine is obtained by macerating sponge for eight days in a 38 per cent. sulphuric acid in the cold. After this time the sponge is entirely disintegrated, leaving only a pulverulent residue. This is dissolved in soda solution, and precipitated with acid. It is then dissolved in ammonia, again precipitated by saturation with ammonia sulphate. The precipitate is purified by dialysis. Iodo-spongine is a light powder turning brownish black in the air. It is insoluble in water, sparingly soluble in alcohol, but readily dissolved by alkalis and ammonia, from which solutions it may be reprecipitated by acids and ammonium sulphate.—*Pharm. centr.*, xxxix., 451., after *Zeit. f. physiolog. Chem.*, xxiv., 570.

NOTES ON THE PHARMACOPŒIA OF 1898.

BY JOHN MOSS, F.I.C., F.C.S.

I purpose to offer the following observations as suggested for the most part by the discussion at the close of the Belfast Conference, when a tendency to partial views was noticeable, as of the wholesaler, or retailer, or dispenser. The more useful view is that of the pharmacist, which includes all three.

I take a pharmacopœia to be a register of remedies which medical men desire to prescribe. What it is and what it contains besides this, contribute to the realising of the dominant idea which makes such a register necessary—the desire for accuracy and uniformity in the remedies. To secure these two ends, the formulæ and instructions, the characters and tests are given; so that wherever the Pharmacopœia has its course medical men may obtain or prescribe and dispensers shall compound, remedies of the same nature, strength and appearance, under the same name. The most highly developed and specialised pharmacopœia, that which is simplest and most efficient for its purposes as a register, is the one which excludes most effectively all matters not essential to secure this end of uniformity. The pharmacopœia which best corresponds to this description is our own—the British Pharmacopœia—and we need not share the regret sometimes expressed that this volume does not more closely resemble certain others which, monuments of industry and erudition though they are, extend far beyond the lines of the above definition, and include matters which are more properly treated of in the text-books.

It is solely the prerogative of the medical man to say what remedies shall or shall not be included in the Pharmacopœia. Until recent years it would be admitted also that his instructions for the preparation of such remedies as require manipulation should be final, because previous to that time he was a better pharmacist than the druggist of the day. *De facto* his instructions are final now, but he recognises that the druggist has developed into the pharmacist, thanks to the fostering care of the Pharmaceutical Society, and he is ready to acknowledge the skill of the pharmacist as chemist, or botanist, or commercial man, and to take advantage of it in perfecting his Pharmacopœia. He admits the pharmacist to be his superior in devising new processes and improving existing ones; an admission which concedes the power and the right to criticise his own work in the past. He has not yet reached the point in this country of regarding and working with the pharmacist as *collaborateur*, but graciously condescends to accept, utilise, and acknowledge his services as those of an unpaid assistant. There is reason to hope that the relative position of medical man and pharmacist will be altered before the next British Pharmacopœia is issued, by such an arrangement as will give the latter an equal standing with the former, so far as his special work is concerned. The presenting of this claim firmly and respectfully is due to himself and the nation, and when conceded a national medicine book will be produced which shall have the authority of perfection, as well as of position.

Though the pharmacist may not say that a certain medicine shall be in the Pharmacopœia, it is quite proper for him to express a desire that instructions may be furnished for a remedy in general use, for which otherwise no recognised standard exists. That the book would be made more bulky is not to the point; compound syrup of the hypophosphites is very largely used, and that something worse than inconvenience has not resulted from the want of a standard is due to the loyalty of pharmacists to the formula published by their own Conference. Further, the pharmacist has exceptional facilities for acquiring information as to what remedies are most used in his own district, and what others have fallen into desuetude.

A pharmacopœia should be printed and issued before it acquires the force of law—say three or six months—so that medical men and pharmacists may become acquainted with its contents. That pharmacists should be liable to prosecution the very day the British Pharmacopœia is published, because they have not changed their stocks in conformity with it, is an intolerable absurdity. That it should be possible for those who are bound by it to discuss the date when it becomes operative, and each decide on a different one, is childishly absurd. If the above suggestions were adopted no temptations would remain to try the weakness of trade members of a pharmacopœia committee. The march of medicine and surgery calls for more frequent revision than sufficed formerly, and ten years hence would seem to be quite long enough to wait for the next volume.

Mr. Lloyd Howard's plea that greater consideration for the manufacturing chemist should be shown in the Pharmacopœia was as entertaining as his general remarks were interesting and instructive. If any producer has been too indulgently considered in the past it is the maker of Rochelle salt, Epsom salts, quinine, and camphor. Substances manufactured on a large scale, especially if they have an important use outside medicine, have in the past been taken by the Pharmacopœia constructors as found in commerce, and such characters and tests as applied have been attached to them. But there are several instances of manufacturers having been worked up to a higher standard of excellence by a pharmacopœia, just as there are instances known to Mr. Howard of chemical manufactures such as will satisfy any pharmacopœial requirements. Perhaps Mr. Howard, though, was generously pleading for those not so well placed as his own firm.

Mr. Martindale's remarks on "limits of adulteration" are contrary to the general sense of the community, which demands that though natural products (he instanced milk) may vary, the variation shall be natural and within reasonable and narrow limits. "Limits of adulteration" is thus seen to be a phrase which the impracticable purist uses to prejudice honest production, as was well shown in anticipation by Mr. Lloyd Howard.

The Pharmacopœial directions to evaporate extract of cascara "to dryness" are indefinite, and have given rise to question and debate. They should be supplemented by the words "and reduce to powder." A hard dry extract has inconveniences which do not pertain to the powder.

Liquid extract of cascara, or rather the new process for it, has been fortunate enough to secure unstinted and general approval. I see no reason for disagreeing with this, notwithstanding Mr. Martindale, who, while prominently associating my name with it, furnishes an exception and stands crying in the wilderness, with unheeded reiteration, that the preparation is not a good one. No man hearkens to his voice. If an alternative formula has been suggested, the approval and choice of the Committee have been withheld therefrom. We may pass the assumption contained in his words "a drug which depended for a good deal of its activity on its resinous matter," and consider the further one involved by the recommendation "should have a better solvent than distilled water as a vehicle for exhausting it." Is there a better solvent than distilled water? Mr. Martindale would prefer 20 per cent. alcohol, but where is his evidence that it is a better solvent? This is a matter of observation, not of preference or of opinion, and Mr. Martindale can easily satisfy himself of what I stated many years ago that water will completely exhaust cascara. Mr. Bird supported this the other day. After having exhausted over one hundred tons of cascara, I can confirm previous observations, by again saying that "after the bark is exhausted with cold water proof spirit will remove nothing more from it." Cold water will, there-

fore, remove everything that proof (or a weaker) spirit will remove. A spirituous menstruum, whether strong or weak, will remove nothing from cascara after exhaustion with water. Let Mr. Martindale try this and he will agree with me that liquid extract of cascara prepared by the present B.P. process realises the definition, "bark minus woody fibre," a phrase which the late Mr. Schacht made use of to describe the desideratum in the preparation of ext. cinchonæ liq.

In the very next observation (reported *P.J.*, August 20, p. 235), Mr. Martindale is delightfully inconsistent. He is meeting the complaint that in preparing liquid extract of belladonna the root is not fully exhausted. He demands what is the use of exhausting any drug when the game is not worth the candle? (Another assumption, by the way.) According to him, it is so absolutely essential that cascara should be exhausted that the solvent now used (which does exhaust it) should be replaced by a better solvent, whilst belladonna (a poisonous drug) is so unimportant that it does not matter about exhausting it.

I appear to have been very fortunate in my experience with liquid extract of liquorice. I know of no instance in which this preparation of the B.P., 1885, has in any way gone wrong, either at home or when exported, so that the increase in spirit seems unnecessary.

After having exhausted a very fair quantity of ipecac. root, I have no hesitation in saying that the strength of alkaloid required corresponds very closely with a pound of drug to a pound of liquid extract. Just before the Conference meeting, a seron of root was converted into extract. In the test room this gave 0.417 gramme of alkaloid from 20 C.c., or 2.085 grammes in 100 C.c.; re-solution and again shaking out with chloroform caused no difference. This is within the limits permitted by the Pharmacopœia. (By the way, would Mr. Martindale call these "limits of adulteration"? and can he shirk his responsibility for the Pharmacopœia permission?) Having compared the B.P. process for testing ipecac., and the excellent modification of the same by Mr. Harold Wilson published in your pages, I may say that I greatly prefer the latter. It yields the alkaloids in a more pure condition, with greater accuracy and expedition.

PHOTO-MICROGRAPHY.—VII.

(Continued from page 330)

BY EDMUND J. SPITTA, L.R.C.P. LOND., M.R.C.S. ENG., F.R.A.S.

Whilst the negative is fixing let us go back to the consideration of the plate which, we will suppose, was over-exposed, lying in the developer to which we have added the extra bromide. It has been soaking, we will presume, all the while. The developer is rocked to and fro until we begin to find the back of the plate turning slightly grey, the front of it having long ago turned black. At this juncture development must be stopped and the negative washed, or it may become so dense that the gas flame cannot be seen through it when taken out of the "hypo."

Great judgment is required to know how long to let the plate soak in this highly restrained developer, and it is not at all impossible the tyro will find his patience very severely taxed before learning how to save a plate having received too long an exposure, and it is an art to do this well in extreme cases. All negatives should be left in the hypo some little time—say five minutes—after the last trace of yellowness has vanished. Let us now examine our negative in front of a gas flame with a piece of ground glass interposed between the two—the flame and the negative. If the exposure and development have been correct the proboscis should be very clearly shown upon a black background, and if the focussing has been perfectly carried out, the

little hairs protruding from the lobes of the organ should be quite plainly seen sharply defined; so, too, ought the edges of the suctorial tubes, as well as the small hairs when looked at through the focussing glass, applied, of course, to the back of the negative. It should be noted that as the proboscis itself is not absolutely flat it is impossible for the whole of the object to be absolutely in one and the same focus. Should, however, the negative appear choked and the clear portions of glass between the rings of the suctorial tubes overcast with shadow—blotted out, in fact—and the background so pitch dark that the gas flame can scarcely be seen through it, we know that one of two things has taken place, either we have over-exposed our plate or else we have over-developed it—perhaps both. One other alternative may possibly be seen, a faint or perhaps a fairly defined image of the proboscis, visible upon a background far too transparent. This is a common fault and it occurs most frequently to those commencing. It produces a positive with a muddy background superimposed, upon which lies the image of the proboscis faintly and sickly defined. This arises from under-exposure, and nothing I know of will cure it save taking another picture.

Supposing we wish to save a picture which is overcast and evidently over-exposed or developed, we may do so in a great measure by allowing it to dry after washing a couple of hours in water, to rid it of its hypo, and then again placing it in water for a few minutes while we are preparing the thinning solution. Of these there are many, and each photographer may be said to have his pet formula; the one I prefer at this stage is that adopted by most photographers in the trade. It is simple enough to make, and efficacious to use, but, seeing it is desperately poisonous, must be handled with extreme care, and the operator must be provided with an indiarubber finger-stall for any finger with a hang-nail or open scratch. To make the solution one proceeds as follows: Place one or two pieces, about the size of a very small marble, of cyanide of potassium in about 1 oz. of water in a measure, and when dissolved or nearly so, add 20 or 30 drops of a very concentrated solution of iodine in spirits of wine. The brown solution of the iodine instantly disappears as it is added to the cyanide. The iodine solution must be very strong, at least three or four times that of the liq. iodi of the British Pharmacopœia. Having stirred well with a stirrer, the quarter-plate negative is placed in a half-plate dish, in which enough water has been added to just cover the plate. A fresh measure is then taken, the water out of the dish emptied into it and about a teaspoonful of the cyanide cum iodi solution added. The newly mixed solution is then poured over the plate as it lies in the half-plate dish and the effect carefully watched. If too strong the thinning will proceed at an alarming rate, and the negative must be taken out and washed in water or it will be completely destroyed. It is therefore well to proceed with some caution, adding but little of the cyanide solution at first until the learner has acquired a little experience. Directly it is lifted out, and before looked at, the plate should be rinsed very freely in water, for if not, streaks will be immediately formed where the fluid runs down the gelatin, which cannot possibly be removed. This precaution should certainly not be forgotten. After thorough rinsing hold it up to the light with the ground glass between it and the flame, and let the operator make up his mind whether he thinks it sufficiently thinned or not. If not, the process must be renewed; if sufficiently reduced return it to the sink, where it should have at least one or two hours' good washing, besides a gentle rubbing over the surface of the film as it lies under water with a piece of cotton wool. It is not a little curious that stains may arise which hopelessly spoil the final result at this stage if the washing be neglected, and therefore,

the operator is cautioned not to leave this portion of the treatment to chance.

If the photographer elects to thin the negative before the washing after fixing—that is to say, directly he has taken the plate out of the hypo bath—he may proceed as follows: The quarter-plate negative is placed in a half-plate dish and covered with water; this is returned to a measure, to which is added about a tablespoonful of the concentrated solution of hypo already mentioned and about a drachm of a solution of ferricyanide of potassium (150 grains to 20 ounces of water). When mixed thoroughly this solution is flooded over the negative, taking care not to pour it all over one portion of the same, as by so doing it is possible that that portion so treated will be more thinned than the rest. After a few seconds the film will appear more transparent, and if this process proceeds too rapidly the solution should be diluted with an equal bulk of water. Let the operator, until he gains experience, be careful to rinse the negative under the tap each time before he holds it up to examine it before the gas lamp, lest perchance his solution runs in tears down the negative. If it does this, streaks will be formed down the picture which will hopelessly spoil it. A good washing for two hours is necessary to eliminate the hypo, and let the plate be gently rubbed with cotton wool soaked in water before taking it out to dry.

The negative dried, we wish now to take a print. It is done as follows. Seeing that most of my readers may very possibly conduct their photography at evening time rather than during the day, I will describe first how to take a print on paper which can be exposed—perhaps requiring only half a minute—in front of a gas light. I refer to an excellent paper for all photo-micrographical work, namely, that sold under the name of Eastman's Nikko paper. There is not space here to describe many varieties of bromide paper, but having tried most of them, I have found that ordinary bromide paper gives too coarse a grain, and does not seem able to give the minute details which are readily shown with the Nikko. Taking a piece out of its case (of course in the dark room, one ruby fabric), it is laid face downwards on the negative placed in an ordinary printing frame. Advancing to a naked gas light, with the face of the printing frame resting against the coat, it is placed—the face of the negative—in front of the light at a distance of one foot, moving it in that plane up and down or in a circular motion, so that the bright part of the flame strikes upon all parts of the negative equally. If this be not done, it is very probable that the print will be unequally exposed, and the final result will appear uneven. One point must here be mentioned; it occasionally happens that a very good negative has been obtained so far as applies to the object, perhaps a most difficult diatom, but the light, through some oversight, or perhaps through a small portion of the lime spurting off during exposure, is not equal all over the plate, a most provoking occurrence; but it can, if not too bad, be readily remedied. Whilst exposing the print before the gas it is not difficult to hold a blackened card in such a manner as to shade the thinner part, whilst allowing the denser portion to be exposed. This requires a little practice, more especially to know how much more exposure the denser portion should have. Then, too, the card must not be held still but kept moving over the picture, otherwise a line of demarcation, hard and defined, will inevitably result across it at the junction of the covered and uncovered portions.

Having now exposed our print what we think a sufficient time (with a good negative of a proboscis it will probably only want from twenty to forty seconds), we at once return to the dark room, take out the paper, and immerse it in water, taking care that the whole of the paper is thoroughly covered. After a few

seconds, say about ten, the paper will stretch itself out, and this indicates it is ready for the developer. The water is drained off thoroughly, and the print placed paper side down upon the dish. Equal parts of the hydroquinone and soda developer (about half an ounce of each is sufficient for a quarter-plate print) are then flowed over it. After a few seconds, much quicker than in the case of the negative, a positive image comes into view. The photographer must keep his eye now fixed upon the picture and not let his attention be attracted to anything else. It should be developed till all the details of the image are well out, and then the developer instantly poured off and the picture allowed to drain for a few seconds, say five; in which interval, if he notices, he will detect a grey look coming over the whole print, which he is apt to think will spoil it. This is not so, for after washing well and placing in the hypo, such greyness entirely disappears, leaving a beautifully black and crisp image. Perhaps, on looking at the picture, it may be brown, although it appeared most beautifully black in the dark room. This is mostly due to one fault—over-exposure; remedy, try half the time. If, however, there is still a brownness, although the print is evidently under-exposed, the operator has made some mistake in the mixture of the solutions or has forgotten to shake up the soda solution before using. It may be here stated that this developing solution can be used over and over again on the same evening taking care to add equal parts of soda and hydroquinone to fill up the deficiency which will take place after developing each print. Browning or greying of the print which is properly exposed may sometimes arise from neglecting to keep up the strength of the solutions.

Having washed the print for fifteen to twenty minutes in running water it is thrown upon a piece of polished plate glass prepared as follows: Well wash first with soap and water to clean off all grease or dirt, thoroughly wipe with a clean towel and give as much polish as possible. Take a plug of wool, dip it in powdered French chalk, and rub over the surface of the glass, wiping off the superfluous amount with two or three, not twelve or thirteen, rubs of a handkerchief, rolled into a pad. By this means it will be understood an infinitesimally thin layer of French chalk really remains upon the glass; if too little perhaps the print will finally stick; if too much the thick pieces will leave little dents and ridges on the print. The print being taken out of the water is laid to drain for a few seconds, and then thrown on to the glass, being held gently by the first finger and thumb, a squeegee being passed over the whole, not with heavy pressure, however, or it may injure the delicate surface of the print, but with sufficient pressure to squeeze out the air between the print and the glass. Let the glass be lifted up and looked at in a strong light, No bubbles between the print and the glass should be seen. If there are the print must be squeegeed again; if not, it can be left six hours to dry. In winter it may need ten or twelve; in summer three or four, but no artificial heat of any kind must be employed; if it is, the gelatin surface of the Nikko will assuredly melt, and nothing but hot soap and water will remove it from the glass. When we wish to peel off the print take a knife and raise one edge, pulling the print rather than wrenching it off backwards. If cracked lines appear all over the surface it is because the paper has been bent backwards too much in pulling off. I mention this because it took me some time to find out the cause of the trouble. If it is desired to mount the print on a card it should be smeared over the back whilst wet on the plate with a solution sold by the Eastman Company for the purpose, such purpose being to prevent the moisture of the mounting medium getting through the substance of the paper, which if it does, instantly removes all

the polish. If, however, one is desirous of mounting a print that has not had applied to it the special mounting when wet, we may use a little strong solution of gum arabic, which will suffice for the purpose and answer fairly well.

As regards a suitable board upon which to mount Nikko prints, much depends upon taste, but I have usually found that a grey edging suits them better than a white, inasmuch as the Nikko paper nearly always has a slight tint of pink, although it may be procured absolutely white.

There are several, however, who think the best details that can be obtained from any negative can only be obtained by the use of the old-fashioned so-called "silver print," otherwise known as albumin paper positives. These are easily made but require daylight. The paper can be bought ready sensitised, but if the photographer desires to do this for himself it is easy enough. The best Saxe or Rives paper being procured, it is floated on to a solution of recrystallised nitrate of silver, about 60 grains to the ounce of distilled water. Having floated on this for about three minutes in cold weather, and about double the time in hot, the paper is carefully withdrawn so as to leave no bubbles on the surface, and dried in a dark place. Sensitising must also be done in subdued light. When dry the paper is placed in contact with the negative in the same way as when using Nikko paper, and exposed to diffuse daylight if the negative be a good one full of contrast and not choked in the high lights. If the plate has been over-exposed and is flat, subdued daylight is best, and on the contrary, if over-developed, being choked in all directions, nothing but direct sunlight will get through it, as half of the printing frame back can be lifted without disturbing the other half, so the paper can be examined to see how the print is getting on. It should be always over-printed because the toning and fixing baths, into which it has to be placed, always reduce its intensity considerably.

When sufficiently printed, it is taken into the dark room (one ruby fabric enough) and floated in clean water; after a few seconds the water will become milky. Throw it away, and continue washing until the milkiness has all but departed. The print is then transferred to the toning bath. Of these there are no end, each photographer having his pet formula, many of which are to be found in the text-books. One that is very good for the purpose in hand is made as follows:—

Trichloride of Gold	1 grain.
Chlorineted Lime (Chloride of Lime)	1 grain.
Chalk	$\frac{1}{2}$ teaspoonful.
Water	8 ounces.

If the water be hot, the bath may be used when cold; if not, a day should elapse between mixing and using it. This bath keeps well, but, of course, from time to time the ingredients must be freshly added. Another excellent formula, but which must be used on the day it is made, is as follows:

Borax	100 grains.
Trichloride of gold	1 grain.
Water	10 ounces.

This bath seems to suit the ready-made sensitised papers, to which I have referred, better than those made in the manner already described. Sixteen ounces should tone a whole so-called sheet of paper.

Printing with albuminised paper—although I practised it largely some twenty-five years ago—I have always considered is an art, and many bad prints must be made before the amateur can expect to be perfect at it.

After the print is placed face down in the gold bath it should be turned the other way—face up—moved frequently, and watched. The colour which is rapidly imparted to it should be the same

when the print is looked through as when looked at, for this will show the gold has permeated the film on the paper. Toning completed, another washing of the print is necessary, say, for ten minutes, before placing it in the fixing bath, consisting of "hypo," 4 ounces, to water, 1 pint. Here it must be left for ten to fifteen minutes, or even longer, if the paper be very thick. Another washing—this time for not less than an hour—here follows, and the print is then ready for drying.

As many mistakes are easily made in printing with albuminised paper, and as these articles are to be as instructive as possible, the following hints may be worth recording.

1. When sensitising the paper, if you know you have a weak, thin negative (usually arising from over-exposure and improper development), it is better to have a rather weak solution of silver nitrate, and to print in a feeble light.

2. Do not forget to wash the paper before and after toning, and at least an hour after fixing.

3. Do not try and economise by using a stale solution of hypo; use fresh each time.

4. If your fixing is not a success let it remind you it is a good plan to test your fixing bath before use, to see it is not acid. If so, add a little ammonia until neutrality is obtained.

5. Whenever you tone, wash, or fix your prints see they are kept well moving about and that there are no air-bubbles about.

6. Remember over-toning produces mealiness, and under-toning a reddish (brick-red) appearance.

7. Do not let any toning formula be too cold. Keep it say, always about 60° F. and certainly not lower than 57° F.

Albumin prints cannot be polished in the same way as Nikko paper—at least, not without the use of a special solution: which in my hands is not often a success. If it is desired to polish them they must be enamelled. Solutions are sold for this purpose with full directions.

Printing-out paper may also be used for prints from photomicrographic negative, but they mostly have to be exposed in daylight. Full directions are given with these papers, which are made by several firms. I confess to have a liking for that prepared by Otto Schölzig or by the Ilford Company. There is also an excellent class of paper sold by The Paget Prize Plate Company, called collodio-chloride, but it requires a little careful handling. Full directions are given with each packet.

A NEW COLORIMETRIC METHOD FOR THE DETERMINATION OF PHOSPHORIC ACID.—Jolles and Neurath publish the following method for the colorimetric determination of phosphoric acid. 20 C.c. of the fluid to be examined are diluted to contain no more than 0.001 gramme of phosphoric acid, and mixed with 1 C.c. of molybdic reagent (8 grammes potassium molybdate dissolved in 50 C.c. of water and 50 C.c. nitric acid, s.g. 1.2). Simultaneously, 20 C.c. of distilled water are filled into test tubes of equal calibre and mixed with sodium phosphate solution until the proportion is 0.001, 0.00075, 0.0005 gm., etc., P₂O₅. 1 C.c. of the reagent is now added, and all the test tubes, heated on the water bath to 80° C., after which the colours are compared. The method allows of exact distinction between 0.001, 0.00075, 0.0005, 0.000005, and 0.0000025 gm. P₂O₅. The authors specially recommend the method for the determination of phosphoric acid in human blood, where only a small volume of blood is available, also for the examination of foods containing only a little phosphoric acid, such as wine, beer, milk, and water. The presence of inorganic salts which occur in a natural water have no influence on the colorations, but inorganic salts in water rich in iron, etc., affects the exactness of the method.—*Pharm. Centralh.*, xxxix., 380.

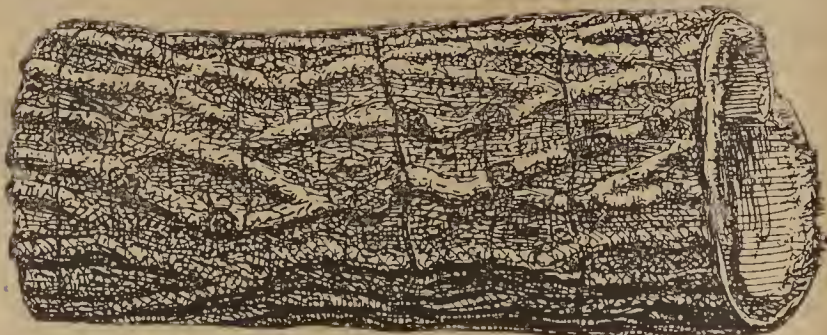
PRACTICAL PHARMACOGRAPHY.

CINCHONÆ RUBRÆ CORTEX.

Red Cinchona Bark.—Quinquina rouge, Fr.—Rothe Chinarinde, Germ.

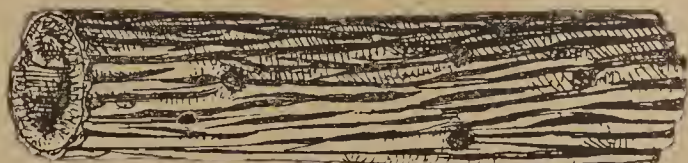
MACROSCOPIC CHARACTERS OF EAST INDIAN CULTIVATED BARK.

The red cinchona bark, which is now the only official kind, consists of the dried bark obtained from cultivated plants. It varies considerably in appearance, according to the part of the tree from which it is obtained. The bark of different varieties of the same species also presents certain distinctive characters.



Cinchonæ Rubræ Cortex.—*Cinchona succirubra*, E.I., Trunk Bark.

There are, however, a few features which may be regarded as fixed in all varieties. These are (1) a more or less abundance of longitudinal wrinkles, due to the comparatively rapid growth and therefore more succulent character of the young bark, which consequently shrinks more in drying than in the other species; (2) the presence of numerous warts or enlarged lenticels which often are more prominent along the ridges; (3) the more astringent taste, and a more quickly developed bitterness than in *C. officinalis* or *C. calisaya*, due to the presence of more cinchotannic acid, and to the more ready solubility in the saliva of the natural cinchonine salt. (4) The red colour of the powder and of the bark itself. The bark from India and Ceylon usually occurs in quills, varying in thickness. Those derived from the branches are thin (about $2\frac{1}{2}$ Mm.), strongly wrinkled longitudinally, and have very small but often numerous warts, and are often strongly inrolled. Those from the trunk are thicker (up to 6 Mm.), with fewer ridges, more prominent warts, and have often the thalli of lichens developed here and



Cinchonæ Rubræ Cortex.—*Cinchona succirubra*, E.I., Branch Bark.

there, these being nearly absent in the small branch quills. The Jamaica red cinchona bark is apparently largely derived from the variety *subpubescens*, and differs considerably in appearance from the East Indian kind in the very few warts present in the few longitudinal ridges and in the great number of small transverse cracks present in it. These are usually few in the East Indian bark, but are always present more or less in nearly all cinchona barks, except those of the *C. lancifolia* group, in which the outer layer is spongy and more or less silvery. But the taste and colour of the substance of the Jamaica bark renders it possible to recognise it as a red bark. It should be noticed also that the transverse cracks present have scarcely raised edges, so that the bark does not give the sensation of roughness that is experienced when the finger is run over the surface of the bark of *C. officinalis*, in which the cracks have

thickened and more or less raised edges. The red cinchona bark in chips now largely imported and obtained by the use of a spoke-shave naturally do not present macroscopic characters for recognition, except such as are afforded by the red colour and astringent and quickly bitter taste. The mossed red cinchona bark is now rarely imported. It has a darker or almost blackish tint between the ridges and presents no trace of lichen thallus. The renewed bark is similar in size, *i.e.*, usually about the thickness of



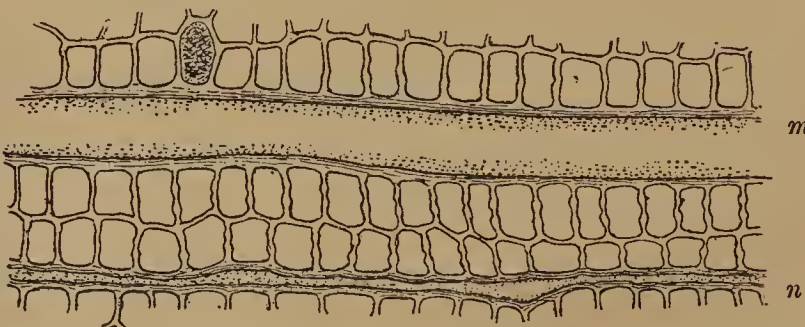
Cinchonæ Rubræ Cortex.—*Cinchona succirubra*, Jamaica Trunk Bark.

the little finger, but has a browner-red tint and is usually furnished with thicker ridges and better developed warts than the natural bark. Although bark of medium size is generally considered the best for pharmaceutical purposes, the different varieties in cultivation vary much in alkaloidal value,* so that the only safe guide to their agreement with the B.P. standard must depend on the analysis. Thus the hybrid between *C. succirubra* and *C. officinalis*, known to planters as *C. robusta*, is much richer in quinine than the ordinary bark. In macroscopic characters this bark shows its hybridity in the fewer warts, fewer longitudinal ridges, and in the presence of the thick-edged, rough, horizontal cracks, characteristic of *C. officinalis*. The distinctive structural characters of the other species of cinchona in commerce will be found carefully enumerated in the 'National Dispensatory,' p. 461 (1886).

MICROSCOPIC CHARACTERS OF EAST INDIAN CULTIVATED BARK.

Cork.—It is of considerable thickness and consists of cells which are well extended tangentially. It is split here and there into layers giving rise to well-marked elevations. The inner layers contain a dark red colouring matter.

Cortex.—Composed of thin-walled parenchyma with tangentially extended cells. It is not uncommon, however, to find cells divided by three or four radial division walls. The majority of cells contain numerous starch-grains or deposits of cincho-tannic acid and



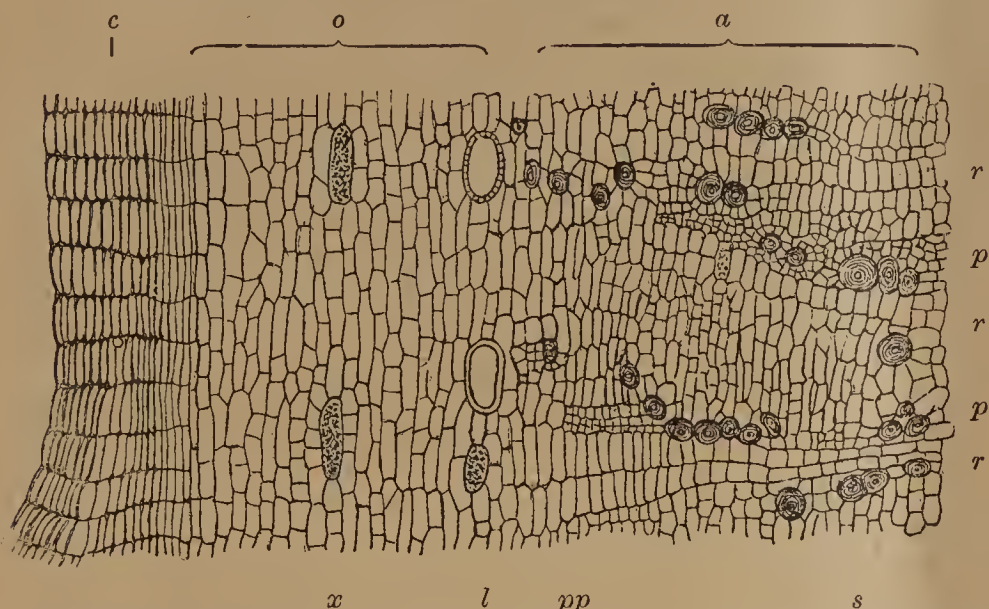
Cinchonæ Rubræ Cortex.—*Cinchona succirubra*, E. I. cultivated.—Longitudinal section of inner part of cortex. *m.*—Laticiferous vessel. *n.*—Collapsed laticiferous vessel. (After Tschirch.)

cinchona red; some also contain sandy crystals of calcium oxalate. Stone cells and sclerotic fibres are absent. Near the inner limit of the cortex is a rather regularly arranged ring of laticiferous vessels not infrequently which are found in pairs. Generally they are destitute of cell contents, but some of them are filled with tyloses; some have succumbed to the pressure of the surrounding

* *Pharmaceutical Journal* [3], xiv., 666.

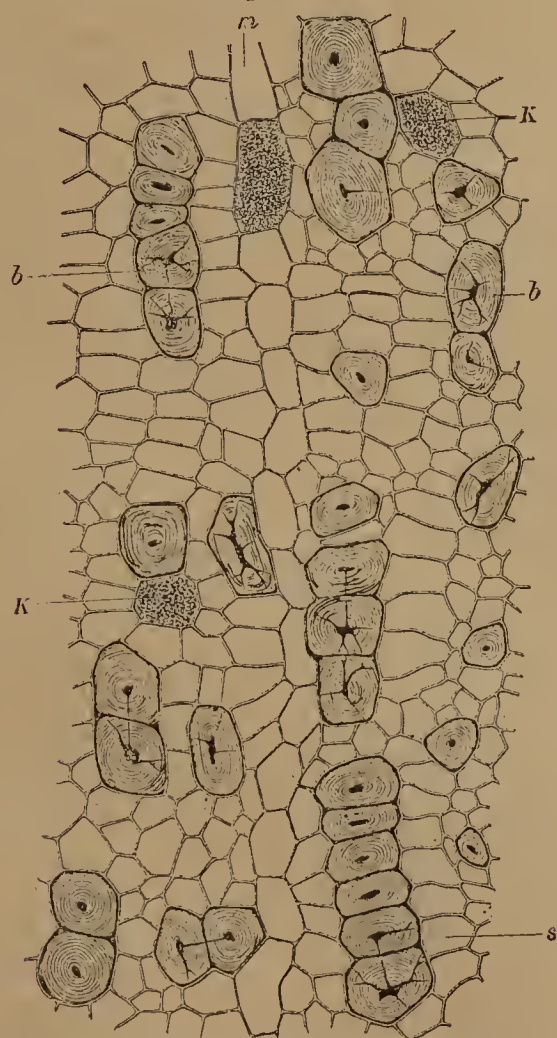
tissues and the lumen of them is quite obliterated, although the vessels themselves are easily recognised. They have a diameter of from 100μ to 355μ and are considerably larger and have much

up of thin-walled parenchyma and almost obliterated sieve tubes, with oblique sieve plates, which can only be observed in well-prepared longitudinal sections. In the phloem are situated the most



Cinchonæ Rubræ Cortex.—*Cinchona succirubra*, E. I.—cultivated.—Portion of transverse section. *c.*—Cork. *o.*—Cortex. *a.*—Phloem. *r.*—Medullary rays. *x.*—Crystallogenous cells. *l.*—Laticiferous vessels. *pp.*—Protophloem. *s.*—Bast fibres. *p.*—Soft phloem. (After Tschirch.)

thicker walls than those in other varieties of cinchona barks; the walls are traversed by narrow pores.



Cinchonæ Rubræ Cortex.—*Cinchona succirubra*, E. I.—cultivated.—Transverse section of inner portion of phloem. *b.*—Bast fibres. *s.*—Soft phloem (sieve tubes and parenchyma). *k.*—Crystallogenous cells. *m.*—Medullary ray. (After Tschirch.)

Phloem.—Immediately within the ring of laticiferous vessels is found the protophloem in small masses which are not easily distinguished. The fundamental tissue of the phloem is made



Cinchonæ Rubræ Cortex.—*Cinchona succirubra*, E. I.—cultivated. *a.*—Isolated bast fibres. *b.*—Ends of isolated bast fibres. (After Tschirch.)

important elements of the bark, namely, the bast fibres. These are remarkable on account of their short length, being probably the shortest known. In the cultivated and American barks they vary in length from 400μ to 880μ ; in the mossed and renewed barks they attain a length of from 1000μ to 1100μ . They are somewhat spindle shaped and have the external walls either even or indented by the surrounding parenchyma. The ends of them are generally pointed, but not always regularly so; still they are not subject to the knobby and horned irregularities prevailing in some other cinchona barks. The walls are strongly thickened, markedly striate in transverse section, and pierced by numerous canals; in transverse section the outline of them is usually polygonal or sometimes roundish and the lumen is very small. The fibres are either isolated or in short single radial rows separated by bands of parenchyma. The medullary rays are from one to four cells broad; in the inner phloem the cells are radially extended, but as the rays approach the periphery they become more and more extended tangentially, and thus cause an expansion of the rays. The greater proportion of the cells of the phloem contain starch and tannin deposits; some of them contain sand crystals of calcium oxalate. Crystallogenous cells are also found in the medullary rays, as are also starch granules. The phloem constitutes about three-fourths of the bark.

The starch-grains are small, round, mostly single, but sometimes compound. The alkaloids are located in the cell-walls of the parenchyma; but not in those of the sieve-tubes, the bast fibres, and the cork. Renewed barks do not conform to the foregoing description. In them is an excessive development of thin-walled parenchyma, while the bast fibres are found in small quantities only in the very innermost layers of the phloem. They contain no laticiferous vessels.

Distinctive Characters.—The cells of sand-like crystals. The large thick-walled laticiferous vessels with tyloses. The bast fibres; their short length and pointed ends. The round starch granules. The absence of stone cells and clustered and isolated crystals.

THE PHYSICO-CHEMICAL STATE OF CASEINOGEN IN MILK.*

BY DAVID FRASER HARRIS, M.D., C.M., B.SC.LOND., F.R.S.E.,

There may be said to be three views as to the conditions under which fat and caseinogen exist in milk: (1) That there is a layer or membrane of proteid material surrounding each oil-globule. This proteid was originally called alkali-albumin, then casein ("Ascherson's membrane"), the oldest view. (2) That the globules in milk are composed of fat, and have no envelope, while the particles in milk are composed of caseinogen—that is, are wholly proteid in nature. (3) That there exists around pure oil-globules a more closely "adherent layer of caseinogen solution, or rather milk plasma," so that the following phrase appears justified: "Milk globules contaminated with proteid."† My work has led me to conclusions, amongst which are the following:—

1. Caseinogen is not in solution in milk plasma, but
2. Is present, along with fats, in both the globules and the particles in a state of minute subdivision—that is, both the fat and the proteid is "particulate" or minutely granular.
3. The globules contain a maximum of fat and a minimum of caseinogen. The particles contain a minimum of fat and a maximum of caseinogen.
4. Thus the globules are not pure fat or oil, and the particles are not pure caseinogen.

The globules are spherical bodies with a diameter ranging from 0.005 Mm. to 0.0025 Mm.; occasionally very large ones, 0.0103 Mm. diameter, are met with; bodies with a diameter of less than 0.0025 Mm. may be called particles; their outline cannot be discerned. On optical grounds alone we cannot affirm that there is any difference, at least of composition, between these two varieties of solid body. It is highly improbable that there is any envelope, at least of caseinogen. Cream, which is an aggregation of the larger globules, contains as much caseinogen as does whole milk (3.5 per cent.). This fat-associated proteid in cream is, however, not present in it in proportion to the water (28.675 per cent.) of cream. If the caseinogen of cream were present in it in proportion to the water of cream, there ought to be only 1.3 per cent. of caseinogen, but there is actually present in cream 3.5 per cent. of caseinogen, that is, 2.2 per cent. more than is consistent with its being dissolved in the water. Chemists have for long agreed that if the proteid is present as an envelope it is "imponderable," and therefore *a fortiori* inadequate, to give rise to 3.5 per cent. of caseinogen; further, it is not "carried up mechanically," because in cream there is a notable absence of any solid bodies other than the larger globules. Thus, if it is not in solution in the watery basis of the cream, and not present as the envelopes of the globules, and is not carried up mechanically, it must in cream co-exist in an extremely intimate manner with the fat in the larger globules.

It is notoriously difficult to separate caseinogen from fat, and not at all easy to dissolve out the fat from its union with the proteid unless chemicals, calculated to disturb that union or mixture, have been previously added. Fat is at a maximum in cream, but fat exists in all the solid bodies of milk, for when treated with osmic acid they are all stained black or brown. Further, skimmed milk contains 1 per cent. of fat, and "centrifugalised milk" has from 0.1 per cent. to 0.5 per cent.: in both these forms of milk almost all the solid bodies are "particles," therefore the particles contain fat, that is, they are not pure caseinogen. In skimmed milk there is always a vast number of particles that never rise to the surface (that is, there is a limit to "creaming"), and in centrifugalised milk a like number which are never thrown to one end or other of the tube, therefore these particles cannot be pure fat else they would rise or would be thrown out. They are evidently of the same specific gravity as milk plasma (1033 to 1037); it must, then, be their associated proteid (caseinogen), which weights them down and raises their specific gravity from that of pure fat to that of milk plasma.

Buttermilk contains a larger percentage of caseinogen than whole milk does, because the particles of caseinogen previously in the large globules of the churned cream have been dissociated from the fat of those globules but left in the milk, the fat being removed as butter. This is essentially what happens after milk has been shaken for a very long time with ether; there is an increase in the number of proteid "granules" (Hoppe-Seyler) from the breaking up of the globules, the fat being dissolved, the

caseinogen particles set free.

100 C.cm. of cream weigh 97.2 g.

100 C.cm. of pure butter-fat weigh 91.5 g.

Difference 5.9 per cent., made up as follows:—

Lactose	1.7 per cent.
Salts	0.7 "
Proteid	3.5 "

This is a further proof that, over and above the lactose and salts, there is 3.5 per cent. of something that is not fat; this, which is proteid, is the caseinogen of cream.

In the clots of milk there are no fibres whatsoever nor any coalesced "oil drops"; a clot is an agglutination of globules to globules, globules to particles, and particles to particles; there is a diminution in the number of globules, as though they had disintegrated previously to their constituent particles adhering. There is no reason to believe that any of the particles of a clot or precipitate in milk are not either pre-existent in the milk or liberated from disintegrated globules.

Name of Cheese.	Antecedent Condition of Solid Bodies.	A. Casein per cent.	B. Fat per cent.	Total per cent.
Camembert (cream cheese)	The larger globules	19.0	21.5	40.5
Skim milk (American)	Mainly particles	32.0	8.5	40.5
Cheddar (whole milk)	Globules and particles	47.0	30.0	77.0

This furnishes additional proofs of what has been said above: (1) In particles there is most casein, least fat; whereas (2) in globules there is most fat, least casein. (3) Note that 21.5 + 8.5 = 30.0 per cent. (the percentages of fat). (4) Note that, taking averages in column A. instead of one case, 15.0 (for 19.0) + 30.0 (for 32.0) = 45.0 (for 47.0) per cent. (5) Lastly, taking these average figures, 15.0 + 21.5 = 36.5 and 30.0 + 8.5 = 38.5, then 36.5 + 38.5 = 75.0 per cent. = 45.0 + 30.0.

In other words, the casein plus fat of cream cheese plus the casein and fat of skim-milk cheese is equal to the casein and fat together of whole milk cheese.

Caseinogen is not in solution in the milk plasma, for the pressure filtrate through a diatomaceous clay filter (Berkefeld) leaves all the caseinogen outside; in short, all the globules and particles remain outside. All the fat and caseinogen is outside, and the filtrate will not clot with rennet; it contains lactose, salts, and of proteid only a trace of lactalbumin. It has been suggested that caseinogen might be in solution, but unable to pass through the pores owing to the "size of its molecule." Hæmoglobin has a very large molecule, and its solution passes through this filter, as also does egg-albumin (10 per cent. solution in water) and alkali-albumin. My inability on a previous occasion* to find egg-albumin in the filtrate arose from using not a high enough vacuum and a filter blocked with milk globules or particles.

Ringer's (so-called) solution of pure caseinogen is distilled water, holding in suspension a vast number of milk particles. This is no proteid in solution; the pressure filtrate is water; it is not pure caseinogen, because there is some fat present, a minimal quantity in the particles; the liquid is opalescent because of the particles; when they are dissolved, for example, with weak alkali, the liquid becomes clear, and now it will not clot with rennet.

In Nature "caseinogen" is never seen apart from fat, and in milk the fat never apart from caseinogen; the two substances are produced side by side by the metabolic activity of the protoplasm of the cells of the acini of the mammary gland, so that caseinogen is not a chemical entity *sui generis*, it and the fat together constituting a highly complex organic substance, which might provisionally be called an oleo-nucleo-proteid. The caseinogen, when artificially fat-free, is a nucleo-proteid; but the fat molecule is, I take it, an integral portion of the fully-elaborated product of the cells, which product (oleo-nucleo-proteid) is as much a unique animal substance as is lactose. There is evidence that the nucleus is the source of the particulate caseinogen of milk.

It is not that the caseinogen of the milk-clot is "contaminated by fat"; it is not that the fat is contaminated by proteid in the cream from milk, but it amounts to this, that caseinogen, apart from fat (even though it be but the minimal trace), is unknown in Nature, is a concept in the mind of the physiological chemist. Nor is such a body improbable from its complexity; hæmoglobin and lecithin are, if anything, more complex; and just as by chemical agencies they can be broken up into their constituents, so by chemical and physical agencies can the oleo-nucleo-proteid of milk. If the term "caseinogen" is to be retained its connotation must be extended so as to embrace the fat molecule.

* Abstract in the *British Medical Journal*.

† Schäfer, 'Text-Book of Physiology,' vol. i., p. 125, 1898.

* *Proc. Roy. Soc., Edin.*; Section 1895-96, vol. xxi.

NOTICES OF BOOKS.

'THE FUTURE WATER SUPPLY OF BIRMINGHAM,' by Thomas Barclay (Birmingham: Cornish Brothers; London: Simpkin, Marshall and Co.), is a handsome volume of more than two hundred pages, printed at the private press of Southall Brothers and Barclay, Ltd., a firm of which Mr. Barclay is one of the heads. He was at one time a member of the Water Committee of the Birmingham City Council, and in great measure the conception of the scheme by which the city is to be supplied with water from the Elan Valley is due to him. The present volume is the third and much enlarged edition of the original work; it is freely illustrated and, in addition to a complete account of the present water demand and supply of Birmingham, deals with the conditions of a suitable supply for large cities, the action of moorland water on lead, the steps taken to improve the Birmingham supply, and the new Liverpool and Manchester water undertakings. Londoners and others who may be interested in the improvement of their water supplies will read Mr. Barclay's useful work with much advantage to themselves.

'A POCKET DICTIONARY OF HYGIENE,' by C. T. Kingzett, F.I.C., and D. Homfray, B.Sc. (London: Baillière, Tindall and Cox. Price 2s. 6d.), is a small 18mo. volume, containing concise information respecting most of the subjects comprehended in the theory and practice of hygiene. The chief object of the authors has been to supply medical and sanitary officers with a pocket dictionary for reference in connection with their work, but the book will doubtless be found useful to many others interested in the subjects dealt with. Though the type employed is small it is clear, and the volume is well bound in French morocco.

'DEFECTIVE SIGHT AND ITS OPTICAL CORRECTION,' by W. D. Mason (Grimsby: Carr and Forman. Price 6d.), is a reprint of a useful series of articles that appeared in the *Watchmaker, Jeweller and Silversmith*, and is now in its second edition. It deals with the structure of the eye and the theory of vision, myopia, hypermetropia, astigmatism, presbyopia, asthenopia, odd sight, squint, and cataract, with a concluding section on spectacles. Chemists who are connected with the optical trade should possess copies of this little pamphlet.

'RADIATION,' by H. H. Francis Hyndman, B.Sc. (London: Swan, Sonnenschein and Co. Price 6s.), is an elementary treatise on electromagnetic radiation, and on Röntgen and cathode rays. According to Professor Silvanus P. Thompson, who has written a preface to the volume, it presents a summary of knowledge in the domain of which it treats, and is all the more useful because of the reference it affords to the original sources. "It helps to fill a void left by the artificial sub-division of Physics into separate class-subjects. To the real student of Physics, who pursues the subject for its own sake, it will be found most useful. It is much too good to be of use to one whose highest aim is to pass examinations." No stronger recommendation of a book could be given, and it can be fully endorsed. The first of the three parts into which it is divided, deals with material vibrations—longitudinal (sound), and transverse. Part 2 is devoted to a consideration of the ether and ethereal vibrations—longitudinal and transverse; the dimensions, production, detection, and recognition of vibrations, their penetrative power, reflection and refraction, interference and diffraction, polarisation, effect on distribution of electricity, chemical and physiological effects. Other forms of radiation are described in the third part, the five chapters of

which deal respectively with the phenomena connected with the vacuum tube, negative and cathode rays, Röntgen or X rays, Becquerel rays, and Le Bon's rays.

'DISEASES AND REMEDIES,' by Physicians and Pharmacists (London: The 'Chemist and Druggist,' 42, Cannon Street, E.C. Price 2s. 6d.), is described as a concise survey of the most modern methods of medicine, and appears to be intended as a guide to chemists when not to prescribe. In justification of the work it is affirmed that "the more the pharmacist knows of disease, of its symptoms and issues, the less eager will he be to assume carelessly the functions of the medical man." This statement may or may not be correct; but for the sake of the good feeling and of the better co-operation that is desirable between pharmacists and medical men, it could be wished that there was no necessity for the publication of such a book.

'NATURAL HYGIENE,' by H. Lahmann, M.D. (London: Swan, Sonnenschein and Co. Price 4s. 6d.), is a treatise for physicians and their patients on the predisposition to and prevention of disease. The essential condition of good health, according to the author, being healthy blood, he endeavours to show how that may be attained. Commencing with a description of the manner in which he thinks hygiene ought to be taught, he next proceeds to explain "dietetic dysæmia"—a condition said to arise from a wrong selection or wrong preparation of food, the abuse of common salt, and the excessive consumption of water—and discusses the constitutional predisposing causes of numerous diseases. As an example of the author's method, the words "anæmia," "scrofula," and "apoplectic tendency" are alleged to mean nothing, being incapable of explanation. The present book is offered as a contribution towards the preparation of the ABC of the branch of medical science of which it treats.

'THE TAX-PAYERS' CASH BOOK,' by Alfred M. Scarf (London: The Income Tax Adjustment Agency, 12 and 13, Poultry, Cheapside, E.C. Price 2s. 6d. net), has been referred to with approval in these pages on former occasions, and the third edition merits commendation no less than its predecessors. The plan on which the book is based enables anyone in business to see the result of each week's business in full detail at a glance, and the record will be available for comparison with those of corresponding weeks in other years. At the end of any given week the total amount of business done up to that date in the particular year is shown, and the use of the book saves much worry, by enabling the trader with a minimum of trouble to satisfy the Inland Revenue Authorities as to the amount of his trade profits. In connection with this third edition of the work, it is stated that during the last eighteen months the book has been found to provide a simple and satisfactory means of furnishing an accurate account of the transactions of various business concerns, the profits of which are not of sufficient magnitude to warrant the expense of keeping the usual books of account necessary to a proper system of double-entry bookkeeping. This can be readily believed, as the book is extremely well devised for its intended purposes.

'FORMULAIRE HYPODERMIQUE ET OPTHÉRAPIQUE,' par le Dr. E. Boisson et J. Mousnier (Paris: J. B. Baillière et Fils. Price 3fr.), is a handy little volume which treats of the preparation, sterilisation, etc., of hypodermic injections, alkaloids, animal extracts, and other medicaments which require to be administered with antiseptic precautions. Illustrations are given of the apparatus to be employed, and the instructions given are full and very practical.

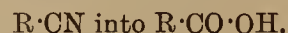
THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.*

Acidum Hydrocyanicum Dilutum.—The official solution of this acid may lose its strength through careless storage: (1) by volatilisation; (2) by decomposition. The latter cause is particularly interesting. The hydrocyanic acid reacts with water, thus:—

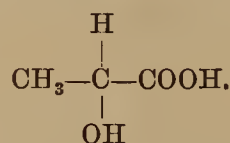


the ammonium salt of formic acid being produced. This is known in organic chemistry as the *cyanide synthesis*, because it enables one to make from any given hydrocarbon the acid containing one atom of carbon more. Thus from ethane we can pass to propionic acid by preparing (1) ethyl chloride, (2) ethyl cyanide, and hydrolysing the latter. The essential feature of the change consists in the conversion of a cyanogen group into a carboxyl group—

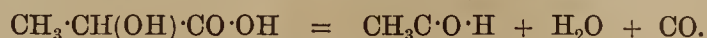


The conversion of hydrocyanic acid into ammonium formate takes place slowly, but the hydrolysis of this and other organic cyanides can be quickly accomplished by boiling with sodium or potassium hydroxide.

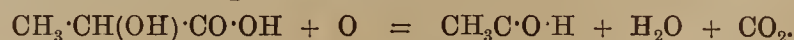
Acidum Lacticum.—Lactic acid is also known as α -hydroxypropionic acid, since it is derived from propionic acid by substitution of hydroxyl for hydrogen combined with the carbon atom nearest the carboxyl group. This nomenclature is adopted in order to distinguish isomeric substances, the successive atoms in the carbon chain being distinguished by the Greek letters α , β , γ , proceeding from the end next to the characteristic group of the mother substance. Thus $\text{CH}_2(\text{OH})\cdot\text{CH}_2\cdot\text{COOH}$ is β -hydroxypropionic acid, otherwise known as hydracrylic acid. Inspection of the formula for lactic acid shows that it contains one asymmetric carbon atom, *i.e.*, carbon combined with four different groups or elements, in this case CH_3 , H, OH, and COOH.



It can therefore exist in three stereo-isomeric forms: (1) dextro-rotatory, (2) lævo-rotatory, and (3) racemic or inactive. The last is produced by mixing equal proportions of the dextro- and lævo- varieties, and is the kind obtained in the fermentation of lactose by means of putrid cheese. Read up in your text-book the chapter relating to stereo-isomerism. When lactic acid is heated cautiously, the *main products* are aldehyde, water, and carbon monoxide, the last mentioned being, of course, inflammable.



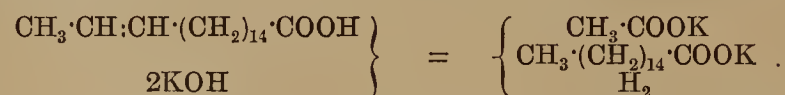
When oxidised by permanganate, aldehyde is also produced, carbon dioxide being formed here.



Note that the carbon chain is broken in both cases at the carbon atom combined with hydroxyl. Sarco-lactic acid, detected by the formation of an insoluble copper salt, is the dextro-rotatory variety referred to above, and is so called from its occurrence in the muscle plasma of flesh. Glycerin is detected by converting the lactic acid into its zinc salt; this, together with the excess of zinc carbonate, is insoluble in alcohol, while the glycerin easily dissolves and is left as a moist, sweet residue after the alcohol is evaporated.

Acidum Oleicum.—Oleic acid belongs to an unsaturated series of acids known as the acrylic series, from the name of the first and simplest member, acrylic acid. These acids take up *two* atoms of hydrogen when acted upon by reducing agents, such as hydriodic acid, and yield saturated acids containing the same number of carbon atoms. Acrylic acid, $\text{C}_2\text{H}_3\cdot\text{COOH}$, yields pro-

panoic acid, $\text{C}_2\text{H}_5\cdot\text{COOH}$, for example, and oleic acid, $\text{C}_{17}\text{H}_{33}\cdot\text{COOH}$, becomes stearic acid, $\text{C}_{17}\text{H}_{35}\cdot\text{COOH}$. These unsaturated acids also take up two atoms of bromine (or chlorine), yielding di-bromo derivatives of the corresponding saturated acids, just as the unsaturated hydrocarbons, *e.g.*, ethylene, C_2H_4 (the simplest hydrocarbon of the series) takes up bromine to form ethylene dibromide, $\text{C}_2\text{H}_4\text{Br}_2$, or *di-brom-ethane*. This faculty is utilised in analysis to distinguish the members of one series from those of another or to determine the proportion of each in a mixture. Not only the fatty acids but also their glyceryl esters, which constitute the main portion of fixed oils and fats, behave in this manner; and the amount of bromine, known technically as "bromine absorption," becomes an important factor in the identification or determination of purity of bodies of this class. In the unsaturated acids of the acrylic series, the existence of a double bond between two of the carbon atoms is assumed. (Compare in your text-book the chapter dealing with the constitution and behaviour of ethylene.) In a compound like oleic acid the determination of the exact position of this double bond in the carbon chain is difficult. The method adopted—and this has a general significance for all similarly constituted bodies, is to study the decomposition products obtained by oxidation. It has been found in the case of the simpler compounds that the chain is broken between the doubly-linked carbon atoms. In the case of oleic acid, however, the results obtained by the action of various oxidising agents are not concordant. When fused with caustic potash we get acetate and palmitate of potassium, which would show that the double bond is between the second and third carbon atoms.



On the other hand, certain oxidising agents, at comparatively low temperatures, yield, among other products, acids having eight carbon atoms in the molecule, and this would indicate that the double bond occurs in the middle of the carbon chain, as shown by the formula in the Pharmacopœia. The matter cannot be considered settled definitely at present, but the latter of the two formulæ discussed above is maintained by some to represent the constitution of oleic acid because its oxidation, by fusion with caustic potash, necessitates the application of a high temperature. At high temperatures atomic rearrangements in the molecule often occur, so that the constitution of a body cannot always be deduced correctly from the decomposition products obtained. Elaïdic acid, obtained by the action of nitrous acid on oleic acid and isomeric with it, probably owes its isomerism to an alteration in the position of the double bond. The same remark applies to the isomerism of the glyceride elaïdin with olein.

To detect stearic or palmitic acids the oleic acid is first converted, in alcoholic solution, into the sodium salt by caustic soda. A very *strong* aqueous solution of soda is used in order to add as little water as possible during the process, because the neutralisation of oleic acid does not occur either rapidly or completely in presence of water. This is partly accounted for by the insolubility of oleic acid in water, but it is also noteworthy that water partly hydrolyses soaps into fatty acid and alkali, so that such solutions are always alkaline. The slight excess of soda necessary to give the red colour with phenol-phthalein is then neutralised by acetic acid, because a turbidity—due to lead hydrate—would be produced by the sodium hydroxide on the addition of lead acetate solution. After the addition of ether lead acetate gives no precipitate in the case of pure oleic acid, because lead oleate is soluble in the mixture of alcohol and ether, while lead stearate or palmitate is insoluble.

Acidum Sulphurosum.—In the determination of the strength of sulphurous acid solutions by means of iodine the solution to be titrated must be very dilute (*vide* B.P. directions), because the reaction



is reversible in strong solutions, *i.e.*, sulphuric acid will decompose hydriodic acid, with production of sulphurous acid and iodine. (Compare action of strong sulphuric acid upon sodium or potassium iodide.) The water used for dilution should be previously boiled, to expel dissolved oxygen, which would oxidise a portion of the sulphurous acid.

* NOTE.—This series of articles should be read in conjunction with the series referring to the 1885 B.P., and published in the *P. J.* during 1897 and the earlier portion of the current year.

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AMERICAN PHARMACEUTICAL ASSOCIATION.

THE forty-sixth annual meeting of the American Pharmaceutical Association was held at Baltimore, on Monday, August 29, and the following days, some four hundred pharmacists from the various States of the Union assembling to exchange views, under the presidency of Mr. HENRY M. WHITNEY, of Massachusetts. In his opening address, the PRESIDENT said that, as time went on, he was more and more impressed with the value of the Scientific Section of the Association. The able papers published in the "Proceedings" exhibited study and research far beyond the ability or time of the average pharmacist, and he desired to place upon record his more than grateful recognition of the services of those who contributed the papers, with the assurance that if, upon certain occasions, their audience was small, their labour was not lost, for many members in the quiet of their homes, or in their places of business, free from the allurements of tempting pleasures, read and appreciated the papers and honoured the writers. At the same time, he urged pharmacists of scientific bent not to be too lofty in the high altitude of their special calling as instructors, and not to neglect the Commercial Section. For, he said, if there is no commercial value to come from the instruction given, the audience will be *nil*, and even a professor cannot live by words alone. Above all, it was urged that it is necessary to encourage and aid those who are striving against odds to make attractive the ranks for which the instructors are furnishing recruits. It was also pointed out by the President that there is no national body of pharmacists in the United States which in the least represents the commercial side of pharmacy. He said: "The great American Pharmaceutical Association, as represented by those most active and numerous at its annual meetings, has repudiated the pharmacist's occupation as a means of livelihood. Pharmacy, in the opinion of these editors and emissaries of the manufacturers (*sic*), is essentially a theatre for the display of their rare scientific attainments. The man who keeps a drug store and soils his palms with filthy lucre is no longer considered a pharmacist. The country is probably too large for a successful national association of the bread-winners of pharmacy." And though the speaker said it was not his purpose to pose as an alarmist, he earnestly asked his hearers to heed the warnings they were receiving and, if they desired to keep and increase the membership of their Association, to apply the science of sound business principles with good sense.

Of the reports presented at this meeting, the most interesting were those on national legislation and on weights and measures. In the former attention was chiefly directed to the way in which the makers of secret remedies are endeavouring to prevent others from copying their products, by registering the titles of the preparations as trade-marks. The point at issue in such cases as have been before the United States courts in this connection, has been whether the word claimed as a trade-mark is the generic name of the thing manufactured and sold, or a mark or name used to distinguish an article as made and sold by one manufacturer from the same article as put out by other manufacturers. In each case "it was held that because the word had become descriptive of the thing it could not be appropriated as a trade-mark." It was urged, therefore, in the report that the time is ripe for pharmacists all over the United States to act in this matter; that the question of patents and trade marks as affecting medicinal products should be brought before every national, state and local medical and pharmaceutical society for discussion, besides being taken up with like intent by every medical and pharmaceutical college in the United States. Subsequently, the sense of each organisation should be made known to the Secretary of the Interior in the form of proper memorials or resolutions which he can refer to the Commission appointed to deal with the matter. The committee on national legislation has already called the attention of the President of the United States to the work of the American Pharmaceutical Association in this connection and the matter has been referred, by him, to the Secretary of the Interior, who in turn referred, it to the Commission, so that another of the objects of the Association in appointing a special committee on national legislation is likely to bear fruit. Continuing, it is contended in the report that the trade-mark law should be such as to render it necessary for every article of commerce, when first introduced, to have a name given it for public use as a part of the common language. "It should also require that the common descriptive name of each article advertised should appear in advertisements equally prominent with its brand-name, so that the latter may be used by the public for the purpose of specifying a particular brand, when desired, and the former employed to designate the article itself as such, irrespective of who is the maker. . . Every kind of tincture, fluid extract and pill must have a specific name by which it may be described, and if the introducer does not supply it he has no reasonable complaint if the name claimed by him as a trade-mark ceases to perform its function as a brand-mark and falls into the public domain as a descriptive word or appellative. The trade-mark law should be so revised that its ambiguous wording will not protect those who desire to create perpetual monopolies of secret medicines by claiming that their commonly accepted names are trade-marks."

In the report of the special committee on weights and measures, it was pointed out that during the past year no action has been taken by Congress on the subject of the metric system. The Bill proposing to make that the legal system in the various departments of the Government remains in the hands of the Committee on Coinage, Weights and Measures, where it was sent more than a year ago. Reference was made to the recognition of the metric system of weights and measures in the recently issued British Pharmacopœia and to the fact that a Bill has passed both Houses of Parliament, legalising the system for purposes of trade in the United Kingdom. Russia has also made the

adoption of the metric system a certainty after a stipulated date. Regret was expressed that physicians in the United States do not more generally use the metric system in their every-day prescription writing, and the committee hopes for no rapid progress in the use of the system in medicine until the medical schools and colleges teach that system alone, and medical authors at least give it the preference, rather than merely state equivalents in metric terms. In view of that fact the chairman of the committee suggested that a resolution be passed by the Association to be presented to the American Medical Association at its next meeting to be held at Columbus, Ohio, requesting that Association to use its influence in bringing about the exclusive use of the metric system of weights and measures by all colleges and schools of medicine recognised by them in the United States. Such a step, it was thought, would only require such men as are engaged in scientific instruction or in teaching medicine to change their old-established methods of dosage and calculations, so that all students coming under their instruction would from their entrance in college know no other system of weights and measures. The resolution covering the suggestions of the committee was in the following terms:—"Whereas, the metric system of weights and measures has been adopted by the United States and British Pharmacopœias and is used exclusively in the Pharmacopœias of nearly all other nations; and, whereas it has become the almost universal system of weights and measures in scientific calculations, be it resolved that the members of the American Pharmaceutical Association request the American Medical Association to use its influence with all colleges and schools of medicine recognised by them in the United States, to use exclusively the metric system of weights and measures in the instruction of students, beginning with the classes entering said colleges and schools in the college year of 1900."

"PRESCRIBING CHEMISTS AND UNQUALIFIED ASSISTANTS."

THE above is the heading of a note in the organ of the British Medical Association, but inasmuch as the case commented on was not one of prescribing by a chemist, the connection is not obvious. According to the report of the case in the daily press, a young child had been taken to a chemist's shop at Tottenham, where apparently in the proprietor's absence an unqualified assistant gave the mother some medicine for the child, and told her to feed it on arrowroot. Four days later the child died and at the inquest it was shown that death was due to collapse, following summer diarrhoea. One of the jurymen remarked that, in his opinion, chemists ought to be stopped from practising as doctors and the *British Medical Journal* thinks the condition of affairs is one which calls for the consideration of the Apothecaries' Society. It acknowledges that the chemist himself had not prescribed in the case, but proceeds, nevertheless, to blame him by inference.

This medical writer somewhat sententiously remarks that "the medical practitioner is being deprived, and rightly so, of the services of unqualified assistants; here we have a child prescribed for by the unqualified assistant of a chemist, who himself has no right to prescribe." The word "who" in the sentence quoted presumably is intended to apply to the chemist, though it is actually made to refer to

the unqualified assistant. No explanation is given of the assumed lack of right in any individual to prescribe, and it would be difficult to find any British law forbidding anyone to do so. Without in the least degree attempting to defend the practice of counter-prescribing, we, therefore, fail to see what is to be understood by the statement that if the medical profession loyally obeys the ordinance of the General Medical Council with regard to the employment of only qualified assistants, the Council must see that "the legal rights of the profession are secured to them."

The medical profession has no legal rights in the matter of prescribing which are not shared by every member of the British public, but the proposal is seriously made, in the note referred to, that united action should be taken by the General Medical Council and the Apothecaries' Society "to protect the interests of the profession," presumably in the matter of prescribing. It is difficult to understand why the trouble experienced by medical practitioners with regard to cheap assistants should be brought up in connection with registered chemists, and one wonders whether the object of this invocation of the General Medical Council is to suppress chemists, or to prevent them employing unqualified assistants, or only to drive the dismissed unqualified assistants of medical men into the workhouse? It would appear, at least, that the idea is to strike a bargain with the medical authorities, which shall in some degree compensate medical practitioners for the compulsory loss of the services of unqualified assistants, for we are told that there are cases of such assistants who, being dismissed by their employers owing to the resolution of the General Medical Council, have started in practice in the same district as their former employers, defying any efforts to "restrain" them. It may be that these unqualified opponents are to be attacked, and if at the same time the stone can be made to hit chemists and druggists employing unqualified assistants who amuse themselves occasionally by prescribing on their own account, the result would be considered so much the better. But one would like to know wherein the chemists have offended against the law before further steps are taken, if the medical writer can so far unmix himself as to explain.

REFORM OF PHARMACY BY LAW.

AT last year's meeting of the American Pharmaceutical Association an excellent paper was read by J. H. BEAL on the relation of the pharmacist to pharmacy law (see *P. J.* [4], 5, 420), and the same pharmacist has now supplemented that by a more comprehensive paper on the reform of pharmacy by law. We hope to be able to publish the paper in full later, but it may be stated now that the author does not share the belief of those who hope to reform the practice of pharmacy by legislation. The present conditions of pharmacy, he points out, are the outgrowth of a century of a mistaken policy. They cannot be changed in a day or a year, but must be modified by a process of slow and gradual evolution which can only be hastened by bringing intelligent artificial selection to the aid of natural selection. Favourable variations should be perpetuated and unfavourable ones eliminated, for whether we will it or not, the evolutionary process will go on and no legislation can stop its operation. "Men have tried for ages to control the operation of economic laws by legal enactments and to force trade into artificial channels by trade combinations, by associations and by unions. They never have succeeded and they never will."

ANNOTATIONS.

SUBSCRIBERS TO THE BENEVOLENT FUND of the Pharmaceutical Society of Great Britain, who have not yet remitted the amount of their subscription for the year, and registered chemists who have not subscribed up to the present, are reminded that the benefits of the Fund are exclusively applicable in case of need to any of the fifteen thousand persons whose names appear on the registers of pharmaceutical chemists and chemists and druggists, and to the widows and orphan children of persons who have been so registered. Of those persons for whose exclusive benefit the Fund is available there are over ten thousand who contribute nothing towards it, and as the total annual relief granted is over £2500, a much larger amount of support is required to enable this expenditure to be maintained. Every registered person is urged to give a small annual contribution, and thus enable the Council to continue to deal with the numerous distressing appeals for assistance. It is scarcely credible that there is any registered person who could not spare at least half-a-crown a year for the Fund, or in other words who feels unable to devote a little over a halfpenny per week to support a mutual insurance fund—one of the best of its kind.

THE OFFICIAL STANDARD FOR CREAM OF TARTAR is the subject of a miniature discussion in our pages, the discrepancy between the required percentage of potassium bitartrate in cream of tartar and the amount of that salt corresponding to 5.2 cubic centimetres of volumetric solution of sodium hydroxide, pointed out by Mr. Dowzard last week, being shown by Mr. Duncan (see page 364) to be like some other apparent inconsistencies in the Pharmacopœia. That is to say, it is necessarily consequent to the practice of stating the measure of a volumetric solution requisite to complete a reaction with a stated quantity of the article to be tested as to a fixed standard of purity. As a revival, in another form, of the objectionable approximations distinguished by the word "about" that practice is calculated to mislead, as in the present instance, where the percentage of bitartrate corresponding to 5.2 C.c. sodium hydroxide solution is 97.11, and the required minimum percentage is 97.5. The statement of the measure of volumetric solutions required in testing percentages had better, therefore, have been omitted, for, if carried out decimally, the figures would have expressed quantities that cannot be measured with an ordinary burette. In the case of diluted hydrobromic acid, for instance, the percentage corresponding to either of the two quantities of volumetric solution, stated to be requisite for neutralising 4 grammes of the acid, is above 10 per cent., and it would have been more correct to say that *nearly* 5 C.c. of the volumetric solution should be required to neutralise 4 grammes.

THE USE OF IPECACUANHA IN EPILEPTIC CASES is suggested in a note contributed to the *Lancet* by C. Knox Bond, L.R.C.P., who records the results of the administration of the drug in one such case by Dr. Alfred Eddowes. The patient was an unmarried woman, aged twenty-nine years, and had been subject to epileptic fits from the age of eight years. For a long period she had taken continuously large doses of bromide, without any diminution in the number or severity of the fits. Dr. Eddowes decided, therefore, to reduce the doses of bromide taken to one-third, and added ipecacuanha wine to the medicine, beginning with a dose of ten minims of the wine, and gradually increasing the quantity until a dose of forty minims three times a day was being taken. With

each increase in the quantity of ipecacuanha there was a marked improvement in the patient's condition, the severity and frequency of the fits diminishing under the treatment until the beginning of May last, since when no fits have occurred. Dr. Eddowes was led to adopt this treatment partly as the result of his observation as to the value of ipecacuanha in convulsive attacks of children, due to gastro-intestinal irritation, but also because the drug suggested itself as a suitable remedy for checking the voracious appetite and neglect of mastication so frequently observed in epileptics. The results of the treatment, as recorded, may be described as perfectly satisfactory.

"FREE STAMP TRADING" is the subject of a communication signed by the chairman and secretary of the Federation of Grocers' Associations of the United Kingdom. The system referred to may be briefly described as follows: Agents go into a town and canvass the traders in different districts to take up their system of trading, then they open a shop or store where they keep a number of miscellaneous goods, varying from guitars to cheap copies of works of well-known authors, in which the copyright has expired. A trader is invited to buy certain stamps from the company, who supplies him also with books. The trader then gives a stamp to each purchaser of goods to the value of sixpence or a shilling, and the purchaser sticks the stamps so obtained into a book; when his book is filled he goes to the shop of the Company and selects from the goods stocked there the article he prefers. The company prints the names of the traders who do this kind of business in a book, and in addition, sends male and female canvassers around the district urging people to buy at the shop of the free stamp traders. On the face of it the plan appears attractive to some, especially as the trader is assured that if he will take up the system he will be the only trader in his district to whom the agency is given. It is alleged, however, that presently the trader finds some other member of the same trade has a similar agency for the stamps, and very shortly friction arises, and a great deal of annoyance is experienced. Some grocers who have taken up with the system are said to have been only too glad to cease their connection with it; but when they desired to do so they found they had unwittingly signed a stringently drawn legal agreement, and had in consequence to pay a penalty. The practical outcome of this objectionable scheme appears to be that the trader pays about six per cent. of his turnover to his customers in the form of presents, and unless he can add that to the selling price of his goods his expenses are increased to that extent. Obviously, therefore, the safer plan is to keep clear of any such entanglement, whilst, to say the least of the scheme, it puts a trader in an absurdly undignified position.

"PATENT MEDICINES AND MEDICAL SHAREHOLDERS" is the title of an editorial note in the *British Medical Journal*, in which it is stated that the conductors of that organ are often asked "whether a medical man should take a share or shares in a patent medicine, or be the owner of a proprietary medicine." And though it is stated to be obviously contrary to medical ethics for any medical man to associate himself in any way with such medicines, it is admitted by our contemporary that some members of the profession do reap profit from the sale of such articles without publicly associating their names with them. That, of course, it holds to be distinctly undesirable. With regard to dietetic preparations, it is suggested that a medical man might legitimately say to a patient, "I am a shareholder in this company, and I think its preparation a good one," but he should never accept offers to have

his portrait painted free on condition that the portrait be shown to patients and friends, nor accept gifts of wine on similar conditions. "It is deplorable and humiliating," says the *B. M. J.*, "that we should have to insist upon such elementary truths, but from our correspondence it is painfully evident that there is a very grave amount of misapprehension . . . as to what constitutes absolute fair dealing." Apparently, therefore, medical men are no more free from the trading instinct than any other class of the community, nor do they invariably trade with clean hands.

THE SOUTH AFRICAN REPUBLIC is so far advanced pharmaceutically as to possess a pharmaceutical society and to have an annual dinner. One of our Johannesburg correspondents has been good enough to send an account of the banquet which took place at the Masonic Hotel, on Wednesday, August 17, and at which about thirty prominent chemists of the Republic were present. The speech of the evening appears to have been given by Mr. Trembath in proposing "The Pharmaceutical Society, South African Republic," and it is interesting to gather from his remarks that in no State is a Pharmacy Act more badly wanted or a pharmaceutical society more essential than in the Transvaal. Under the present régime, he observed, chemists there have no laws and are much in the condition of the toad under the harrow—they never know what is going to happen. The object of the Society is to improve the status of the chemist and lift the calling from its present unsatisfactory and uncertain position. It does not appear from Mr. Trembath's speech that the individuals engaged in the calling have been very keen to support their Society in its laudable objects, so that one is forced to the sad conclusion that pharmaceutical human nature is pretty much the same under President Kruger as it is under Queen Victoria. Mr. Trembath is a pharmaceutical chemist of Great Britain and an old "Square man," and we feel that his association with South African pharmacy is a matter upon which South African chemists may be congratulated.

A BACTERIOLOGICAL LABORATORY FOR LONDON has been suggested by the London County Council, that body having recently addressed a communication to each of the vestries and district boards throughout the metropolis asking them whether they would be in favour of the Council applying for Parliamentary powers to establish such a laboratory. The idea is to appoint an expert or experts in connection with the projected institution, or otherwise to make arrangements whereby medical officers of health and medical practitioners in London could obtain, at the expense of the county, the examination by a competent bacteriologist of material from suspected cases of infectious disease, with a view to aiding in the diagnosis. Owing to the summer vacation of the various local authorities the proposition has not yet been fully considered by the majority, but, according to a correspondent of the *Times*, so far as those are concerned who have paid attention to the question, the scheme has met with unanimous approval. Among the authorities who have already pronounced in favour of the project are the vestries of Shoreditch and St. Pancras. In the case of Shoreditch the Health Committee of the Vestry points to the laboratory established by the city of New York some five years ago in connection with a scheme for general bacteriological examination of cases of diphtheria, and states that it has been received by the medical profession of that city with almost unanimous approval. In St. Pancras the Vestry has already made some progress in the direction indicated, since it appears early last year to have sanctioned the examination of pathological material in doubtful cases of diphtheria and typhoid fever, the examinations being made

when necessary, and they are considered essential to the proper notification and prevention of the spread of the disease to which they apply. The St. Pancras Vestry has come to the conclusion that a central bacteriological laboratory should be established rather than smaller local ones, and that such an institution could be provided by the Metropolitan Asylums Board, under the latter's Parliamentary powers, in the new premises now being built on the Victoria Embankment.

WHAT IS A PROFESSOR?—Doubtless everyone thinks he knows, but let the school children reply as they have done to Miss Catherine J. Dodd, who contributes "A Study of School Children" to the *National Review*. They were asked what is a policeman, a postman, a soldier, a king, and so forth. But the professor was the real crux. The country children avoided the question altogether or associated the professor with tricks at a show. Among the other replies were these: "A professor is someone who writes stories." "A man who makes a book." "A gentleman who publishes something." "A man who has passed a high examination." "A very clever man." "A learned man well-known." "One who can do his work easily." "A man skilled in sense." "A professor is a man who is well off." "A man who lives in a nice house." "A professor is a man who does something good." "A person who professes to do something." "A man who says he can do anything." "A professor teaches all kinds of instruments." "He is one who knows different languages." "A professor is a man or woman who teaches singing." "A man who knows clever tricks." There is something to be said in favour of each of these definitions, but the last one in particular seems particularly good.

MEDICINE STAMPS yielded the noble sum of £260,852 7s. 5d. net to the British Exchequer during the year ending March 31 last. The total number of stamps sold was 33,195,811, including 27,086,000 at 1½d., 5,167,588 at 3d., 833,957 at 6d., 98,894 at 1s., 4880 at 2s., and 4492 at 3s. The gross receipts derived from medicine stamp duty amounted to £260,950 0s. 3d., but nearly £100 must be deducted from that amount for repayments and allowances. The modest balance speaks well for the credulity of the British public and the prosperity of quacks.

DEATHS BY POISONING IN SCOTLAND during 1896, a report of which has only been published a few weeks, included seventy-nine due to accident and thirty-four attributed to suicide. The details, so far as regards the more important poisonous substances, are given below in tabular form:—

Poison.	ACCIDENTAL.		SUICIDES.	
	Males.	Females.	Males.	Females.
Opium	8	8	4	1
Laudanum	4	5	4	1
Morphine	1	—	—	—
Other Narcotics	2	—	—	1
Aconite	1	—	—	—
Arsenic	—	1	—	—
Carbolic Acid	5	3	3	6
Chloroform	3	—	—	—
Hydrocyanic Acid	2	—	2	—
Strychnine	—	1	1	—
Belladonna	—	—	—	1
Nitric Acid	—	—	1	—
Sulphuric Acid	—	—	1	1
Oxalic Acid	—	—	—	1
Mercuric Chloride	—	—	1	—
Mercuric Oxide	—	1	—	—
Phosphorus	—	—	1	—

The position occupied by carbolic acid, though not quite so prominent as in England, appears sufficiently so to justify its inclusion in the list of scheduled poisons.

British Association.

ADDRESS TO THE CHEMICAL SECTION

BY PROFESSOR F. R. JAPP, M.A., LL.D., F.R.S.

President of the Section.

STEREOCHEMISTRY AND VITALISM.

Of the numerous weighty discoveries which science owes to the genius of Pasteur, none appeals more strongly to chemists than that—with which he opened his career as an investigator—establishing the connection between optical activity and molecular asymmetry in organic compounds. The extraordinary subtlety of the modes of isomerism then for the first time disclosed; the novelty and refinement of the means employed in the separation of isomerides; the felicitous geometrical hypothesis adopted to account for the facts—an hypothesis which subsequent investigation has served to confirm; the perfect balance of inductive and deductive method and, lastly, the circumstance that in these researches Pasteur laid the foundation of the science of stereochemistry, are characteristics which, taken together, stamp it as the capital achievement of organic chemistry.

Physiologists, on the other hand, are naturally more attracted by Pasteur's subsequent work, in which the biological element predominates; in fact, I doubt whether many of them have given much attention to the earlier work. And yet it ought to be of interest to physiologists, not merely because it is the root from which the later work springs, but because it furnishes, I am convinced, a reply to the most fundamental question that physiology can propose to itself—namely, whether the phenomena of life are wholly explicable in terms of chemistry and physics; in other words, whether they are reducible to problems of the kinetics of atoms, or whether, on the contrary, there are certain residual phenomena, inexplicable by such means, pointing to the existence of a directive force which enters upon the scene with life itself, and which, whilst in no way violating the laws of the kinetics of atoms—whilst, indeed, acting through these laws—determines the course of their operation within the living organism.

The latter view is known as Vitalism. At one time universally held, although in a cruder form than that just stated, it fell, later on, into disrepute; "vital force," the hypothetical and undefined cause of the special phenomena of life, was relegated to the category of occult qualities; and the problems of physiology were declared to be solely problems of chemistry and physics. Various causes contributed to this result. In the first place, the mere name "vital force" explains nothing; although, of course, one may make this admission without thereby conceding that chemistry and physics explain everything. Secondly, the older vitalists founded force with energy; their "vital force" was a source of energy; so that their doctrines contradicted the law of the conservation of energy, and became untenable the moment that this law was established. I would point out, however, that the assumption of a purely directive "vital force," such as I have just referred to, using the word "force" in the sense which it bears in modern dynamics, does not necessarily involve this contradiction; for a force acting on a moving body at right angles to its path does no work, although it may continuously alter the direction in which the body moves. When, therefore, Professor J. Burdon Sanderson writes: "The proof of the non-existence of a special 'vital force' lies in the demonstration of the adequacy of the known sources of energy in the organism to account for the actual day by day expenditure of heat and work," he does not consider this special case. The application of the foregoing principle of dynamics to the discussion of problems like the present is, I believe, due to the late Professor Fleeming Jenkin. A third ground for abandoning the doctrine of a "vital force" was the discovery that numerous organic compounds for the production of which the living organism was supposed to be necessary, could be synthesised by laboratory methods from inorganic materials. It is the validity of some of the conclusions drawn from the latter fact that I wish especially to consider.

Recent years have, however, witnessed a significant revival of the doctrine of vitalism among the physiologists of the younger generation.

It is not my intention to offer any opinion on the various arguments which physiologists of the neo-vitalistic school have put

forward in support of their views; these arguments and the facts on which they are based lie entirely outside my province. I shall confine myself to a single class of chemical facts rendered accessible by Pasteur's researches on optically active compounds, and, considering these facts in the light of our present views regarding the constitution of organic compounds, I shall endeavour to show that living matter is constantly performing a certain geometrical feat which dead matter, unless indeed it happens to belong to a particular class of products of the living organism and to be thus ultimately referable to living matter, is incapable—not even conceivably capable—of performing. My argument, being based on geometrical and dynamical considerations, will have the advantage, over the physiological arguments, of immeasurably greater simplicity; so that, at all events, any fallacy into which I may unwittingly fall will be the more readily detected.

In order to make clear the bearing of the results of stereochemical research on this physiological problem, it will be necessary to give a brief sketch of the stereochemistry of optically active organic compounds, as founded by Pasteur and as further developed by later investigators.

Substances are said to be optically active when they produce rotation of the plane of polarisation of a ray of polarised light which passes through them. The rotation may be either to the right or to the left, according to the nature of the substance; in the former case the substance is said to be dextro-rotatory; in the latter, lævo-rotatory. The effect is as if the ray had been forced through a twisted medium—a medium with a right-handed or a left handed twist—and had itself received a twist in the process; and the amount of rotation will depend upon the degree of "twist" in the medium (that is, on the rotatory power of substance) and upon the thickness of the stratum of substance through which the ray passes, just as the angle through which a bullet turns in passing from the breech to the muzzle of a rifle will depend upon the degree of twist in the rifling and the length of the barrel. If the bullet had passed through the barrel in the opposite direction, the rotation would still have been in the same sense; since a right-handed (or left-handed) twist or helix remains the same from whichever end it is viewed, in whichever direction it is traversed. This also applies to optically active substances; if the polarised ray passes through the substance in the opposite direction, the rotation still occurs in the same sense as before. This characteristic sharply distinguishes the rotation due to optically active substances from that produced by the magnetic field, the latter rotation being reversed on reversing the direction of the polarised ray.

Optically active substances may be divided into two classes. Some, like quartz, sodium chlorate, and benzil, produce rotation only when in the crystallised state; the dissolved (or fused) substances are inactive. Others, like oil of turpentine, camphor, and sugar, are optically active when in the liquid state or in solution. In the former case the molecules of the substance have no twisted structure, but they unite to form crystals having such a structure. As Pasteur expressed it, we may build up a spiral staircase—an asymmetric figure—from symmetric bricks; when the staircase is again resolved into its component bricks the asymmetry disappears. (I will explain presently the precise significance of the terms symmetry and asymmetry as used in this connection.) In the case of compounds which are optically active in the liquid state the twisted structure must be predicated of the molecules themselves; that is, there must be a twisted arrangement of the atoms which form these molecules.

The earliest known experimental facts regarding the rotation of the plane of polarisation by various substances, solid and liquid, were discovered by Arago and by Biot.

After this preliminary statement as to what is understood by optical activity, we may consider Pasteur's special contributions to the solution of the problems involved.

Pasteur tells us, in the well-known "Lectures on the Molecular Asymmetry of Natural Organic Products," which he delivered in 1860 before the Chemical Society of Paris, that his earliest independent scientific work dealt with the subject of crystallography, to which he had turned his attention from a conviction that it would prove useful to him in the study of chemistry. In order to perfect himself in crystallographical methods, he resolved to repeat all the measurements contained in a memoir by De la Provostaye on the crystalline forms of tartaric acid, racemic acid, and their salts. These two sets of compounds have the same composition, except that they frequently differ in the number of molecules of water of crystallisation which they contain; but whereas tartaric

acid and the tartrates are dextro-rotatory, racemic acid and the racemates are optically inactive. It was probably this circumstance that decided Pasteur in his choice of a subject, for it appears that, even as a student, he had been attracted by the problem of optical activity. In the course of the repetition, however, he detected a fact which had escaped the notice of his predecessor in the work, accurate observer as the latter was—namely, the presence, in the tartrates, of right-handed hemihedral faces, which are absent in the racemates. Hemihedral faces are such as occur in only half their possible number; and in the case of non-superposable hemihedry, to which class that of the tartrates belongs, there are always two opposite hemihedral forms possible; a right-handed or dextro-form, and a left-handed or lævo-form. Which is right, and which is left, is a matter of convention; but they are opposite forms, and differ from one another exactly as the right hand of the human body differs from the left; that is, they resemble one another in every respect, except that they are non-superposable—the one cannot be made to coincide in space with the other, just as a right-hand will not fit into a left-hand glove. The one form is identical with the mirror image of the other, thus the mirror image of a right hand is a left hand. Such opposite hemihedral crystalline forms are termed *enantiomorphs*; they have the same faces and the same angles, but differ in the fact that all positions in the one are reversed in the other for one dimension of space, and left unchanged for the other two dimensions; this being the geometrical transformation which an object appears to undergo when reflected in a plane mirror. Enantiomorphism is possible only in the case of asymmetric solid figures; these alone give non-superposable mirror images. Any object which gives a mirror image identical with the object itself—a superposable mirror image—must have at least one plane of symmetry.

The hemihedry of the tartrates discovered by Pasteur is in every case in the same sense—that termed right-handed—provided that the crystals are oriented according to two of the axes which have nearly the same ratio in all the tartrates.

Pasteur was inclined to connect the molecular dextro-rotatory power of the tartrates with this right-handed hemihedry; since in the racemates both the hemihedry and the rotatory power were absent. A similar connection, which, however, held good only for the crystalline condition, had, as he points out, been already observed in the case of quartz, the crystals of which occasionally exhibit small asymmetric (tetartohedral) faces, situated in some specimens to the right and in others to the left; the former specimens being dextro-, the latter lævo-rotatory. The possibility of this connection was first suggested by Sir John Herschel.

Pasteur's views were confirmed by an unexpected discovery which he made shortly after. Mitscherlich had stated in 1844, in a communication to Biot, which the latter laid before the French Academy of Sciences, that sodium ammonium tartrate and sodium ammonium racemate were identical, not merely in chemical composition, but in crystalline form, in specific gravity, and in every other property, chemical and physical, except that the solution of the former salt was dextro-rotatory, that of the latter inactive. And, to make his statement still more definite, he added: "The nature and the number of the atoms, their arrangement, and their distances from one another are the same in both compounds."

At the time this passage appeared Pasteur was a student in the *École Normale*. He tells us how it puzzled him, as being in contradiction to the views universally held by physicists and chemists that the properties, chemical and physical, of substances depended on the nature, number, and arrangement of their constituent atoms. He now returned to the subject, imagining that the explanation would be found in the fact that Mitscherlich had overlooked the hemihedral faces in the tartrate, and that the racemate would not be hemihedral. He therefore prepared and examined the two double salts. He found that the tartrate was, like all the other tartrates which he had investigated, hemihedral; but, to his surprise, the solution of the racemate also deposited hemihedral crystals. A closer examination, however, disclosed the fact that, whereas in the tartrate all the hemihedral faces were situated to the right, in the crystals from the solution of the racemate they were situated sometimes to the right and sometimes to the left. Mindful of his view regarding the connection between the sense of the hemihedry and that of the optical activity, he carefully picked out and separated the dextro- and lævo-hemihedral crystals, made a solution of each kind separately, and observed it in the polarimeter. To his surprise and delight, the solution of the right-handed crystals was dextro-rotatory; that of the left-handed, lævo-

rotatory. The right-handed crystals were identical with those of the ordinary (dextro-) tartrate; the others, which were their mirror image, or enantiomorph, were derived from the hitherto unknown lævo-tartaric acid. From the dextro- and lævo-salts, thus separated, he prepared the free dextro- and lævo-tartaric acids. And having thus obtained from racemic acid its two component acids—dextro- and lævo-tartaric acids—it was an easy matter to recombine racemic acid. He found that, on mixing equal weights of the two opposite acids, each previously dissolved in a little water, the solution almost solidified, depositing a mass of crystals of racemic acid.

These two tartaric acids have the same properties, chemical and physical, except where their opposite asymmetry comes into play. They crystallise in the same forms, with the same faces and angles; but the hemihedral facets, which in the one are situated to the right, are, in the other, situated to the left. Their specific gravities and solubilities are the same; but the solution of the one is dextro-rotatory; of the other, lævo-rotatory. The salts which they form with inorganic bases also agree in every respect, except as regards their opposite asymmetry and opposite rotatory power. They are enantiomorphous.

Pasteur, discussing the question of the molecular constitution of these acids, anticipates in a remarkable manner the views at present held by chemists. "We know, on the one hand," he says, "that the molecular structures of the two tartaric acids are asymmetric, and on the other, that they are rigorously the same, with the sole difference of showing asymmetry in opposite senses. Are the atoms of the right acid grouped on the spirals of a right-handed helix, or placed at the solid angles of an irregular tetrahedron, or disposed according to some particular asymmetric grouping or other? We cannot answer these questions. But it cannot be a subject of doubt that there exists an arrangement of the atoms in an asymmetric order having a non-superposable image. It is not less certain that the atoms of the left acid realise precisely the asymmetric grouping which is the inverse of this."

The idea of the irregular tetrahedron is, it may be explained, derived from the hemihedral facets. Imagine these to develop in the case of dextro-tartaric acid until the other faces of the crystal disappear, and there results an irregular tetrahedron. Repeat the process with a crystal of lævo-tartaric acid, and the enantiomorphous tetrahedron—the mirror-image of the former—is obtained. We shall see later that the idea, on the one hand, of two asymmetric tetrahedra, and, on the other, that of two opposite helices, given as alternatives by Pasteur to explain the grouping of the atoms within the molecules of dextro- and lævo-tartaric acids, are in reality identical.

The precision of Pasteur's views as to the asymmetry of these acids enabled him to discover two further methods of separating them. Thus he points out that although these acids will possess equal affinity for any given symmetric base, such as potash, or ammonia, or aniline, yet their affinities will not be equal if the base, like quinine or strychnine, is itself asymmetric; because here the special one-sided asymmetry of the base will modify its mode of combination with the two enantiomorphous acids. The solubility is different in the case of the dextro- and lævo-tartrates of the same asymmetric base; the crystalline form, the specific gravity, the number of molecules of water of crystallisation, may be all different. Potassium dextro- and lævo-tartrates are mirror images of one another; quinine dextro- and lævo-tartrates are not. Pasteur employed in his experiments the asymmetric base cinchonine, which he converted into its acid racemate, and allowed the solution to crystallise. The first crystallisations consisted of pure lævo-tartrate of cinchonine, whilst the more soluble dextro-tartrate remained in the mother liquor, from which it finally crystallised in forms totally distinct from those of the lævo-tartrate.

Pasteur's third method is of physiological interest, and is, moreover, the stepping-stone to his later work on ferments. As we shall see presently, he regarded the formation of asymmetric organic compounds as the special prerogative of the living organism. Most of the substances of which the animal and vegetable tissues are built up—the proteids, cellulose—are asymmetric organic compounds, displaying optical activity. Pasteur had shown that two compounds of inverse asymmetry behaved differently towards a third asymmetric compound. How would they behave towards the asymmetric living organism?

It had frequently been noticed that impure calcium tartrate, when mixed with organic matters, as is the case when it is obtained in the process of preparing tartaric acid from argol, readily under-

went fermentation. Pasteur examined the action of the ferment (apparently a *Penicillium*) on ammonium tartrate—a substance which had the advantage over calcium tartrate of being soluble—and finding that the fermentation here followed a normal course, ending with the destruction of the tartrate, repeated the experiment with ammonium racemate, examining the solution from time to time with the polarimeter. The fermentation proceeded, apparently, as before; but the solution, originally optically inactive, became lævo-rotatory, the activity gradually increasing in amount until the maximum was reached. At this point the fermentation ceased. The whole of the dextro-tartrate had disappeared, and from the solution the lævo tartrate was obtained in a state of purity. The asymmetric living organism had selected for its nutriment that particular asymmetric form of tartaric acid which suited its needs—the form, doubtless, which in some way fitted its own asymmetry—and had left the opposite form either wholly or, for the most part, untouched. The asymmetric micro-organism, therefore, exhibits a power which no symmetric chemical substance, such as our ordinary oxidising agents, and no symmetric form of energy, such as heat, can ever possess: it distinguishes between enantiomorphs. If we oxidise racemic acid with nitric acid, for example, both the enantiomorphous constituents are attacked in exactly the same degree. If we heat racemic acid, whatever happens to its right-handed constituent happens equally to its left-handed constituent; the temperature of decomposition of both is the same. Asymmetric agents can alone display selective action in dealing with enantiomorphs.

By the action of heat Pasteur converted ordinary tartaric acid into racemic acid, in which process a portion of the right acid is converted into the left, an equilibrium being established; and lævo-tartaric acid may be converted into racemic acid in the same way, the inverse change taking place. At the same time, a new tartaric acid is formed in both cases: mesotartaric acid, or true inactive tartaric acid, which resembles racemic acid in having no action on the plane of polarisation, but differs from it in not being separable into two acids of opposite activity. According to our present views, it contains two equal and opposite asymmetric groups within its molecule. Racemic acid is thus inactive by inter-molecular compensation; mesotartaric acid, by intra-molecular compensation.

Pasteur, generalising somewhat hastily from the few cases which he had studied, came to the conclusion that all organic compounds capable of exhibiting organic activity might exist in the foregoing four forms—dextro, lævo, racemoid, and meso. As regards the dextro and lævo forms, this is correct; as regards the racemoid form it is generally correct; but the meso form, as we now know, is a very special case, implying that the molecule contains two structurally identical complexes of opposite asymmetry.

Were I following the exact historical order, I should introduce here Pasteur's view that compounds exhibiting optical activity have never been obtained without the intervention of life—a view which it is the object of the present address to consider. The later developments of stereochemistry, however, throw so much light on this question, and enable us to discuss it with such precision, that we shall turn our attention to these first. Before so doing, however, we may note that, in spite of the immense growth in the material of stereochemistry, and in spite of the development of the theoretical views of stereochemists, hardly any experimental method of fundamental importance for the separation and transformation of optically active compounds has been added to those described in Pasteur's classical researches, although it is almost forty years since these came to a close. Perhaps Walden's remarkable discovery of a method for the transformation of certain enantiomorphs into their optical opposites without previous racemisation, is the only one entitled to be so classed.

Pasteur was in advance of his time, and his theory of molecular asymmetry was a seed that lay for many years in the ground without germinating.

In 1858, just about the period when Pasteur was concluding his researches in the foregoing field, Kekulé published his celebrated theoretical paper, "On the Constitution and Metamorphoses of Chemical Compounds, and on the Chemical Nature of Carbon," in which he showed that, by assuming that the carbon atom had four units of affinity, the constitution of organic compounds could be satisfactorily explained. This was the starting-point of the theory of chemical structure, and from that time to the present day organic chemists have been engaged, with enormous expenditure of labour, in determining the constitution or molecular structure of the carbon compounds on the lines of Kekulé's theory.

In order that Pasteur's ideas should bear fruit it was only necessary that his purely general statements with regard to molecular asymmetry should be specialised, so as to include the recognised constitution of organic compounds. It was from this union of Pasteur's theory with that of Kekulé that modern stereochemistry sprang. The necessary step was taken, independently and almost simultaneously, by Van't Hoff and Le Bel, in 1874. I will briefly state their conclusions, so far as these bear on the subject of optical activity.

If we examine the structural formulæ of a number of thoroughly investigated optically active organic compounds, we shall find that the molecule of each contains at least one carbon atom of which the four affinities are satisfied by four different atoms or groups—an asymmetric carbon atom, as it is termed.

(To be continued.)

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE PHARMACY ACTS.

PHARMACEUTICAL SOCIETY *v.* CROOK.

At the Oldham County Court on Thursday, September 15, the case of the Council of the Pharmaceutical Society of Great Britain against John Crook, grocer, 687, Manchester Old Road, Rhodes, came on for hearing before His Honour Judge Jones. Mr. T. R. Grey, instructed by Messrs. Flux, Thompson, and Flux, appeared for the Society, and Mr. Shimmeld, solicitor, for the defendant.

Mr. Grey, in opening, said the action was brought by the Pharmaceutical Society against John Crook, and the facts were simply these:—From information with regard to the sale of poisons at the shop in question a witness, who would be called, went there on July 4 to make a purchase, and he did purchase a substance called Kay's compound essence of linseed, which contained morphine, one of the poisons within the Act. The question as to whether Kay's essence did contain morphine would not, he was glad to say, come before His Honour, because the defendant admitted that if he did sell—and this he denied—that Kay's essence did contain morphine.

Mr. Shimmeld: We say we do not know what it contains, but we are not going to dispute the point.

Mr. Grey: It says on the bottle that it contains morphine and chloroform, and also the word "Poison." We wrote them in order to save bringing an analyst down from London, and they write that an analyst would not be necessary.

Mr. Shimmeld: I am not going to dispute that, your Honour.

The Judge: I should like to know what the defence is.

Mr. Shimmeld: The defence is that we have not sold it.

Mr. Grey said the Act under which the Society were suing was the 31 and 32 Victoria, chapter 120, and was an Act to regulate the sale of poisons. These Acts provided for registration, etc., and the defendant was not a registered man. Section 2 defined what poisons were within the meaning of the Act, and he referred His Honour to the schedule on page 24, where he would see that amongst the preparations were morphine, prussic acid, cyanide of potassium, etc. Mr. Grey quoted the sections referring to the keeping of the Register, and also the clause referring to the sale whereby the defendant had rendered himself liable to a penalty of £5.

The Judge: Wholesale dealers may supply poisons.

Mr. Grey: Of course, but if the defendant comes within any part of the section he must prove it. He added that he only need refer to one case, that of the Pharmaceutical Society *v.* Armson, which was taken to the Court of Appeal, and that decided that the prohibition in Section 15 against the sale of poisons was not confined to the sale of the scheduled poisons in their simple state or to preparations of such poisons, but extended to the sale of compounds containing the scheduled poison as one of its ingredients. Then the exception in Section 16 as to making or dealing in patent medicines did not extend to proprietary medicines. He did not propose to read the judgments unless it was necessary to do so in the course of the case.

Arthur Foulds, sworn, deposed: I was instructed by the Pharmaceutical Society to make a purchase in this case, and I went to the shop of John Crook, 687, Manchester Old Road, Rhodes. It was on July 4 this year. I asked for some coffee and a bottle of Kay's essence of linseed. A middle-aged woman with

a wedding ring on, whom I took to be Mrs. Crook, served me. There was no one in the shop besides her. On asking her for Kay's essence, she said, "I have only one left." I could see it before I asked for it in a glass case on the counter, similar to the glass cases used in confectioners' shops. It was the only article in the case and prominently shown. She took the bottle produced out of the glass case and handed it to me, and I paid her 10½*d.* The bottle is in the same condition as when handed to me, the whole practically sealed up. I handed it over to Mr. Harry Moon, putting on a little white label for purposes of identification.

Cross-examined by Mr. Shimmeld: I am an inquiry agent.

Mr. Shimmeld: How many inquiries of this kind have you made before?

Mr. Grey: I really must object. It has absolutely nothing to do with this case.

The Judge: It is not relevant to the issue.

Cross-examination continued: I went at 1.35, during the time Messrs. Schwabe's calico printing people were out at dinner. I took the woman there to be Mrs. Crook. She had a wedding ring on. [Mrs. Crook stood up in court at Mr. Shimmeld's request, and witness said he would not swear she was the lady.] I was dressed as an ordinary workman—I had a muffler and cap and other things. I am not sure about the number of the shop. It is a corner place. I looked at the door but did not see a number on. I looked at the shop next door, the one nearer Middleton, and I fix the number in that way. I could not say whether there was a shop on each side of the street or not. I had no reason to take notice of that. I saw the name Crook over the door of the shop. I cannot say whether there is a shop on this side, and whether they sell the same compound.

Mr. Harry Moon, clerk in the office of the plaintiff Society, deposed to instructing the last witness to make the purchase, and to receiving the bottle produced from him.

Cross-examined: It is not a patent medicine, and so far as I am aware has not been sold as such. A person in Mr. Crook's position would not be at liberty to sell it.

Mr. Grey put in the bottle, and also the Register, and said that was his case.

Mr. Shimmeld said that, as he had already intimated, the defence was that they had not sold the bottle, and in support of this he should call Mrs. Crook, who would swear they had never sold a single bottle of Kay's essence of linseed, and if she had been asked for it the answer she would have given would have been "We have not got it."

Sarah Ann Crook deposed: I am the wife of John Crook, and I usually serve in the shop, which is a grocer's. My husband takes out a patent medicine licence, and we sell such things as Owbridge's lung tonic, boxes of pills, and things of that kind. I have never sold any of Kay's essence of linseed.

The Judge: You say you have never sold any, but have you any in the shop?

Witness: No, sir, we have no sale, and we have always kept from selling poisons.

The Judge: That is not the question.

Mr. Shimmeld: I will call all the parties who have anything to do with the shop.

Examination continued: I think I remember July 4. It was a Monday. I looked at the calendar. I do not remember the first witness coming into the shop. It is only a small village, and if any stranger had come in I should have noticed it. On July 4 I did not sell any Kay's essence to Mr. Foulds or anyone else.

Cross-examined by Mr. Grey: My daughter and my husband look after the shop. My daughter is 19 years of age.

Mr. Grey: I understand you have got a licence to sell patent medicines; what kind of patent medicines do you sell?—Owbridge's, Beecham's pills, Whelpton's, and Fenning's powders.

And "Mother Seigel's syrup"?—Sometimes.

Are you aware whether "Mother Seigel's syrup" contains poison with the meaning of this Act?

I am not.

Have you sold Winslow's soothing syrup?

No, I have not sold that.

And do you know that Kay's essence is one of the same class of medicines?

I did not know what it was.

In reply to further questions, witness said she attended to the invoices and things of that kind on account of her husband's

eyesight. She was sure they had not sold any of Kay's essence of linseed during the past three years, but she could not remember or say that they had none in the shop at all. They had not a good many people coming into the shop. Her husband was at Oldham on July 4, and her daughter was at home. They had no servant.

John Crook (sworn) stated: I keep the shop in question, which is 685A really. There is one No. 687 at the other side of the street. It is a grocer's shop, and it is possible they may sell Kay's compound essence of linseed.

The Judge: Of course he will say yes to that. It is quite possible.

Examination continued: I do not keep Kay's essence, and had none in my shop on July 4. We have sold it, but I do not think we have sold a dozen bottles in eleven years. The last I sold was six or seven months ago. I was ordering some from Mr. Sharp in February or March, and he advised me to have no more, as the right to sell it was lost in some way by Kay's people, and it came under the Poisons Act. I took his advice. Prior to that I had acted quite innocently, and thought the licence included that. In the eleven years I have had the shop I may have sold a dozen bottles, but none on July 4. Looking at the price on the bottle—9½*d.*—I never had one of that size in. I do not keep books, as my eyesight is rather bad. I simply order the things and pay the bills when due, and file them.

Mr. Grey: Only two questions, Mr. Crook. You say six or seven months ago you purchased some Kay's essence from Sharp, chemist?—I was going to order and he warned me.

Are you aware that on this very bottle is "Sharp, chemist"?—Probably so.

Sarah Ellen Crook, daughter of the last witness, also swore they had no Kay's essence of linseed in the shop.

The Judge: Let me see your hand. You have no wedding ring on, have you?

Witness: No, sir.

Cross-examined: I know everything in the shop. We have cakes in the glass case at present. I cannot swear from my own knowledge that we have not had Kay's essence in the shop within the past two years, but I do not remember any. That is all I can say.

In reply to the Judge, Mr. Grey said the section with regard to the penalty was Section 15, of 31 and 32 Victoria.

The Judge: My reason for asking is this, "Shall be liable to pay a penalty of £5." In this case I certainly feel strongly that the defendant has made a mistake. I cannot treat his evidence as an answer to that. He has been acting in ignorance of the law, and under the circumstances I should like to deal with him as leniently as possible.

Mr. Grey: I am afraid it is a penalty of £5 or nothing. We are only suing here for one penalty. There is on the bottle "Sharp, chemist." We have had several cases lately with regard to that, and he is in that way holding himself out as a chemist and druggist.

The Judge: That is the man he bought it from?

Mr. Grey: Yes, and by selling it under that title—Sharp, chemist and druggist—he is leading people to believe he is himself a chemist and druggist.

The Judge: No, I do not think that—he says "Crook, Rhodes."

Mr. Grey: Further than that, he has also committed an offence under Section 17, because he has not put his own name and address on the bottle. You see he has really committed three offences. My object in calling attention to that fact is that we only sue for one penalty. Therefore, I submit in this case it is not such a hardship quite as you might think.

The Judge said he thought the defendant had acted somewhat in ignorance of the law, and he was anxious not to impose a penalty; but it seemed to him, under Section 15, the Court had no discretion, and that he must inflict the penalty provided in the Act. Take the evidence. The evidence of the first witness, Mr. Foulds, who was instructed to attend at the defendant's shop. He said he went to the shop, and did not notice any number over the door, but saw the name—Crook. He went in, and a woman certainly served him, she had a wedding ring on, and he concluded it was the owner's wife. Further than that, there was a remarkable statement on her part that it was the last bottle they had in the shop. The defendant, according to his own evidence, has been in the habit of selling this to a limited extent, but for the last six or seven months he had not sold any. This was not evidence he could rely on in face of the direct evidence of the person sent there with explicit instructions to buy a certain

article, which he did buy and paid for. The defendant trusted to his memory as to when the last bottle was sold. Then they came to the wife's evidence, which was equally uncertain. First of all she said she was there and had not sold any, and when further examined she said she could not remember having Kay's essence in the shop on that day. If that were so, it showed her memory was not to be relied upon, and when they came to the daughter, she said she could not remember seeing any of Kay's essence in the shop. It seemed to him that the first witness happened to go in, and he purchased the very last bottle they had. It seemed to him, therefore, that the penalty had been incurred, and the learned counsel gave defendant the information that he was selling something else which might render him liable to a penalty. The best way would be for him to ascertain his exact legal position at once as to what he could or could not sell. At the same time, he was compelled to impose the penalty, which would be £5.

Mr. Shimmeld asked that it should be paid by easy instalments.

The Judge asked what Mr. Grey suggested. He wished to deal leniently. The Chief Clerk had seen the shop, and it was a poor one.

Mr. Grey said he left it entirely to His Honour's discretion as to what would be right under the circumstances. He would be aware that the Society was put to enormous expense in these cases, and if the instalments were low there was great difficulty in collecting. They cost a great deal more than they got from the County Court, and it was a public duty imposed upon them to see that nobody offended against the Act.

The Judge: Clearly it is a public duty, and it is for the protection of the public.

Mr. Grey replied he now left the matter in His Honour's hands.

The Judge: The Chief Clerk knows the shop, Mr. Grey, and it is a very small business, and under the circumstances, seeing that the matter is in the discretion of the Court, I shall not allow costs. I am bound so far as regards the penalty.

Mr. Grey: I am sorry to carry this on, but by Section 13 the Court is also bound as regards the cost.

His Honour, on referring to the section, said that was so, and ultimately made an order for the payment of penalty and costs at the rate of 8s. per month.

PHARMACEUTICAL SOCIETY *v.* WILLIAMS.

At the Llanrwst County Court on Friday, September 16, a case was heard before His Honour Judge Sir Horatio Lloyd, in which the Pharmaceutical Society of Great Britain sued Elizabeth Williams, Llanddewi, near Llanrwst, for £5 penalty for having kept open an establishment for retailing poisons contrary to the Pharmacy Act, 1868. Mr. T. R. Grey (instructed by Messrs. Flux, Thompson, and Flux, London) appeared on behalf of the Society and Mr. David Jones (Messrs. David Jones and Roberts, Llanrwst) defended.

Mr. Grey having stated the facts,

Mr. David Jones said they were admitted. The defendant was a poor woman who acted in ignorance. He consented to judgment, and asked His Honour to make an order for 5s. per month.

Mr. Grey said it was this ignorance which was dangerous and which did damage.

His Honour: An order for 5s. per month will be a perpetual reminder, and the Act is not likely to be forgotten.

An order was made accordingly.

DETECTION OF FORMALDEHYDE IN FOOD.—According to E. Rinini, if 15 C.c. of a highly diluted aqueous formaldehyde solution are mixed with 1 C.c. 1 per cent. phenyl-hydrazin-chloral-hydrate solution and three or four drops of fresh sodium nitro-prusside solution, then rendered alkaline with concentrated sodium hydroxide solution, a marked blue coloration, changing later to a deep red, is given on warming. The aldehydes of acetic, isobutyric, valerianic, benzoic, cinnamic, salicylic acids; paraldehyde, chloral, grape sugar, furfural, acetone, aceto- and benzo-phenone, camphor, methyl alcohol, and formic acid similarly treated do not give this reaction, which may therefore be considered characteristic. The reaction is suitable for the detection of formalin in food-stuffs. Milk containing formaldehyde treated as above turns blue to ash grey, the colour disappearing after fifteen minutes, giving place to a red colour.—*Chem. Repert.*, xxii., 146, after *Ann. d. Farmacoterap. e Chim.* 1, 9.

LETTERS TO THE EDITOR.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

FRENCH LAVENDER OIL AND THE BRITISH PHARMACOPEIA, 1898.

Sir,—The letter from Mr. J. C. Umney which appeared in your issue of the 3rd inst., is valuable and interesting, and I should have replied to it before, but have been waiting to hear from the distiller whose words I quoted. I have just heard from him, but he does not give a satisfactory explanation of his former statement, which I think can only be accounted for by the use of a different standard. Mr. Umney suggests that I should give results of my own experiments. I append therefore the results of the application of the Pharmacopœial tests to the nine samples of ol. lavand. exot. :—

No.	Spec. Grav. at 60° F.	Solubility in official proportion of alcohol 70 per cent.
1	0.886	Soluble
2	0.880	Insoluble
3	0.883	Insoluble
4	0.885	Soluble
5	0.887	Soluble
6	0.885	Soluble
7	0.900	Insoluble
8	0.905	Soluble
9	0.883	Insoluble

From these results it will be seen that nearly half the samples did not conform to the B.P. standard, and although I must acknowledge that my statement at the Conference was too sweeping, it behoves pharmacists to examine their oil of lavender carefully to see if it is in accordance with the official requirements.

Exeter, September 21, 1898.

H. WIPPELL GADD.

THE FALLACY OF STARCH-FREE FOODS.

Sir,—The interesting record of analyses in the Journal of September 17 by Mr. A. J. Cownley is only another instance of how we medical men are often deluded by glowing testimonials and advertisements. We have to thank Mr. Cownley for taking the trouble to bring this matter before us. Last year I had a patient suffering from diabetes, who, being well to do, was able to obtain from London supplies of diabetic bread, biscuits, and flour. They were all certainly very expensive, and not very pleasant to the palate. After a time I bethought me to test these expensive articles, and I was astonished to find that they were practically, as far as starch was concerned, identical with ordinary bread or flour. I at once placed my patient on ordinary regulated diet, and found that the state of health differed in no respect from what it did when "diabetic" bread was prescribed, and I afterwards discarded these fancy preparations altogether and got the cook instructed in preparing bran bread, mixed with washed flour. I found that an intelligent woman could so wash the flour that most of the starch was removed, and this mixed with bran could be made into a loaf, and the patient could have it fresh instead of fusty. Several hours' washing of oatmeal, too, I found removed the starch in great part, and this could be made into an agreeable porridge and eaten with cream. This sort of dietary with meats of all kinds and fruits (allowable) is less irksome to the patient than might be supposed. The fact of foods being prepared at home has a good effect on a patient. Oranges in November I found contained from 4 per cent. of a sugar which does not readily reduce Fehling's solution. Baked apple pulp in the same month contains from 6 per cent. of a sugar readily reducing Fehling's solution. If pharmacists took up this branch of work they could help medical men in determining the true value of foods in diabetes as in other diseases, and it would bring grist to the mill in an indirect way.

Leeds, September 19, 1898.

GORDON SHARP, M.D.

POTASSIUM BITARTRATE AND THE B.P., 1898.

Sir,—In the Journal of last week Mr. Doward draws attention to what seems self-contradiction in the official characters and tests of this salt. Cream of tartar is now required to contain 97·5 per cent., yet the volumetric determination is equivalent to 97·11 only, a difference of 0·39. Similar apparent inconsistencies are met with throughout the Pharmacopœia, but an explanation of such is found in the preface, where it is stated that the quantities of volumetric solutions requisite in testing are given with such degrees of accuracy as are obtainable with an ordinary burette. It is impracticable to read to the second place of decimals on an ordinary burette, therefore the B.P. statement, "Each gramme of the dry salt should require for neutralisation at least 5·2 C.c. of the volumetric solution of sodium hydroxide" is preferable to 5·220883, etc., C.c., which theory demands. In a few cases, such as arsenious and hydrobromic acids, more exact readings are given, but they are the exception, not the rule.

Edinburgh, September 19, 1898.

WILLIAM DUNCAN.

CLASSES FOR PHARMACEUTICAL STUDENTS.

Sir,—I enclose a prospectus of our evening classes, and should like to call your attention to the classes on pharmaceutical chemistry and botany. I notice that in your Students' Number this institute is not mentioned as supplying pharmaceutical courses. We made a start last year with pharmaceutical chemistry, lectures and practical work. We enrolled eleven for the lectures, ten Minor and one Major, candidates, and for the practical twelve Minor and three Major candidates. This year we have added botany, and if successful shall add materia medica next session. You will notice the hours are late to suit chemists' assistants and the fees are low.

South-Western Polytechnic,
Manresa Road, Chelsea,
September 20, 1898.

J. B. COLEMAN,
Head of Chemical Section.

* * * The special class in pharmaceutical chemistry, referred to by Prof. Coleman meets on Wednesdays at 8.45 p.m., the fee for a course of about forty experimental lectures being 6s. only, or, with one evening's practical work per week, 10s. A similar class in pharmaceutical botany is held on Tuesdays at 7.30 p.m., the fee in the latter case, 10s.—also including practical work.—[Ed. P. J.]

RECTIFIED SPIRIT OLD AND NEW.

Sir,—Owing to the altered strength of rectified spirit in the new B.P., I should like to know if spirit. rect. B.P. 1885 (which is known also as 56 o. p.) can be transformed into spirit. rect. B.P. 1898 (approximately 58 o. p.) by the addition of absolute alcohol; if so, how is it to be done?

September 13, 1898.

ENQUIRER (16/15).

* * * The alcohol conversion table, by Mr. F. C. J. Bird, published in the *Pharmaceutical Journal* for May 21 1898, gives complete data for the required purpose. [Ed. P. J.]

A CAUTION.

Sir,—We have had stolen from us, among other things, a quantity of medicine stamps, 1½d., 3d., and 6d. Would you kindly warn chemists through your columns against purchasing stamps offered for sale, and ask them to at once give information to the police if such a case occurs.

Cranbourne Street, London.
September, 15, 1898.

FRIZELL AND CO.

PUBLIC INSTITUTIONS AND THEIR DRUG CONTRACTS.

Sir,—In last week's number of the *Pharmaceutical Journal*, under "Pharmacy in Ireland," your correspondent states that public institutions have some difficulty with their drug contracts. In an infirmary under the Local Government Board a system is in use which has worked well. The contractor is supplied with the usual tender form, on which is given (only for a guide) a short list of the articles most used, with quantities used during preceding contract. The contractor has to send in with his form a list (his current price-list) stating how much discount he is prepared to allow off all the articles in that list. In adjudging contract the lists are compared one with the other, individual items being compared. This has the advantage that "faking" the prices is almost entirely prevented, as it is very unlikely that a contractor would issue a special list for that contract, also, that almost all drugs, etc., come under the contract, as most druggists make their price-lists as complete as possible, thus preventing the charging of high prices for things out of the contract, and,

lastly, putting the competitors on a more even footing as regards the tendering.

London, September 19, 1898.

W. J. D. (143/31).

M.P.H.S.?

Sir,—Would it not be a wise thing for the Council of the Pharmaceutical Society to recommend its members to use a definite set of initials, such as M.P.S.G.B., in order to show their connection with the Society, in the same way that members of the Irish Society would be distinguished by the letters M.P.S.I.? I think that if every member would use the distinctive initials on all his labels, circulars, etc., the public would very soon look for those initials as indicating the keeper of a "chemist's shop," and those outside the Society would find it worth their while to become members.

September 17, 1898.

A LOCAL SECRETARY (143/16).

ANSWERS TO QUERIES.

Special Notice.—Scientific, technical, legal, and general information required by readers of the '*Pharmaceutical Journal*' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms, and the registered number added in each instance should be quoted in any subsequent communication on the same subject.

HOLIDAYS.—In the absence of a written agreement to that effect we are afraid you have no ground for claim. [Reply to No. 6.—16/10.]

FORMULA REQUIRED.—We cannot undertake to prescribe medicines in these columns. [Reply to W. J. W.—16/12.]

BOTANICAL.—Your plant is a specimen of *Hypericum elodes*. [Reply to A. L.—11/91.]

PHOTO-MICROGRAPHY.—Thanks for your suggestion, but the author is already arranging to republish the articles in book form. [Reply to J. H. B.—143/17.]

COMMERCIAL INFORMATION.—Matters such as you refer to hardly come within our scope. All you need to know about the points you mention can be gleaned from such a book as 'Every Man's Own Lawyer,' published by Crosby, Lockwood and Son at 6s. [Reply to W. B. W.—141/16.]

FREEDOM OF THE CITY.—If you receive the freedom of the city you become a citizen and are entitled to participate in the election of what ought to be, but is not, the representative governing body. To become a freeman of the city you must be elected a member of a city guild. [Reply to W. B. W.—16/4.]

EFFECTS OF OPIUM.—The headache and tendency to sickness are attributed by medical authorities to the excretion of some decomposition product of morphine—such as apomorphine—from the blood into the stomach. The simplest remedy is another dose of morphine, but stimulants such as alcohol or cocaine are sometimes preferable. [Reply to SEDATIVE.—16/18.]

CELLULOID.—It ought not to be difficult to prepare a solution that will leave a clear film on evaporation by using amyl acetate as a solvent, but you will not be able to produce transparent and polished sheets of celluloid except you combine partial solution with pressure, and employ special appliances. You will find details of one process in the first volume of Thorpe's '*Dictionary of Applied Chemistry*.' [Reply to H. J. P.—16/16.]

INFORMATION WANTED.

CELLULOSE ACETATE.—I shall be glad if any reader can give me the address of a firm from whom I can obtain cellulose acetate.—J. H. B. (16/19).

PRINTING INK ERASER.—Can any of your readers tell me of a liquid which erases printing ink and leaves no stain? Such a liquid is prepared and largely used in America.—W. (16/20).

PROPRIETARY ARTICLES TRADE ASSOCIATION.

At a meeting of the Council of the above Association, held on Thursday, September 15, there were present Mr. Shorrock (Messrs. Bovril and Co.), Mr. Gilligan (Messrs. Corneille, David and Co.), Mr. J. E. Garrett, Mr. C. Sanger (Lambert and Co.), Mr. G. R. Barclay (Barclay and Sons), Mr. W. Edwards (Messrs. W. Edwards and Sons), Mr. Pickering (Messrs. F. Newbery and Sons), Mr. E. P. Sanger (Messrs. J. Sanger and Sons), Mr. A. Tebbut (Messrs. Sutton and Co.), Mr. W. R. Barnes, Mr. Bunker, Mr. Cooper, Mr. T. S. Wokes, and Mr. T. P. Garrett, Newport. In the absence of the President, through indisposition, the chair was taken by Mr. C. Sanger, who, before commencing the ordinary business of the meeting, drew attention to the lamentable death of the late Mr. Seely, who was a former Vice-President of the Association, and one of its most active supporters. Mr. Seely, he said, had taken a very active part in all questions affecting trade organisation, and was one of those men whom the drug trade could least spare. The Secretary was instructed to write to Mrs. Seely expressing the deepest sympathy of the members of the Council. It was also decided to send a letter of condolence to the Halifax Chemists' Association.

The report of the Executive Committee was read and adopted. Amongst other things, it stated that, since the last meeting of the Council, five proprietors had joined the Association, and over 150 retail members. The Committee expressed its great satisfaction at having received the fullest assistance from the wholesale houses in tracing supplies to cutters, and through their help a number of firms who had been buying on behalf of firms on the stop-list had been traced, and their supplies withheld. It was also stated that a number of attempts had been made to purchase goods in unusually large quantities by firms who could not possibly want the goods ordered in the ordinary course of their business. The Committee had, in each case, insisted upon a stringent undertaking, rendering the firm so purchasing liable to damage if the article reached the firms on the P.A.T.A. stop-list, and it withheld supplies unless a satisfactory explanation was forthcoming. The Council were recommended to authorise a departure in regard to the Photographic Section, so that, in future, members of the Retail Drug Section of the Association, who were also photographic dealers, should be admitted members of the Photographic Section without further subscription. Most beneficial results were reported as a result of the visit of Mr. W. Johnston to the north of Ireland and certain Midland towns.

In reference to the Grocery Section, it was stated that considerable delay had arisen, owing to the necessity for waiting a reply from the secretary of the London Wholesale Spice and Rice Dealers' Association. The members of that Association had been invited by the Retail Grocery Section to co-operate with the view of forming a Wholesale Section of the P.A.T.A. A letter had, however, been received from the secretary of that Association, explaining that whilst they have every sympathy with the objects of the Association, they felt that the combination suggested would not be practical. The Retail Grocery Section would meet the proprietors early in October, and it would then be decided whether to form a Wholesale Section with the help of the country wholesalers, many of whom had written strongly in favour of such a course, or whether the grocery branch should only consist of two sections, namely, manufacturers and retail. On the motion of Mr. Tebbutt, seconded by Mr. E. P. Sanger, the report was unanimously adopted.

A recommendation to the Committee in reference to the Photographic Section was unanimously agreed to. The report of the Executive Committee in reference to the appointment of a solicitor to the Association was considered. The Committee recommended that Mr. F. W. Beck, of Messrs. Neave and Beck, should be appointed solicitor to the Association, so that the Secretary would be able to consult him at any time in connection with Association matters, and also to obtain, for any member of the Association, legal advice on any question arising in regard to their business. On the motion of Mr. Wokes, seconded by Mr. T. P. Garrett, Mr. Beck was unanimously appointed.

The question of the organisation by the Association, of a chemists' defence fund, was discussed, with the result that a sub-committee of the London retail members of the Association was appointed to draw up a scheme in detail, and submit it to the next meeting of the Council. The Secretary reported that he had

received inquiries from members of the Association as to whether they would be enabled, under the regulations laid down by the Association, to enter into an agreement with the United Service Association, Ltd. It was explained that this Association was inviting the public to become members at a small annual subscription, and in return were offering them various discounts upon the amount of their purchases made from certain traders who had entered into an agreement with the Association. It was unanimously decided that the trade be strongly urged not to enter into any arrangements by which companies or third parties were to assist them in dividing their profits with the public, and that it be pointed out that no such arrangements should be permitted by which purchasers obtained directly or indirectly a bonus or discount off the protected prices paid for P.A.T.A. articles.

PHARMACY IN IRELAND.

[From our Dublin Correspondent.]

THE CALM THAT PRECEDES A STORM is at present observed in the deliberations of the "pharmaceutical fathers" at Mount Street. The casual observer would scarcely gather from the report of last month's meeting of the Society how deep the fires are burning beneath the surface, or how near a crisis are matters affecting the future government of pharmacy in Ireland. Yet such is the case, and the result will be made manifest within the next few days. It is an open secret that the Society, as a body, has for some time past been "a house divided." That the remainder of the adage has not before this been exemplified is due mainly to the spirit of toleration and forbearance shown by those concerned. The leaven of discord is unfortunately working too well and time, instead of smoothing the difficulty, is only accentuating it.

BY THE TIME these notes reach my readers the war trumpet will have been sounded, and good men and true "from Fair Head in Antrim to Mizen Head in Cork," will be called on to show by their votes how much or how little they feel in connection with the leaven above referred to. In other words the annual elections of the Society will take place in a day or two, and the following councillors retire by rotation:—Messrs. Grindley, Wells, Montgomery, Kelly, Hayes, Conyngham, and Merrin. The first four may be taken to represent one side of the "House," and Messrs. Hayes, and Conyngham the other. Dr. Merrin, the remaining outgoing councillor, is a busy physician, and the proprietor of an extensive pharmacy in Dublin. For the seven vacancies on the Council there will probably be eleven candidates, namely the seven outgoing councillors already referred to, and Messrs. Tait (Belfast), Michie (Blackrock), Brittain (Drogheda), and Dr. McWalter (proprietor of Leonard's Medical Halls, Dublin). That all will actually go to the poll is however doubtful, as rumour has it that at least one of the candidates-elect is performing that sometimes difficult acrobatic feat of balancing himself on the hedge, and waiting to see who exactly are the "Richmonds" about to enter the field. The war-cry of Messrs. Grindley, Wells, Montgomery and Kelly is understood to be "*mort au compaignie; vive le pharmacie pur*," whilst that of the remaining warriors is varied. It may, however, be stated that Messrs. Tait, Michie and Brittain are the nominees of four of the outgoing members, Dr. McWalter being a free-lance and a powerful adversary by the same token.

IT WAS RECENTLY STATED that if the licentiates had been as wise when the elections were held last year as they were subsequently, the result would have been vastly different. The inference to be drawn is that votes given to some of the Councillors now retiring would have been otherwise disposed of, with the result that candidates who retired gracefully—or the reverse—from the contest then held, would have been probably returned on the Council. To those who made that statement the opportunity of mending their hand will now be offered, and with a view of testing the pharmaceutical chain by the link of company pharmacy, a circular signed by Messrs. Grindley, Wells, Montgomery, and Kelly is in course of issue to all voters of the Society, asking for their support to themselves, and also the three candidates whom they have nominated. The circular recapitulates all that the signatories have done for the good of pharmacy in general, and the licentiates in particular; and in addition to this, the three candidates referred to are each sending out strongly worded circulars of an election-

earing type, soliciting the suffrages of the "free and independent voters." To put it mildly, there will be a square fight, and on the result hangs the "company" question so far as the Society is concerned.

THOSE WHO HAVE AT HEART the best interests of the Society regard the present crisis as a melancholy instance of disunity. Formerly it was considered only courteous to re-elect the outgoing Councillors, and rarely, indeed, was a contest rendered necessary; but of late years all this has been changed, and not for the better of pharmacy or its followers. An erstwhile grave and dignified body has compromised its prestige by ways and means too well known to be dwelt upon. The ordinary rules of debate have on more than one occasion been violated, and the President literally shouted down by those who might reasonably be expected to assist him in preserving order. The explanation is unhappily expressed in one word—"self," and it is to bring matters to a head that the forthcoming extreme course has been resorted to.

OF THE OUTGOING COUNCILLORS some are sufficiently well known to need no word painting. None who were connected with pharmacy in 1875 but can remember Mr. William Hayes, whose popularity resulted in his election as President of the Society. Mr. Conyngham, an old and respective representative of pharmacy, is a director of the flourishing concern of Hayes, Conyngham, and Robinson, Limited, and has, throughout his career, vied with his co-director, Mr. Hayes, in maintaining the welfare of pharmacy from his experience of what it ought to be. Both gentlemen have spared no effort to cement the cordial relations between the trade and the public. Mr. Wells is also an ex-President of the Society, over the welfare of which he has presided with marked ability: he would still hold the reins of government but for his determined refusal to accept office again under existing conditions. He has the name of being a "fighting man," but it is right to say he fights with his head, or rather with his brains. Being a man with a will and determined on using it, he is apt to strike out vigorously in what he believes to be his mission, despite the odds. Mr. Wells may be fairly called the apostle of pure pharmacy and his worst enemies, of whom, for a belligerent, he has few, agree that all his actions are governed by *mens conscia recti*. Messrs. Grindley, Montgomery and Kelly are devoted followers of what has come to be known as "Wells' policy." In their personality they are highly estimable gentlemen. Mr. Grindley, though somewhat retiring in disposition, is counted one of the most valuable members on the Council—one who does good by stealth and blushes to find it fame. Mr. Montgomery hails from the "Northern Athens," and although not so well known to the Dublin craft he is always at hand when wanted. To Mr. Montgomery are entrusted the affairs of the society in Ulster, and to his zeal and watchfulness may fairly be ascribed the present satisfactory condition of pharmacy in the north of Ireland. Mr. Patrick Kelly is very popular with the licentiates, by whom he is regarded as *patriis boni*, having acted as their guide, philosopher and friend for many years past. Dr. McWalter, though a young man, has already made his mark in medical and pharmaceutical circles. An old chemist's assistant himself, he has that "fellow feeling" towards his quondam colleagues which makes him "wondrous kind" to all classes and conditions of assistants. Dr. McWalter's views on company pharmacy are extreme and it is the general belief that the welfare of the Society would be safe in his hands if elected to serve on the Council.

THROUGH THE SAD AND UNTIMELY DEATH last week at Clones of Mr. E. P. Murray, Councillor of the Pharmaceutical Society of Ireland, a report of whose tragic end appears elsewhere in these pages, a vacancy has been created on the Council which will probably be filled by the co-option of one of the four new candidates above referred to. In the event of Dr. McWalter not being returned for one of the seven vacancies it is not improbable he will be asked to allow himself to be co-opted in Mr. Murray's place.

IN THE EVENT OF DR. MCWALTER being elected M.C.P.S.I., the Pharmaceutical Society of Ireland will enjoy the distinction of having no fewer than five medical gentlemen on its Council, namely, Drs. Tichbourne, Merrin, Whitla, Walsh and McWalter, a striking sign that pharmacy and medicine are advancing hand in hand, and also that going with the times the old love has not

been cast off for the new, all being worthy sons of Galen before they became added to Æsculapius.

MINDFUL OF TIME'S PASSAGE, Mr. R. J. Downes, the energetic President of the Pharmaceutical Society of Ireland, is actively engaged in collecting material for the syllabus of the forthcoming evening meetings of the Society. Already, I understand, he has secured promises from eminent gentlemen to read papers or deliver lectures on subjects of interest to the members and the trade, and, as far as can be foreseen, a thoroughly successful session is already secured. It is to be hoped the President's efforts to inform, to instruct, and to amuse the licentiates will be recognised by an increased attendance at the meetings. Mr. Downes has not spared himself to make these gatherings popular, and it remains for the craft at large to make them populous by their presence. Last session the President foreshadowed a number of pleasing departures by the Society, including a botanical museum, and it was also suggested that a gymnasium be started for the benefit of the younger members. These and several other benefits are in store, and as a hearty welcome is extended by the President and the Council to all in the trade desirous of attending the meetings there is every reason to anticipate a cordial response.

ENCOURAGED BY THE SUCCESS which attended the first annual dinner in November last of the Pharmaceutical Society, the Council has decided on a "repeat" this year, and has fixed the date for the 4th proximo, when the President will "dispense" the hospitalities at the Shelbourne Hotel. The invitations will, I understand, be numerous and representative.

THE MANY FRIENDS of Mr. W. Vincent Johnston, M.P.S.I., honorary secretary of the Irish Pharmacists Assistants' Association, will be pleased to learn that he is about to open business on his own account in Ranelagh. Being well known and highly esteemed in that rising suburb of Dublin, Mr. Johnston is certain of success in his new venture.

APROPOS OF THE ASSISTANTS' ASSOCIATION, the opening meeting of that body for the ensuing winter session will be held the first week of next month, and much interest will be attached to the election of new office bearers. It is minus a President in consequence of the departure from Dublin to Belfast of Mr. W. J. Hardy, who so ably filled the chair for the past year. His successor has, I understand, been already named, and if the choice falls on the gentleman referred to, the right man will be in the right place. Like the parent body, the preparation of a syllabus is engaging attention, and a not less interesting literary menu is anticipated. A word of praise for so successfully conducting the affairs of the Association is due to Messrs. Turner, Johnston, and Hunt, through whose exertions may be ascribed its present strong position as a literary and social body.

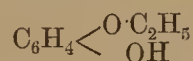
THE LISTOWEL DRUG AND MEDICINE CONTRACT has assumed a new aspect. A fortnight or so ago the Local Government Board informed the Guardians of the Listowel Union that they regretted the medicine contract had been given to a Mrs. English, a Mullingar lady pharmacist, and the Guardians for the nonce cried *peccavi*. On reflection, however, they determined to stick to the contract, and accordingly appointed the lady, whose tender was not the lowest. This act of gallantry was quickly followed by an official mandate from the Local Government Board, that if the Guardians insisted on appointing Mrs. English, the Board would hold the Dispensing Committee responsible. This dire threat had the very opposite effect to that intended, and the Guardians once more displayed their chivalry by forthwith ratifying Mrs. English's tender. We may expect to see a sworn inquiry being held by the Local Government Board's Inspector.

THE TRAGIC DEATH of an Irish Pharmaceutical Councillor occurred at Clones on the 13th inst.; an accident occurred in the pharmaceutical concern of Mr. E. P. Murray, J.P., M.C.P.S.I., resulting in the death of the proprietor. It appears that on the evening in question he had been doing something in his pharmacy, regulating drugs on a shelf, when it gave way, and the contents fell about him. A large bottle of vitriol seems to have broken over his head and shoulders, his arms, head and face were burned black by the corrosive fluid, and he died on the following morning from shock, the effect of the burns.

NEW REMEDIES.

FERRIPTONE.—Ferriptone is a concentrated preparation of iron for subcutaneous injection or to be taken in water in the usual way. It is neutral, does not discolour the teeth, and is free from any marked taste or odour. Schuler has obtained good results with ferriptone in the treatment of various forms of anæmia and debility.—*Pharm. Zeit.*, xlii., 564.

AJACOL AND GUÄTHOL.—The dry distillation of the calcium salt of diethylprotocatechuic acid furnishes, according to Parthiel, besides the large amount of diethylprotocatechuic acid ethyl ester, pyrocatechin, and two other bodies, one of which the author classifies as diethylpyrocatechin—



This compound is a pale yellow oil, sinking in water without being dissolved. A few drops of alcohol, however, readily effect solution. It distils at 240°-249° C. The guäthol of Merck is pyrocatechin-mono-ethyl ester; it is prepared by heating molecular portions of pyrocatechin and alcohol with zinc chloride under a condenser or in closed vessels to 180°-220°C. The fluid is of an oily character and has an agreeable aromatic odour. In the cold it solidifies to colourless crystals, melting at 27°-28°C., boiling towards 215° C. Heyden has introduced a similar preparation in a crystallised state under the name of ajacol. The melting point of ajacol is 26° C., and boils at 209°-209°·5. The specific gravity of the liquefied ajacol is 1·0913 at 15° C., that of the guäthol 1·092. Ajacol crystallises very readily, but the guäthol much less so.—*Pharm. Zeit.*, xlii., 654.

FANGO.—Under this name a bluish-grey volcanic mud, derived from the hot springs of Battaglia, has been used as a cataplasm in rheumatism, gout, and similar affections. It is applied directly to the affected region first at 42° C., gradually raised to 56° C., and covered with cotton wool and gutta percha tissue. It is claimed to exert a chemical as well as a physical action, producing a profuse local diaphoresis.—*Rev. Med. Pharm.*, v., 138, after *Med. Mod.*

QUINOPYRINE.—Santesson gives this name to a highly concentrated solution of quinine hydrochloride and antipyrine. A mixture of the following composition has already been introduced by Laveran for subcutaneous injections:—Quinine hydrochloride, 3 grammes; antipyrine, 2 grammes; distilled water, 6 grammes; also a solution of about 30 per cent. of quinine and 20 per cent. of antipyrine. Both authors state that the pains usually following on quinine injections are entirely avoided by the use of quinopyrine. Although this is not an entirely new observation, yet the immunity from pain and other ill effects is very strange, seeing that subcutaneous injections of concentrated solutions of antipyrine are always followed by violent convulsions. The neutral hydrochlorate of quinine alone is only soluble in water to the extent of 3 per cent. On the addition of antipyrine, according to Santesson, a 50 per cent. solution of the quinine hydrochloride is perfectly stable. The small volume of water used for the preparation of the solution is insufficient to saturate the powder. On heating, however, the mass soon commences to melt to a clear syrupy light yellow or almost colourless fluid. This fluid does not deposit crystals, neither do crystals appear on evaporation, only a varnish-like substance remains. Pure dry antipyrine seems to act as a kind of solvent on the quinine hydrochloride. When mixed in a test tube and heated on the water bath they melt gradually to a clear tough substance which does not crystallise on cooling. Santesson is of opinion that a new chemical body is formed during the process, since the effect of quinopyrine is in many cases entirely different from that produced by its constituents.—*Pharm. Ztg.*, xlii., 623.

ETHYLENE-DIAMINECRESOL IN THE TREATMENT OF SKIN DISEASES.—Ekstein finds that ethylene-diaminecresol has more marked antiseptic properties than other remedies of the phenol group, and that it has a very powerful bactericidal action, penetrating deeply into the tissues. In the strength solution usually employed, 0·25 to 1·5 per cent., it does not cause much irritation. It is specially useful in eczema, the treatment of sycosis, and in ulcerated legs and the treatment of infected wounds.—*Nouv. Rem.*, xiv., July 8, 1898, 300, after *Vratch.*

EXTRACTS FROM CONSULAR REPORTS.

THE PRODUCTION OF INDIARUBBER in Lagos has suffered a serious falling off in 1897, owing to the reckless way in which it was collected, the amount shipped from the Colony in that year being 4,458,327 lbs., as against 6,484,365 lbs. in 1896. It is anticipated that the greed and guile of the small minority that collects and adulterates rubber, coupled with the apathy of the large majority of onlookers, must inevitably deal a severe blow at the trade, if it does not bring about the ultimate extinction of the industry in Lagos. The native chiefs are being encouraged, however, to have the rubber collected in a thrifty and systematic manner, which, it is hoped, will show good results in the near future.

THE EXPORT OF PALM OIL from Lagos during 1897 amounted to 1,858,968 gallons, showing a large decrease on the previous year, when 3,154,333 gallons were exported. There was also a decrease in the export of kernels. The dryness of the past two seasons is held to be responsible for the falling off in both cases. Cocoa and coffee are being cultivated with success in the Colony, and the Government is using every means in its power to encourage the cultivation of economic plants.

THE IMPORTS OF CAUSTIC SODA and potash and sulphates of iron and copper into Mexico during 1897 increased by nearly 40 per cent. over the previous year. This increase, however, was set off by a decrease in paints and colours and in miscellaneous drugs and chemicals. The values of the imports were:—Paints and colours, £54,419; miscellaneous drugs and chemicals, £191,655; caustic soda and potash and sulphates of iron and copper, £98,735.

THERE IS AN OPENING IN MEXICO, according to Consul Carden, for a good trade in English paints, which at present are not imported into that country. The paints that are now sold there are stated to be of inferior quality and very dear, all the colours being coarsely ground. It is also stated that no Japan gold size nor first quality paint or tinting brushes are obtainable in Mexico.

A BAD VANILLA CROP in 1897 caused the Mexican export of that product to be considerably less in quantity than in 1896, but a good rise in price tended in great measure to compensate for the loss. With regard to chicle, however, matters were exactly the reverse, the quantity exported in 1897 being nearly 500,000 lbs. more than the previous year, but a reduction of about 20 per cent. in price brought the total value of the exports to below that of 1896.

GREAT ATTENTION IS BEING PAID to the cultivation of the kola nut in the German colony of Togoland (Africa), also to the production of indiarubber. Regulations have been issued to prevent the wanton destruction of indiarubber trees, and the dealers receive licences from the Government. Only natives are allowed to collect this product, strangers being forbidden to ply the trade without a special licence, which costs £50 a year. The cultivation of the oil palm remains in the hands of the natives, Europeans not having as yet undertaken this branch of industry.

AN EXPERIMENTAL PLANTATION has been established at Sebbe, Togoland, where it is found that the trees which do the best are mangoes, eucalyptus, banana, bixa, orellana, oranges, and coffee. Another new garden is being started at Lome, where native gardeners are being trained.

THE METHOD OF CULTIVATION pursued by the natives in German East Africa is to burn tracts of country, cultivate the burnt tract, and then remove to another district, repeating the process. Efforts have been made to cure them of this primitive mode of procedure, and to introduce a more intelligent form of farming, but not with much success.

AN EXPERIMENTAL BACTERIOLOGICAL STATION has been established near Windhoek, South-West Africa, and it is hoped that a system of inoculation of the cattle to prevent a repetition of the recent outbreak of rinderpest will be successfully introduced and enforced. A similar station for the investigation of horse disease, it is reported, has been set on foot.

Announcements.

THE SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY will hold its Annual Dinner at the Masonic Hall, Sheffield, on Thursday, October 13, at 7.45 p.m. Earlier on the same evening, at 6.30, Mr. J. Rymer Young, of Warrington, Member of the Council of the Pharmaceutical Society, will deliver an address to the students, at the inaugural meeting.

MANCHESTER PHARMACEUTICAL ASSOCIATION.—The forthcoming session of this Association promises to be more than usually interesting. At the opening meeting on October 12 an address on "Pharmacy and Parliament" is to be given by Mr. John Harrison, J.P., of Sunderland. Mr. J. Rymer Young, another member of the Council of the Pharmaceutical Society, at the December meeting, is to discourse on "The Pharmacy Act, 1898, Literally Interpreted." Numerous contributions, critical or otherwise, on the new B.P. are promised, and a lantern lecture by Mr. H. Woolley, F.R.G.S., is also in the list of fixtures.

THE ROYAL PHOTOGRAPHIC SOCIETY will open its forty-third annual Exhibition at the gallery of the Royal Society of Painters in Water Colours, 5A, Pall Mall East, on Monday next, September 26, at 10 a.m. The exhibition will be open daily until November 12 next, from 10 a.m. to 5 p.m., and on Monday, Wednesday, and Saturday evenings from 7 to 10 p.m.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.—The annual meeting will be held at the Rooms, Whimble Street, on Wednesday, October 12, commencing at 2.30 p.m. The annual dinner will take place at Routly's Farley Hotel, Plymouth, on Wednesday, October 12, at 7.30 p.m., tickets 5s. 6d. each.

CHEMISTS' ASSISTANTS' UNION.—At a meeting of the Provisional Council, held at the Horse Shoe Hotel on Thursday night, September 15, it was decided that the first annual general meeting be held on October 6, at 9 p.m. at the Horse Shoe Hotel, when the opening address will be delivered by H. Dutch, Esq., M.D. Several patrons and a large number of members were elected, and a host of inquiries from all parts of the country were dealt with. Local secretaries were appointed in several towns, and a big meeting on the 6th prox. is anticipated.

AN EXHIBITION OF OPTICAL, scientific, and mathematical instruments will be opened by the Lord Mayor at the Mansion House, on Monday, October 3. There are so many persons, observes the *Daily Telegraph*, in London who either wear or expect to wear spectacles that the exhibition appeals to a fairly wide field. The new and the old style will be side by side, with many curious specimens of ancient optical instruments. The Astronomer-Royal, who has been for many years a member of the Spectacle-makers' Company (which is promoting the exhibition), will, it is expected, add to the interest of the collection by contributing some rare specimens from Greenwich Observatory. Most of the well-known firms of opticians are also sending exhibits, ancient and modern. The exhibition will be opened daily from October 3 to 7, from 2 o'clock until 9. Mr. H. C. Kemp, of Thavies-inn, who is a member of the guild, has been entrusted by the company with the organisation and management of the matter.

PHARMACEUTICAL SOCIETY OF IRELAND.—The last days for lodging applications for the October examinations will be:—For the pharmaceutical assistants, Monday, September 26; registered druggists, Tuesday, September 27; pharmaceutical licence, Wednesday, September 28.—The second annual dinner is, we hear, to take place on the evening of the 4th prox., and, judging from the inaugural one last year, a most enjoyable evening is in store for those privileged to be present.

OWING TO THE FAVOURABLE WAY in which the Liebig Company's Bonus Scheme has been taken up by the trade, the Company has decided to extend the period so as to include all orders received up to October 31 next, in order that buyers may take advantage of the 5 per cent. bonus when placing their seasons orders.

Accidental Poisoning Cases.

DISINFECTANT.—A verdict of "Poisoning by misadventure" was returned at an inquest held at the Durham County Asylum, Sedgfield, on Saturday last, with respect to the death of a patient named Geldard, who had found a bottle of disinfectant in a cupboard and drank some of the contents.

CARBOLIC ACID.—Norman Stead, aged two years, son of a journeyman stonemason, of 84, Wykham Street, Liverpool, died on Thursday, September 15, from the effects of drinking carbolic acid from a bottle temporarily placed upon the kitchen dresser. The mother had cautioned the children not to touch the bottle, but during her absence from the room the child drank some of its contents. A jury returned a verdict of "Accidental death," and the coroner remarked that no one was to blame.

SPIRIT OF SALT.—On Friday, September 9, John Preston, 60, builder, of Brent, drank a quantity of spirit of salt from a bottle which he supposed contained cider. Every effort was made to save life, but death occurred the next day.—At a subsequent inquest, the jury returned a verdict of "death by misadventure," and strongly condemned the keeping of such acids in bottles which are not labelled.

CARBOLIC ACID.—Another death due to the dangerous habit of keeping poisons in bottles not plainly labelled, together with medicine bottles and other articles in daily use, has occurred near Rooskey. A Mrs. Noble was unwell, and was taking medicine under doctor's orders. On Monday, September 12, she poured out and took a dose of what she supposed was her medicine, but which proved to be carbolic acid. Two doctors were quickly in attendance, but despite their efforts she died on Wednesday morning.

STRYCHNINE.—On Saturday last, Mr. R. Dobson, deputy coroner of the Warrington district, held an inquiry at Great Budworth, near Northwich, Cheshire, respecting the death by strychnine poisoning of Dr. W. Howard Clark, M.B. and C.M. Aberdeen, of Beccles, Suffolk. The evidence showed that on Thursday Dr. Clark, who had been in the village as *locum tenens* to Dr. Love for a fortnight, walked from Northwich, a distance of four miles. The heat was intense, and he reached home much exhausted. He went to his bedroom and then to the surgery, and afterwards sat down with Miss Muir (Dr. Love's sister-in-law), who was in charge of the house, to dinner. He had drawn the cork from a bottle of stout, and was just about to begin the meal when he called out, "I feel as if I had cramp all over," and presently fell back groaning. Miss Muir called for the groom, who endeavoured to unloose his collar and necktie. The doctor was then becoming black in the face, and he said, "Cut them." This was done, but afforded no relief, as he fell back unconscious and died in a few minutes. Subsequently it was found that the strychnine had been moved from the poison cupboard and stood on the surgery table, and an analysis of the dregs of a phial revealed a mixture of strychnine, ammonia, and gentian, which Dr. Haslewood, of Prescott, a friend of the deceased, said he had seen Dr. Clark take as a pick-me-up. The medical evidence disclosed the fact that a teaspoonful, or from half to three-quarters of a grain, of strychnine was found in the stomach. This was an absolutely fatal dose, and Dr. Mitchell, who conducted the post-mortem examination, stated that the exhausted condition of the deceased would render the poison more rapid in its effect. Letters were read to show that immediately prior to his death Dr. Clark was in the best of health and spirits. A verdict of "Death from misadventure due to the taking of an overdose of strychnine" was recorded.

OBITUARY.

ADLINGTON.—On September 7, William Benjamin Adlington, Chemist and Druggist, London. Aged 54.

WHITAKER.—On September 8, Thomas Whitaker, Chemist and Druggist, Ardwick.



Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

J. A. Belcher has reported in *Treatment* the results of experiments undertaken to determine the effect of various agents on the setting of plaster of Paris. He found that 2 drachms of plaster, mixed with 1 drachm of a 5 per cent. solution of sodium chloride, hardened in two minutes. Mixed with 1 drachm of a 5 per cent. solution of sugar, it hardened in three minutes and a half. Mixed with 1 drachm of a 1 per cent. sodium chloride solution, it hardened in five minutes. Mixed with 1 drachm of an 0.5 per cent. sodium chloride solution, it hardened in five minutes. Mixed with 1 drachm of a 5 per cent. calcium chloride solution, it hardened in six minutes and a half. Mixed with 1 drachm of tap water, it hardened in nine minutes. Mixed with 1 drachm of distilled water, it hardened in nine minutes. Mixed with 1 drachm of saturated solution of sodium chloride, it hardened in eighteen minutes. Mixed with 1 drachm of a 5 per cent. solution of glycerin in distilled water, it hardened in nineteen minutes. Mixed with 1 drachm of a 5 per cent. solution of white of egg in distilled water, it hardened in twenty minutes. Mixed with 1 drachm of a 10 per cent. solution of white of egg in distilled water, it hardened in twenty-five minutes. Mixed with 1 drachm of a 10 per cent. solution of glycerin in distilled water, it hardened in thirty-five minutes. Mixed with 1 drachm of a 25 per cent. solution of glycerin in distilled water, it hardened in sixty minutes. It would appear that where it is of importance to make plaster of Paris set rapidly it should be mixed with a 5 per cent. solution of common salt, such as may be made roughly by adding a table-spoonful of salt to a pint of water.—*Scient. Amer.*

J. U. Lloyd has completed an investigation undertaken under the auspices of the Research Committee of the American Pharmaceutical Association, with a view to establishing standards for black and white mustard. He considers that if not more than 1 per cent. of starch in the form of starch-bearing seeds, etc., is considered admissible in black mustard of commerce the U.S. Pharmacopœia should insist that no distinct blue starch reaction should be given when the sample is mixed thoroughly with nine times its weight of powdered black mustard seed previously ascertained to be free from starch, and 1 Gm. of the mixture is boiled with 10 C.c. of a 5 per cent. aqueous solution of potassium iodide, then cooled, and from one to three drops of 2 per cent. iodine test solution, U.S.P., allowed to flow down the side of the test-tube. In the case of white mustard seed, if not more than 1 per cent. of starch is considered admissible, the sample should be mixed with twenty-four times its weight of starch-free powdered white mustard seed, and submitted to the same test. If either black or white mustard is required to be absolutely free from starch there should be no bluish coloration whatever when the samples are submitted to the test.—*Am. Journ. Pharm.*, lxx., 433.

H. V. Army has prepared specimens of anise, camphor, cinnamon, fennel, peppermint, and spearmint waters, for comparative purposes, by absorbing the oil with absorbent cotton and precipitated calcium phosphate respectively, and finds that there is some ground for the complaint that those made by absorbing the oil with phosphate do not keep so well as those made with absorbent cotton. He also prepared aqueous solutions of oil of wintergreen by various processes and, assuming that such a solution can be taken

as typical of all aromatic waters, he has arrived at the conclusion that the quantity of oil actually dissolved by water is so small that no process has much advantage over any other on the score of strength of product. The cotton process yields a product no stronger than that made by simple agitation, and though hot solution yields the most concentrated product, that when absolutely clear will be scarcely stronger than the calcium phosphate product.—*Am. Journ. Pharm.*, lxx., 422.

J. F. Woolsey has recently examined some powdered gamboge of dull ochre colour, which was soluble to the extent of less than 40 per cent. in 95 per cent. alcohol, leaving more than 50 per cent. undissolved on the filter. The insoluble matter consisted largely of starch. Good gamboge, he points out, should contain about 75 per cent. of resin, and no starch should be normally present, though a trace may be found owing to the method of collecting and packing. Eberhardt's test for starch was adopted in this case, 1 Gm. of the powdered gamboge being dissolved with stirring in 5 C.c. of potash solution, and 45 C.c. of distilled water then added together with an excess of hydrochloric acid. After stirring the whole until uniformly of a bright yellow colour, the thin magma is poured upon a pellet of absorbent cotton loosely inserted into the neck of a small funnel, and the almost colourless liquid which filters through is tested with a drop or two of iodine solution. If more than 2 per cent. of starch be present a dark blue colour or precipitate is produced immediately. Commercial powdered gamboge usually gives a greenish tinge and a faint blue colour is only gradually developed. The presence of 1 per cent. of starch causes a faint blue coloration, which becomes darker on standing, and a slight precipitate is deposited; 2 per cent. gives a decided blue immediately and a precipitate after standing a few hours.—*Am. Journ. Pharm.*, lxx., 446.

Professor Hanausek reports on a sample of powdered pimento which was suspicious on account of its dark brown colour, microscopical examination showed that the adulterant consisted of washed cacao husks.—*Pharm. Centr.*, xxxix., 436, after *Ztsch. f. Unter. d. Nath. Gemismittel*, 345.

In a paper read before the British Association at Bristol, J. Burke referred to the luminosity produced by striking lumps of sugar—in which case a flash is produced of a somewhat bluish white colour, the light being instantaneous, yet spreading into the sugar itself far beneath the struck surface—and stated that an almost continuous luminosity has been produced by a hammer striking automatically the rim of a rapidly rotating wheel of sugar (obtained by cutting up a sugar-loaf into a number of discs). The wheels or discs were about an inch thick, so as to stand the violent hammering, and the hammer was of the nature of a pendulum about four feet in length, which was drawn aside by an electro-magnet and then let go. If the impact was given when the wheel was stationary, so that only an impulse was given without rubbing, or if, on the other hand, the wheel was set spinning and the hammer was stationary and merely allowed to rub up against the wheel, the phenomenon was insignificantly small compared to that obtained when both rubbing and knocking took place together; that is, when the wheel and hammer were both working. The spectrum of the luminosity was confined to the more refrangible end of the spectrum, commencing somewhere near F, but it was difficult to determine exactly. To overcome the difficulty caused by the sugar wearing rapidly, the whole apparatus was fixed on rollers moved slowly along at a suitable rate to compensate for the change

in the position of the sparks which would otherwise take place, and by that means the sparks or flashes of luminosity, which appeared almost continuous, were made to take place always along the axis of the collimator of the spectroscope. The light appears to be produced either by some change in the configuration of the crystals of sugar or by some sort of chemical action set up between the sugar and the surrounding air at the freshly formed surfaces.

R. Fischer and J. A. Anderson find that a large proportion of the gas measured as nitric oxide in Allen's method for the assay of spirit of nitrous ether is vapour of ethyl nitrite, but that this does not vitiate the results to any great degree. Since one molecule of ethyl nitrite yields one of nitric oxide, the vapour of ethyl nitrite and of the nitric oxide formed by its decomposition should approximately occupy the same space. The results obtained by the authors also explain the apparent rapid decomposition at ordinary temperatures of ethyl nitrite by water, or by a solution of potassium iodide, even though both be entirely neutral, the nitrite being in reality driven off in the form of vapour. In one experiment, when working at a temperature of nearly 25° with a 17 per cent. solution of ethyl nitrite, more than 50 C.c. of gas came off upon the addition of potassium iodide solution, but none of that was nitric oxide, as at a temperature of 0° it all liquefied.—*Pharm. Archives*, i., 161.

Gruettner states that the fat of *Hamamelis virginica* consists principally of the ester of a monatomic alcohol of the formula of $C_{25}H_{44}O + H_2O$, phytosterin, melting at 137° C., and traces of triglycerides. It contains oleic, palmitic acid, and probably small quantities of a higher fatty acid. The astringent bodies are gallic acid, and a tannin, hamamelis tannin, of the formula $C_{14}H_{14}O_9 + 5H_2O$. Under certain conditions this is only obtainable in an amorphous condition. The bark also contains a glucosidal tannin. Both this hamamelis tannin and the glucosidal tannin are derivatives of gallic acid. The hamamelis tannin molecule possesses five hydroxyl groups as well as one carboxyl group. It is optically active, having the spec. rot. $G + 35.43$. This tannin gives benzoyl substitution products with all its hydroxyl groups. The sugar of hamamelis bark is glucose.—*Archiv d. Pharm.*, 1898, 278.

A patent has been secured by the firm of Schering for the preparation of a starch-free highly nitrogenous food from fœnugreek seeds. The seeds are ground to powder, deprived of essential oil by treatment with ether or other solvent, and then extracted with ethyl or methyl alcohol to remove the bitter principle and resinous matter. The residue of these extractions is then dried, and is stated to afford a valuable food material.—*Pharm. Zeit.*, 556, 43.

This plant—the “Korarima Cardamom”—is widely distributed in tropical Africa, and *Amomum angustifolium*. J. Mahon, writing from Zomba, states that he has found it fairly common by stream sides and in moist gullies. The Yaos call the plant “Tambali” or “Tambala.” It flowers in November and the seeds possess a decided spicy flavour. The natives eat the ripe fruits raw occasionally and are believed to use the seeds as a flavouring agent. It is a handsome and striking plant, often attaining a height of fifteen feet. The flowers are of a tawny orange colour with some rose-coloured markings, and are produced in dense compact clusters. The fruits, often produced in clusters of three, are a brilliant, shining scarlet. The roots possess very slight aromatic properties, less than the leaves.—*Kew Bulletin*, 142, 288.

FURTHER NOTE ON THE CONSTITUENTS OF LEMON OIL.

BY JOHN C. UMNEY AND RALPH S. SWINTON.

In a paper read before the British Pharmaceutical Conference at Belfast (see *P.J.* [4], vii. 196), we pointed out that a constituent, which could not be without effect on the odour of lemon oil, had up to that time been overlooked. Working with Messina oil, from 1.2 to 1.4 per cent. of ester was obtained, the characters of which led us to believe that it was geranyl acetate, and approximately the same quantity of total ester was obtained from oil of the Palermo variety.

We have found that the physical characters of concentrated oils of the two varieties from which the aldehydes have been removed by the process described later are very markedly different, and it was in order to determine the reason of such variation that our experiments were considerably extended.

MESSINA OIL.—2000 C.c. of oil of Messina variety, from which the stearopten had been removed, and also 90 per cent. of the terpene by distillation under reduced pressure, was treated repeatedly with a solution of acid sulphite of sodium of 30 per cent. strength to remove the aldehyde, the solution being separated while warm so as to prevent the crystallising out of the insoluble citronellal sodium bisulphite compound. This treatment was repeated until the oil did not show any decrease of volume, and it was then thoroughly washed and dried by means of anhydrous sodium sulphate.

To ascertain the proportion of esters present in this non-aldehydic residue, 5 C.c. was saponified with excess of alcoholic potash solution, the saponification number indicated being 102, equivalent to 35.7 per cent. of ester calculated as geranyl acetate. The whole volume of the non-aldehydic concentrated oil was now saponified with the calculated quantity of alcoholic potash solution, the saponified oils separated and the alcoholic solution evaporated to dryness.

The crude salt so obtained was distilled with dilute sulphuric acid, the distillate neutralised with decinormal soda solution and evaporated to dryness. This was converted into the silver salt, washed and dried. The determination of silver in this salt gave the following result: 0.64 gramme of the salt gave 0.410 gramme of silver. Theory requires that 0.64 gramme silver acetate should give 0.413 gramme silver.

This process for the determination of acids was repeated on the Palermo oil, with practically the same result. It is evident, therefore, that the acid present in the form of an ester in the oils of both varieties is acetic acid, and we have not been able to trace the presence of any other acid radicle.

For the separation and identification of the alcohols in the two oils 10 litres of the Messina oil was concentrated and purified as previously stated. The oil was saponified with the theoretical quantity of semi-normal alcoholic potash solution, washed, thoroughly freed from alcohol, dried, and fractionated under reduced pressure.

This yielded a fraction boiling from 225° to 240° C., having the following characters:—

Sp. gravity at 15° C. 0.887
Optical rotation in a tube of 100 Mm. +5

From this by repeated fractionation and by treatment with chloride of calcium pure geraniol was obtained, and its identity proved by oxidation to citral.

PALERMO OIL.—The alcoholic bodies were separated from this oil in the same manner as already described, and by fractionation under reduced pressure a portion was obtained which distilled at a

temperature of between 200° and 240° C. under normal pressure, the characters of which were:—

Sp. gravity at 15° C. 0.880
Optical rotation in a tube of 100 Mm. -12

By the wide range of boiling point, as well as by the relative difficulty of the formation of citral by oxidation with bichromate of potassium and sulphuric acid, it was evident that this did not consist only of geraniol. By repeated fractionation a portion was obtained having a specific gravity of 0.876 and an optical rotation of -16. These characters are in very close agreement with those of linalool as separated from lime oil by Gildemeister. The characters, however, of the varieties of linalool separated from different oils are widely different, and all lævo-rotatory alcohols represented by the formula $C_{10}H_{18}O$, giving citral by oxidation, appear to be included under this general title.

Pure geraniol was separated by its chloride of calcium compound, but the difficulty in obtaining it appears to indicate that it is present to the extent of not more than 25 per cent., and these proportions, viz., about 3 parts linalool and 1 part geraniol, are borne out by the physical characters of the alcoholic portion referred to.

Special search has been made for citronellol, the alcohol obtained by reduction from citronellal, which is present in both varieties of lemon oil, but we have not up to the present been able to obtain any indication of its presence.

It is evident from these results that the difference in odour of Palermo and Messina varieties of lemon oil, although in part due to the different relative proportions of citral and citronellal, is also considerably affected by the nature of the esters present, and the small proportion of linalyl acetate is probably not without effect upon the odour and taste of the Palermo variety.

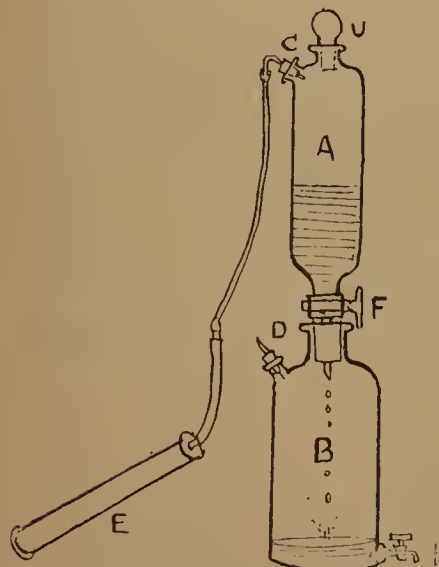
PERCOLATION AND FILTRATION UNDER PRESSURE.

BY ARTHUR W. NUNN, PH.C.

Without claiming any originality for the process of percolation and filtration under pressure, I venture to offer the following method as a simple and effective means of performing the above operation. I have recently tried it for making tr. cinchonæ, B.P., 1898, and I find that the bark is exhausted quicker and the whole process completed in a much shorter time. An ordinary percolator, as figured, is taken and packed with the substance to be exhausted in the usual way.

Instead of connecting the lower part with the upper with a tube, as is usually done, a bored cork is placed in each neck, C and D, and to the cork C is fitted a piece of bent glass tubing, to which is attached about 18 inches of rubber tubing, to the end of which is attached a pump E, such as is used for inflating the tyres of bicycles. Into the cork D is fitted a piece of glass tubing, drawn out to a point to allow a passage of air.

The substance having macerated sufficiently, the tap F is turned on and the pump started, when the liquid runs through at a rate which depends upon the air pressure, and which can be regulated to suit the operator. After the liquid is through it is drawn off by tap H and returned to the upper portion.



This process being repeated two or three times the liquid is finally drawn off and a fresh portion of solvent added, which undergoes the same treatment until exhaustion of the drug is complete. Of course the process can be altered as circumstances suggest, but if the pump be connected as described it will prove useful where filtration has hitherto been retarded.

If the percolator, as figure, be used, be sure and tie down stopper U to prevent it being forced out. It is needless to warn against using more air pressure than the glass will stand.

NOVELISTS IN THEIR TREATMENT OF THE SCIENCE AND POISON PLOT.

BY "PHARMACIST."

Whether it is the scarcity of interesting episodes in human life or paucity of ideas in the brain of the modern novelist, the fact is patent that magazinedom is being inundated with stories which affect to treat the sciences in a familiar and quite know-all-about-them way. A series of adventures which lately appeared, written by L. J. Meade and Clifford Halifax, M.D., remind me strongly of the Jack Harkaway and Broad-Arrow Jack tales of my schooldays—the only difference being that the latter were one penny, the former appearing in the *Strand* at sixpence. These adventures teem with technical terms stuck in at intervals to give the vagaries of Paul Gilchrist (the adventurer) a scientific vein. There is one ludicrous narrative regarding a new explosive which Gilchrist is inventing, but owing to the "instability of nitrous anhydride" he collaborates with two others. These latter rob him of his secret and kill him in a very "scientific" manner to be sure; that is, instead of knocking him on the head with a poker, they strap him to a balloon whose car is loaded with nitro-glycerin and a glass globe-ful of two gases which on mixture will at sunrise explode, and thus he will be reduced to "impalpable dust." Of course, he turns up next morning at breakfast as usual. As a piece of burlesque it might pass, but as a serious illustration of any phase of science it is absurd. Again, this scientific Quixote has a Röntgen Ray apparatus and a battery to generate the electricity! Just think! He believes that the X rays are destined to be of marvellous utility; then a Brahmin swallows a diamond and Paul Gilchrist locates it, not in any ordinary or ignorant position, but in the ileo-caecal valve. It is not explained whether this region is in the vicinity of Achilles' tendon, or the calf of the leg, but it is not intended to convey knowledge to the reader, merely to mystify.

In the July *Strand* there is a picture drawn of a bacteriologist that is a libel on the faculty. This renowned person lives in Devonshire Street, London; he has culture plates, in fact, the article has mention of little else; they are being broken or carried away on secret missions. The bacteriologist, although he is armed to the teeth with bacilli, has to resort to the vulgar fashion of choking his victim, who is a rival "scientist" who babbles about "nitrifying bacteria." But he does not choke him. He concocts a fiendish torturing death; at the critical moment the doomed man says: "My long scientific training enabled me now to think clearly and consecutively. . . . This much, at least, was obvious, I could not stop the tide." A lemma of Newton is child's play to this deduction. There is no harm in inculcating a little knowledge in the form of a story, but the above inculcate naught save ignorance. Then there have been fictions about a pair of gloves impregnated with some "secret Indian poison"; when drawn on, the wearer drops dead instantaneously! Electricity is not to be compared with this for rapidity of effect.

Another appeared in the *Idler*. An artist and baron quarrelled over a fair lady; baron won; artist visited lady for a few minutes; lady found dead; the whole family, including wicked baron, die one by one; secret discovered; hypodermic syringe; chair fast to the floor; being seated in chair, lean back on syringe and get injected with aconite through a top-coat, dress-coat, waistcoat, etc.

It is a notable fact that first-class novelists do not deal in poison and science wares, and properly so; the sphere of the fictionist is elsewhere. The exception is Bulwer Lytton, whose "Lucretia" is a horrible phantasmagoria of nightmares, a monstrous and unnatural creation. The least judging reader gradually begins to see that Lucretia was a mad woman from the beginning of the story, who poisons right and left, for no conceivable purpose, and everyone feels that when she is finally incarcerated it should have been done years ago.

Conan Doyle confines himself to the snake-bite and the poisoned darts of the savage. In the "Sign of Four," little Tonga discharges a two-inch thorn tipped with poison. It reminds one of the famous Wourali Indians of America, whom 'Waterton's Wanderings' chronicle. With their famous wourali poison they could destroy a buffalo in three minutes. It is to be remembered, however, that they used for this class of animal darts eighteen inches long, a somewhat destructive weapon in itself.

In Dickens poison is ignored, but I will quote the conclusion of the well-known passage-at-arms between the judge and the chemist from "Pickwick," on account of its historical interest to pharmacists:—"I merely wanted to observe, my Lord," said the chemist, taking his seat with great deliberation, "that I've left nobody but an errand-boy in my shop. He is a very nice boy, but he is not acquainted with drugs, and I know that the prevailing impression on his mind is, that Epsom salts means oxalic acid, and syrup of senna, laudanum." Happily the grievance of jury-serving by pharmaceutical chemists has long been abolished, though the chemist and druggist is not in the same fortunate position.

Dickens also gives us a glance at the position of medical practitioners in the first quarter of the present century. Mr. Bob Sawyer's premises are described as "a newly-painted tenement which has been recently converted into something between a shop and a private-house, and which a red lamp projecting over the fan-light would have sufficiently announced as the residence of a medical practitioner, even if the word 'Surgery' had not been inscribed in golden letters above the window." When Mr. Winkle remarks that it is "a snug little business," the doctor replies, "Very; so snug that at the end of a few years you might put all the profits in a wine-glass and cover 'em over with a gooseberry leaf." Moreover, the stock is non-existent, "Half the drawers don't open, the other half have nothing in 'em."

This Bristol physician, when "treating" his friends, gave the only tumbler he possessed as an honour to the visitor; his boon mate, Ben Allen, was content with a "funnel with a cork in the narrow end," and the doctor himself imbibed from a large fluid measure.

The present affluence and authority of medical men is in striking contrast with their quondam impoverishment. But it should be remembered that the Pharmaceutical Society came into being in 1841. Those who follow the adventures of Richard Cœur de Lion in the pages of the "Talisman" will recollect that when the muscular monarch was enfeebled with fever, that Saladin, the famous Saracen chief, entered the English king's camp in disguise and abated the fever by the administration of some drug. As is usual in such cases when curiosity is whetted, the novelist does not discover the secret—perhaps because he is himself ignorant. R. L. Stevenson has furnished, in "Dr. Jekyll and Hyde," a good

instance of this. The doctor, by doses of a certain drug, manages to "hide" his identity. It is a very good romance, but for the matter of that any other medium than the science of medicine would have answered equally well.

BOTANIC GARDENS OF THE WORLD.

THE CAMBRIDGE BOTANIC GARDEN.

As soon as possible after the foundation of the Cambridge Colleges, gardens were laid out, but they seem to have been primarily intended for the purpose of growing fruit and vegetables. Saffron, which was much used both in medicine and cookery, was planted in the Pembroke Gardens; Corpus Christi and Queens' had vineyards. Hops were grown at King's in the middle of the sixteenth century. Turner, the first English botanist, complained, while studying medicine, of the want of a physic garden, a need felt later by Ray, the great Cambridge systematist.

It was not till long after the founding of the Oxford Botanic Garden by the Earl of Danby, that Cambridge actually acquired a botanic garden, but as early as the year 1588, Burleigh appears to have drawn the attention of the University to the need for one. His action in the matter seems to have been due to Gerrard. In the Lansdowne MSS. a letter of his to the Treasurer is preserved which is endorsed "John Gerrard, a bill of his owne drawing for ye L. Ther. [i.e., Burleigh] to signe to ye Universitie of Cambridge, for planting of gardens." After mentioning the physic gardens of Padua, Montpellier, and Vienna, and the service they had proved to be to the science of medicine, Gerrard is recommended to the University as an expert herbarist, "who by reason of his travaile into farre countries, his great practise and long experience, is thoroughly acquainted with the generall and speciall differences, names, properties and privie marks of thousands of plants and trees."

In 1695-1696 the scheme of a physic garden took the Vice-Chancellor, Dr. Eachard, to London, probably to obtain the advice of Loudon, the King's gardener. Loudon visited Cambridge three times in 1696, and one Robert Grumbold was paid five shillings "for measuring the intended physick-garden." The scheme, however, came to nothing. Again, in 1731, the project came up for consideration, nor did the promise of Dr. Bradley, the Professor of Botany, to present the University with a botanic garden. This proposal he is said to have made to secure the post, and though he repeated it publicly in his lectures in 1789, nothing was done.

A Mr. Brownell, of Willingham, was desirous of presenting the University with a Botanic Garden. The ground was chosen and the advice of Philip Miller, of Chelsea, and Dr. John Martyn, taken, but the project dropped. Professor Bradley was more interested in horticulture and agriculture than in botany. He was the first botanist who instituted experiments on hermaphrodite plants with the view of establishing the sexuality of plants, and published a 'Historia Plantarum Succulentarum' which was known to Linnæus, but he took no interest in Cambridge studies and did not lecture. Dr. Sherrard and Sir Hans Sloane therefore recommended Mr. John Martyn, who had lectured in 1721, before the Botanic Society of London, to give a course in Cambridge. In a letter to Dr. Richardson, he writes on March 14, 1726-1727; "Mr. John Martyn, who gave a college of botany here last summer to several young gentlemen, goes next month to Cambridge, whither he is invited by above twenty scholars. He carries on at the same time his college here, spending April, May and part of June there, the rest of June and July here; August at Cambridge; and finishes there in September." In May, 1730, he entered Emmanuel College with the intention of taking a Cambridge degree in medicine, and read a course of lectures on botany and materia medica in the University. He took his pupils on botanical excursions into the country, and had printed Ray's 'Alphabetical Catalogue of Plants Growing in the Neighbourhood of Cambridge' for the use of his pupils, to which he made several additions. In 1733 he was unanimously chosen Professor of Botany, and read his last course of lectures in botany at Cambridge in 1735, "labouring under great disadvantages for want of a Botanic Garden, and not finding sufficient encouragement to warrant so long a neglect of his practice as the Course must necessarily occasion." In the year 1747-1748, Dr. Heberden gave a course of lectures on the medicinal plants of Cambridgeshire. He, too, very much felt the want of a botanic garden. In January, 1762, Dr. Martyn resigned the Professorship of Botany, and in August of the same year Dr. Walker conveyed

a piece of land to the University in trust for the purposes of a botanic garden. This land he had bought in July, 1760.

In his account of the donation, published in 1763, Dr. Walker states that acting on the advice of his friend, Philip Miller, "after several treaties that failed," the Mansion House in Free School Lane was purchased "with near five acres of garden about it, well walled round, quite open to the south, conveniently sheltered by the Town on the other quarters, with an antient water-course through the midst of it. Before this, in October, 1760, we find Dr. Thomas Martyn writing: "The foundation of the Greenhouse is laid, but the Garden is not yet in any order; another summer we hope will produce something." Foreign plants, he says, there were at that time some few, but so few that they had taken him but a little while to settle. In April, 1761, he writes to Pulteney: "Our Garden begins to flourish, shrubs and trees are already planted; plenty of seeds, both tender and hardy, are sown; a stove is building; and Stone is preparing to raise the superstructure of a greenhouse on the foundation which was laid last year. All this, I hope, will increase the number of botanists among us. Indeed, we already begin to grow considerable, for I never had more than one companion before this spring, but now I have three; and expect soon to have two or three more converts."

In 1762 Dr. Thomas Martyn succeeded his father as Professor of Botany, and was appointed Walker Reader in Botany. Mr. Charles Miller, the youngest son of Philip Miller, of Chelsea, was at the same time appointed Curator of the Garden, a post which he held till 1770, when he went to the East Indies. Dr. Martyn gave his first course of lectures to fifty students in April, 1763. As subscriptions to the new Garden came in but slowly, he announced that he "would read gratis to those who subscribe ten guineas towards the support of the Botanic Garden." He gave a course of lectures every year till 1796, except in 1779 and 1780, when he was abroad, and 1785, when his lecture room was pulled down. In July and August, 1763, he visited some of the continental botanic gardens, including those of Paris and Leyden.

There was little encouragement given to science at Cambridge still, and Dr. Martyn in 1766 complained that his pupils were few in number. "The Garden," he writes, "gets on very well in point of plants under the direction of Mr. Miller, but our income is still very scanty, so that we cannot finish our greenhouse, much less build stoves; indeed, we are obliged to use a degree of frugality not very consistent with the dignity of an University, or the usefulness of the design, but we keep it on foot for better times."

In 1770, Mr. Miller was sent to Sumatra; the curatorship being thus left vacant, and the Garden being very badly supported, Professor Martyn undertook without payment the duties of the curatorship for several years. He found that a manual of the Garden was badly wanted for his pupils, and therefore issued in 1771 a 'Catalogue of the Garden,' together with an outline of his botanical lectures. A portrait of the founder of the Garden, Dr. Walker, forms the frontispiece. In 1772 he published another 'Catalogue of the Garden,' which has a plan of the Garden prefixed to it. "The usual entrance to the Garden was from Free School Lane, through a small Renaissance archway. . . . There was a second entrance from Pembroke Street. . . . From these gates a broad gravel walk led straight across the Garden to the centre of a range of greenhouses built against the north wall. At a distance of about 175 feet from the gates this walk was carried by a wooden bridge over a long, narrow pond, which crossed the Garden from east to west, and divided it into two unequal divisions. That between the pond and the street contained the herbaceous plants, arranged in a series of herbaceous parallel beds; that between it and the greenhouses was laid out in other beds, not quite so formal, for less hardy plants. . . . Before the above-mentioned gates in Pembroke Street were set up, the entrance to the Garden on that side was through a small doorway at the south-west corner, the traces of which may still be seen in the boundary wall."

In 1771 an unsuccessful attempt was made by the Duke of Grafton, the Chancellor of the University, to endow the Professorship of Botany. For thirty-one years Dr. Martyn was Professor of Botany without salary, and after his marriage, which took place in 1773, he lived at Triplow, nine miles from Cambridge, coming in to lecture. In 1778, 1779, and 1780 he travelled in Switzerland and Italy. From Switzerland he sent over a large case of rare Alpine plants to the Cambridge Botanic Garden.

In 1782 he published 'Heads of a Course of Lectures in Natural History, read at the Botanic Garden,' and continued to lecture till 1796, though but little encouragement was given by the University to the study of botany. In 1804 he writes to Relhan, with whom he had been associated in the 'Flora Cantabrigiensis,' of 1785. "A violent attack upon my lungs during the summer has totally unfitted me for reading any more lectures. If the Governors of the Garden approved, I could have wished that it might be made worth your while to read a course, but there does not seem to be botanical spirit enough in the University to recompense you for the trouble that would attend it." The project came to nothing, and there ceased to be public botanical lectures in Cambridge for some years.

Sir Joseph Banks urged the president of the Linnæan Society, Sir J. E. Smith, to lecture, and Professor Martyn offered to resign the Walkerian Readership in his favour. As Dr. Smith was not either a member of the University or a member of the Church of England, this prevented his appointment, but Dr. Martyn proposed that he should lecture as his deputy with the sanction of the Vice-Chancellor. "As far as my power extends," he writes in 1818, "I am happy in giving you full authority to take such specimens of plants and flowers as you think requisite for your lectures, together with the use of the lecture room, at any time or times, that may be convenient, always under the control of the Vice-Chancellor, and with a complete reliance on your discretion in the use of the Garden." The Vice-Chancellor, Dr. Webb, consented and promised to attend the lectures. Dr. Smith then issued a printed notice of his course to commence on Monday, April 6, but eighteen tutors of colleges sent a written remonstrance against any of their pupils attending the public lectures of "any person who is neither a member of the University nor of the Church of England." Consequently the plan was abandoned. In 1821 he suggested that Henslow should be his deputy, but Dr. Walker's trustees refused their consent, nor would they consent to his resigning their Readership. He died in 1825. During the time he lectured publicly about five hundred students attended his lectures. He was an ardent Linnæan, and through his teaching the system of Linnæus supplanted that of Ray in Cambridge.

A year before Martyn's death Dr. Schultes, a professor at Landshut, in Bohemia, made a botanical tour, in the course of which he visited the Cambridge Garden. In a letter to Count Sternberg, to be found in Hooker's 'Botanical Miscellany' for 1830, he writes: "The Garden at Cambridge contains about five acres of very bad ground, and there are from five to six thousand species of plants, the greater part of them cultivated in beds. It does not present so pleasing an appearance as the Dutch botanic gardens, but is, however, kept very neat and is well arranged. . . . The care of the Garden is committed to Mr. Biggs, whom we did not find at home. The stoves are well built, and they may have been hitherto large enough; but the progress of the science will soon cause their size to be insufficient, as they extend only to 216 feet. A building was erected some years ago for the lecture rooms of the professors of botany, chemistry, mineralogy, and mechanics. The Alpine plants, among which are some rare species from the South Highlands, are very properly cultivated in small pots and placed during winter under glass. The assistant gardener who conducted me through the grounds was not able to tell me the annual expenditure of the institution. The workpeople receive two shillings a day."

Dr. Walker's gift to the University included on one side of the land devoted to the purpose of a botanic garden a building known at the time as "the great house in Free Schole Lane." He directed that two rooms on the ground floor should be appropriated to the use of the Reader on Botany and the reading of lectures on botany, "that the unfurnished room above stairs be set apart for the reception of books on botany and other sciences relating thereto and also of a Hortus Siccus, or collection of dried plants." In 1784 the great house was sold to Mr. John Mortlock. In 1787 there was erected in the Garden a lecture room, 40 feet long and 28 feet broad, with a private room for the Professor of Botany at the south end, and for the Jacksonian Professor at the north end. Subsequently provision was made in the same block of buildings for the Professors of Chemistry, Anatomy and Physics.

On the death of Dr. Martyn in 1825, Mr. Henslow, who together with Professor Sidgwick had founded the Cambridge Philosophical Society, was elected unanimously to the Professorship of Botany. Dr. Martyn held three distinct offices, (1) the University Professorship, which had no endowment; (2) the Regius Professorship, which was at first worth a hundred a year and was subsequently increased to two hundred; (3) the Walker Readership. Henslow

was appointed Regius Professor by the Crown, and Walker Reader by the Governors of the Botanic Garden, the mode of election to the University Professorship at the time of Dr. Martyn's death being under consideration by Sir John Richardson, to whom the question had been referred. After the death of Henslow the Regius Professorship became extinct, and the endowment was transferred to the University Professorship, which was vacant all through Henslow's time, and is now the only existing Professorship of Botany.

Though the Professorship of Botany and the Walker Lectureship were united as a matter of course, no necessary connection existed between the Professorship and the Garden establishment. The Professor was only entitled to use the Garden as Walker Reader.

Professor Henslow found the Botanic Garden in a condition "utterly unsuited to the demands of modern science." It was situated right in the heart of the town, the soil was bad, and there was no possibility of enlarging it. Only a limited number of species could from its size be cultivated in the open ground, and the greenhouses and stoves were small and few in number. He reported the need for a new garden to the Governors, and in 1841 they purchased about thirty acres of land, the present site on the Trumpington Road. Many years elapsed before the plants were actually transferred.

An interesting account of the Garden is contained in Loudon's 'Magazine of Natural History' for 1833.

"Jackdaws are comparatively numerous at Cambridge. The Botanic Garden there has three of its four sides enclosed by thickly built parts of the town and has five parish churches and five colleges within a short flight of it. The jackdaws inhabiting (at least for a certain time in each year) these and other churches and colleges had, in the years 1815 to 1818, . . . and since discovered that the wooden labels placed before the plants whose names they bore in the Botanic Garden would well enough serve the same purpose as twiggy sticks off trees, and that they had the greater convenience of being prepared ready for their use and placed very near home. A large proportion of the labels used in this Garden were made out of deal laths and were about nine inches long, and about an inch or more broad, . . . and although of this size, as they were thin when dry, pretty light. To these the jackdaws would help themselves freely whenever they could do so without molestation, and the time at which they could do this was early in the morning before the gardeners commenced work for the day, and while they were absent from the Garden at their meals, and the jackdaws would sometimes fetch away labels during the gardeners' working hours from one part of the garden, when they observed the gardeners occupied in another, as was often the case in their attending to the plants in the greenhouse, etc. . . . Those who are aware how closely some species of the grasses, garlic, umbelliferous plants, etc., resemble each other and also how needful it is to prefix labels to them, as remembrances of their names, will readily perceive that much inconvenience arose from the jackdaws appropriating some of the labels; and this especially when they removed, as they sometimes did, the labels from sown seeds, as the plants arising from those seeds must in some species grow for a year or more before their names could be ascertained. I cannot give a probable idea of the number of labels which the jackdaws annually removed, but have more than once been told by persons who had ascended the tower of Great St. Mary's Church and the towers or steeples of other churches that wooden labels bearing botanical inscriptions were abounding in these places. The house of the late Dr. Kerrick, in Freeschool Lane, was close beside the Botanic Garden; and the shaft of one of the chimneys of his house was stopped up below, or otherwise rendered a fit place of resort for jackdaws. From this chimney shaft Dr. Kerrick's man-servant got out on one occasion eighteen dozen of the said deal labels; and these he brought to Mr. Arthur Biggs, the Curator of the Botanic Garden. I saw them delivered and received. . . . This number of labels and the fact of the occurrence of plant labels on other buildings about the town prove that in general terms the aggregate of labels lost from time to time could not be inconsiderable."

In 1846 Professor Henslow published an 'Address to the Members of the University of Cambridge,' in which he expressed the need for raising the Cambridge Botanic Gardens to the level of Continental botanic gardens. "The larger the number of living species that are cultivated in a botanic garden the greater will be the facilities afforded, not merely for systematic improvement, but for anatomical and other experimental researches essential to the progress of general physiology. . . . The reason

why a modern botanic garden requires so much larger space than formerly is chiefly owing to the vastly increased number of trees and shrubs that have been introduced within the last half-century."

At the request of the Walker trustees Professor Henslow twice visited Kew and consulted Sir W. J. Hooker and Dr. Lindley about the practical details necessary to raise the Cambridge Garden to the level of those at Edinburgh, Glasgow, and Dublin.

Mr. Babbington, who had attended Professor Henslow's lectures on botany, and later on had arranged the European plants for the Edinburgh Botanical Society, was a member of the Syndicate appointed to superintend the new Botanic Garden. On March 11, 1845, he wrote to Professor Balfour, of Glasgow: "The place for the new garden is at present only a bare field, and the new curator will have to work out the details of a rough plan by himself, as Henslow is non-resident. We therefore want a good practical man, who has a considerable acquaintance with science. It seems to be a fine opening for a young and active man, where he may distinguish himself and obtain reputation." He was able to write in 1848, that he had obtained about 900 species of plants to add to the Cambridge Botanic Garden collection.

Mr. Murray became Curator and helped him in determining the arrangement of the Garden. The first tree was planted in the new Botanic Garden in October, 1846, by Dr. Tatham, the Vice-Chancellor. Some of the trees were planted in that year, but it took several years to get the funds necessary for planting the rest of the trees and stocking the beds with hardy shrubs and herbaceous plants. The first annual report of the Botanic Garden Syndicate, March 5, 1856, drew attention to the "very perfect and valuable collection of herbaceous plants much used by the members of the University who studied scientific botany." The trees were arranged in a belt surrounding the whole of the Garden, and were arranged as far as possible so that allied species and genera were placed near together. Nearly all the trees then known to be capable of withstanding the English climate were included. Mr. Murray died in 1850, and was succeeded in the Curatorship by Mr. Stratton, who suggested the scheme on which the plant houses were constructed. They were erected in 1855, and were considered capable of "containing a sufficiently numerous collection to be tolerably illustrative of the chief groups of the plants that inhabit the warmer regions of the earth." It also contained a number of fine specimens "of the older inhabitants of greenhouses now rarely to be seen, and also many very interesting species which, from possessing slight claims to beauty, have fallen out of cultivation." In May, 1857, the water was let into the pond in the Botanic Garden.

Professor Henslow's lectures were attended by an average of about fifty students, and were delivered in the Easter term. He made much use of illustrations and diagrams, and had living specimens placed in baskets in his lecture room, which his students dissected for themselves. Darwin was one of his pupils, and was recommended by him to join the "Beagle" expedition. He also organised botanical excursions with his pupils into the country, and the scientific evening meetings he organised at his house on Fridays were so much appreciated that, on his removal to Hitcham in 1837, the Ray Club was instituted.

On Professor Henslow's death in 1861, Mr. Babbington became Professor of Botany without opposition, but his first course in botany attended by seventeen students was not given till the next year. The next year his class had increased to between forty and fifty students. He was especially a systematist, and took great interest in the Botanic Garden. Of Mr. Mudd, the curator who succeeded Mr. Stratton, he wrote to Professor Balfour on June 20, 1865: "He is quite transforming our garden. It is so much better already as to be hardly like the same place."

In the division that took place in the Senate on May 25, 1881, to the opening of the Botanic Garden on Sundays, he was one of the opposers, but the openers gained their point by 88 to 76 votes. On the May 10, 1883, the question of opening the Garden for the summer months on Sundays was again raised, but it did not come before the Senate. During the curatorship of Mr. Lynch, a new corridor-house has been added to the greenhouse.

SUPRARENAL EXTRACT AS A HÆMOSTATIC.—Koenigstein states that suprarenal capsule extract is a useful hæmostatic. It is very suitable for hyperæmic patients, congestions, swellings, etc. Suprarenal extract is not an anæsthetic, but it increases the anæsthetic effect of cocaine when combined with it.—*Zahnart. Rundsch.*, vi., 3662.

REFORM OF PHARMACY BY LAW.*

BY J. H. BEAL.

It has not been uncommon of late years to learn from various sources that dispensing pharmacy has about reached the end of its existence as a separate calling and that forces are now at work which must produce its speedy disintegration, eliminating it from the list of recognised occupations whereby men may gain a livelihood.

The question which this prediction suggests is one of supreme importance and may well challenge our serious consideration.

Are we the remnants of a decaying cult, the leaders of a forlorn hope engaged in the desperate defence of a lost cause? Are we endeavouring to perpetuate a scientific art which has outlived its usefulness and despite all efforts to the contrary, is destined to extinction simply because society has no further need of its services?

Some, indeed, have reluctantly accepted this mournful conclusion as true and have advised that we set our professional households in order and prepare to make our exit gracefully. Others less easily discouraged anticipate that our art will again emerge from its present depression and will again demonstrate its right to existence and its ability to render valuable service to mankind.

Whichever conclusion be correct, it is important that we early recognise it and govern ourselves accordingly; if our calling is no longer necessary to society, that we may not uselessly put ourselves in the way of progress and waste our efforts in a fruitless contest with the inevitable; if it is destined to a regeneration, that we may be prepared to do our part in the work of transformation and hasten the day of its final accomplishment.

That dispensing pharmacy is at present in a very unsettled and unsatisfactory condition is a point upon which there is entire unanimity, but as to the causes of this condition or as to the remedies which should be adopted for its improvement there is a wide difference of opinion.

Within the United States there was, until a comparatively recent date, absolutely no legal restriction upon the character of those who might engage in the sale of drugs and medicines and assume the awe-inspiring title of pharmacist and chemist. Not only were there no laws upon the subject, but there was an almost entire lack of that public opinion which may frequently take the place of law. It was quite generally assumed, both inside and outside of pharmacy, that "any one could run a drug store" and that about the only qualifications necessary were some degree of familiarity with the table of apothecaries' weight, a slight acquaintance with the superficial appearance of the more common drugs and chemicals and the ability to interpret the abbreviated titles of the shop bottles. Indeed, it is not too much to say that very many of those engaged in the business at that period could not boast of possessing even these moderate accomplishments in perfection.

A calling which is not careful of its reputation will not long have a reputation worth caring for. When those who were engaged in pharmacy placed so low an estimate upon their vocation, it was not surprising that the public took them at their own appraisal and, at length, came to regard the "drug business" as a species of merchandising which differed from ordinary commercial ventures only in involving less risk and investment or in paying larger profits. As a business of this sort has an irresistible attraction for the average American, the ranks of pharmacy were speedily crowded by men unfitted for it by inclination, ability or training, but attracted solely by a desire to share in the fabulous profits attributed to it by common repute.

Of course there never has been a time when a large proportion of American pharmacists have not been intellectually and morally the peers of any who were engaged in any other calling, men who clearly foresaw the demoralisation which was coming over pharmacy and struggled against overwhelming odds to arouse public sentiment and procure restrictive legislation. To the efforts of these we, as pharmacists, owe what has been saved from the wreck of our profession and to them the public owes the tolerable measure of protection which it now enjoys, but unfortunately, before this restrictive legislation could be obtained the number of so-called pharmacists had increased much beyond the actual necessities of the population, many of them entirely unfit to handle drugs and medicines, a constant menace to the public health and a disgrace to the calling which they assumed to follow.

* Address to the Section on Legislation and Education of the American Pharmaceutical Association, at the Baltimore meeting.

Perhaps all of the measures of reformation which have been suggested have a germ of usefulness in them, some possibly more than a germ; nearly all are fatally defective, either from being based upon a too narrow or too superficial view of the situation, or because the remedies which they propose are not in harmony with natural and economic laws and are therefore futile.

Of the various plans which are advocated, the reformer by act of legislation is easily first in the vehemence with which he insists that his is the only true plan of procedure and that all pharmaceutical ills can be cured by a revision and extension of the law.

The advocates of this theory argue that since the demoralisation of pharmacy was largely the result of a lack of legal restriction, it should be possible by the passage of new laws of greater comprehension and of increased severity to reverse the process and bring about a reformation. This, however, does by no means follow. To check the development of an evil by timely legal enactment and to uproot that evil by law after it has grown deep into the manners and customs of a people, are quite different things. The first has sometimes been done, the second, we believe, has never yet been successfully accomplished.

That a properly constructed pharmacy law, wisely interpreted and honestly enforced, is capable of accomplishing great good is an opinion which we cordially endorse, but that it is possible to reform the practice of pharmacy by legislative fiat is a conclusion opposed to both reason and experience.

Active, useful legislation is but the formal expression of public opinion. The only effective law is that which has overwhelming public sentiment at the back of its enforcement and any legislative enactment which is not thus supported is law in name only. To this rule pharmacy laws are no exception.

Moreover, laying aside the impossibility of reforming society by legislative enactments, the fundamental principles of constitutional jurisprudence forbid invoking the powers of the legislature for the purpose of advancing the interests of a particular class or trade.

The only sound justification which can be alleged in support of pharmacy laws is their necessity to the public and general welfare. If they do not seek and support this end, then they are void under every constitution in the Union.

In the absence of statutory prohibition, every citizen has the same right to sell drugs as to sell agricultural products; the same right to dispose of his services in the treatment of diseases as to dispose of them for any other purpose. Any restriction upon the sale of his possessions or upon the disposal of his services is an interference with his natural rights and the only ground upon which such interference can be permitted is the necessity of protecting the public welfare. Even in securing this laudable end the legislature cannot arbitrarily exclude certain persons from an occupation or extend the privilege arbitrarily to certain others. The most that it can do is to prescribe a reasonable standard of proficiency which must be possessed by those who exercise a given employment and then leave the way open for any citizen to acquire that proficiency and to engage in that employment, if he so desires.

It is true that pharmacists sometimes carelessly speak of the necessity of protecting their calling against invasion; but this expression is only an unfortunate figure of speech which cannot be too quickly banished from the vocabulary of pharmacy. Such thoughtless statements give colour to the claim of many people that pharmacy laws are class legislation and an attempt to create a monopoly of drug sellers; a belief which is unfortunately shared to some extent by the courts who are called upon to construe the statutes.

What the pharmacist refers to when speaking of protection is the inequity of requiring him to qualify by examination and to pay an annual tax for the support of the pharmacy laws, while others are permitted to engage in substantially the same business without qualification and without tax. The pharmacist has an undoubted right to object to such unjust lack of discrimination, and to demand that the law which applies to him should apply to all others, but he should be careful to make his demand in terms which will express his real meaning and which will not place him in apparent conflict with rational jurisprudence.

In addition to fixing the competency of the pharmacist, the law may also prescribe reasonable regulations for the exercise of his business. It may, for example, prohibit the employment of incompetent help, forbid the sale of intoxicating liquors, or of narcotics and articles intended for immoral or criminal purposes, require the labelling of poisons, the registration of their sale, etc.

With these subjects provided for, the proper function of a pharmacy law is exhausted. Having secured the safety of the public by requiring the pharmacist to be competent and to conduct his business in a proper manner, the law has accomplished all that it can or ought to do. The pharmacist cannot expect favours from the legislature and, if wise, he will not ask for them. The prosperity of pharmacy as a specific calling cannot be considered by the law and the success or failure of those who are engaged in that occupation is a matter which must be determined by their individual capacities, by their abilities to adjust themselves to the changing conditions of society and by the law of supply and demand. Wise legislation will undoubtedly benefit the pharmacist indirectly and as a patriotic and public-spirited citizen he should join in obtaining such legislation, but the great reform in pharmacy which we hope for will depend more upon our knowledge and application of natural and economic laws than upon any which may be passed by the General Assembly.

While we believe it to be impossible to reform the practice of pharmacy by legislative enactment, nevertheless a properly constructed law is an important factor in the working of such a reformation and, in the writer's opinion, this Association can perform no more important service than in formulating and disseminating correct ideas upon this subject, especially by combatting certain erroneous notions which, if they should be enacted into law, would not only fail to reform pharmacy, but actually postpone its reform for years to come.

One of the changes proposed in some quarters is that the number of pharmacies should be limited by law according to population, a proposition which it is utterly impossible to realise under our present system of constitutional government. Such a law would be class legislation of the clearest type and in absolute opposition to the principle that pharmacy law is not to protect the pharmacist, but to restrict him and to protect the public.

Even should the American people consent to change a fundamental principle of their governmental system for our especial benefit, we would speedily find that, in obedience to the inexorable law of supply and demand, the franchise of a business protected by law against competition would be valued at such a figure that the profits could pay the purchaser only a small income on his investment. As a consequence the only person who could be benefited by such a law would be the fortunate owner who chanced to be in possession of the business at the time when the monopoly was created.

The folly and impossibility of such a proposition is so apparent that we need hardly give it serious attention.

Another proposition which has been pressed with some vigour by certain writers on the pharmacy laws and has rather more to commend it than the preceding, is that the law should create two classes of pharmacies to be in charge of licentiates of corresponding grades. To the pharmacist of the lower grade would be permitted the sale of a limited line of the less active medicinal agents and of the more active substances when sold in unbroken packages only. To the other, or pharmacist of the first-class, would be granted plenary powers to compound and sell medicinal agents of every sort.

For this division of pharmacists into classes having different degrees of qualification and possessed of different powers, we confess our inability to perceive any good or sufficient reason, believing that the experience of European countries where such a division has been tried argues more strongly against than in favour of its introduction into the United States.

In the first place we deny the truth of the alleged principle upon which such a separation is based, namely, that a man may safely be permitted to conduct a store for the sale of moderately poisonous drugs who could not be trusted with the sale of those which are dangerously poisonous. We contend that if a man is competent to dispense a drug the maximum dose of which is twenty grains he is also competent to dispense one of which the maximum dose is the one-twentieth of a grain. If he is not competent to dispense the one he is likewise incompetent to dispense the other.

The fact that a candidate for registration is or is not competent depends upon whether he has or has not received competent training in the art and science of pharmacy and not upon his recollection of doses. Modern pedagogics makes a distinction between education and the mere possession of information. One is the result of training and culture, the other of memory. Mere information makes the traditional learned fool; training makes the scholar. The man who is well trained in

the general and particular principles of pharmacy will make a safe pharmacist whether he is thoroughly posted on doses or not. The untrained man will be an unsafe pharmacist even if he should know the dose of every drug in the Dispensatory.

We can perceive no better reason why there should be a difference in the educational qualifications of pharmacists than that there should be a difference in the educational qualifications of attorneys and physicians. The education of each should fit him to serve the public to the fullest extent within the line of his occupation. Each should be educated not merely to the lowest permissible, but rather to the highest possible limit; not that he may barely reach the technical requirements of an examining board, but that he may possess a liberal margin of safety over and above such requirements.

Furthermore, if such a division of pharmacists were made, we submit that it would be practically impossible to prevent the constant infringement of the lower class upon the prerogatives of the higher class. Consequently the separation of functions would exist in name only and fail in achieving the first great object of pharmacy law, namely, in securing the public safety.

Finally, we have already with us the first or lower class of druggists in the dealers in general merchandise who are now permitted to sell non-poisonous drugs and we are opposed to giving them official recognition even as pharmacists of the lowest degree. Our efforts should be to procure the restriction of the sale of all medicinal articles to competent hands and not to still further increase the ranks of the incompetent.

We believe that the present popular division of licentiates into pharmacists and assistant pharmacists satisfies every practical requirement. The first only may be the responsible head of a pharmacy and the second may sell medicines only when in a pharmacy under such management. This division is already in existence in twenty-eight States and has been found to work very satisfactorily in practice.

We would favour, however, an important change in the law regarding registration, namely, that every applicant should be required to first register by examination as assistant pharmacist and to remain on the rolls as assistant for two or more years before coming up for registration as pharmacist. Besides other important reasons for the requirement, this compulsory registration as assistant is the only feasible way of enforcing a proper period of experience for those who wish to become managers and owners.

The point is often made that the same degree of education should not be demanded in a pharmacist doing business in a village or country place as in the case of those in the larger cities. Logically it would seem proper that the health and lives of the rural population should be as carefully looked after as those of the dwellers in cities. However, if it is practically necessary to make some concession to the rural districts, there might be inserted in the law permission for the boards of pharmacy to grant Minor certificates authorising responsible persons resident in small places to sell a specified list of articles, or to grant assistant pharmacists the right to conduct stores for the sale of such articles, these permits to be granted only in localities where there are no registered pharmacists within convenient distances.

Another most important point which the law must consider is the degree of competency which should be demanded from candidates for licence as pharmacist. Notwithstanding the number of splendid colleges of pharmacy which we possess, the general standard of admission to the practice of pharmacy in the United States is below that of Great Britain, Ireland, or Canada. While we have many American pharmacists who are the peers of any in the world, it is a lamentable fact that there are on the registers of the various State boards a vast number who are woefully incompetent. A large number of these were in business at the time of the passage of the laws, but many more have been admitted through too great laxity in the examinations. As the laws, with but few exceptions, permit the boards to fix their own standards, these official bodies have received general criticism for their failure to make their examinations severe enough to exclude the unfit. In their behalf, however, it should be remembered that whenever they have increased the severity of the examinations they have invariably been met with the outcry that raising the standard of admission to pharmacy would raise the wages of drug clerks, the objectors apparently forgetting that it is the abundance of cheap clerks which has caused the enormous multiplication of cheap drug stores with which they must compete.

On account of the opposition which will always be made to any

independent action of the boards of pharmacy in raising the requirements for admission, we believe that the law itself should set the standard and that this should be nothing less than graduation at a reputable college of pharmacy.

We are aware that many excellent pharmacists are not in harmony with this idea, contending that the education which was good enough for them is good enough for their clerks. Those who use this argument apparently overlook the fact that the educational value of store experience, at the present time, is very greatly below what it was a quarter of a century ago. Moreover, education in other professional lines has advanced so rapidly that nothing less than a college training will enable the pharmacist to obtain and hold that respect of the public which is absolutely essential to his professional and financial success. Certainly it would be greatly to the advantage of their patrons if future pharmacists should all be college graduates and we believe that it would be equally to the advantage of pharmacy.

We also believe it to be almost if not altogether demonstrable that the esteem in which a vocation is held by the community and the consequent honour and profit attached to its pursuit, depend more upon the character and education of the men who are engaged in that vocation than upon any other single factor, or, perhaps, more than upon all other factors combined.

Of all the influences which may operate to improve the condition of pharmacy in the future, there is none so important, in our opinion, as the thorough education of the rank and file of pharmacists; education not merely in the contents of the *Pharmacopœia*, but in the broadest and most liberal sense, a training which will help the future pharmacist to comprehend the relation of his profession to society and of his individual responsibility to both, which will enable him to adjust himself to the changing conditions of civilisation and to discover new outlets for his services. In short, an education which will lead him to no longer set himself in opposition to the laws of progress, as he has so often done in the past, but rather to acquaint himself with those laws and make them serve his purpose.

That graduation will at some future day be an essential for registration is doubted by few who have carefully studied present tendencies. The only difference of opinion seems to be as to the time when this reform should take place. Some say, now; others, twenty years from now. The sensible thing for us to do is to take up the agitation and to continue at it until we have convinced both the public and the body of pharmacists of the necessity of a higher educational requirement and have secured its enactment as a part of the formal laws of every state in the Union.

Lack of time forbids the discussion of many other features of the pharmacy law deserving of attention, but we would like to refer to the possibility of securing appropriate legislation in the several States.

One of the prerogatives of the American citizen is the right to grumble at the legislature, a trait, by the way, which we seem to have inherited from our British ancestry; but as there are about fifty times as many legislative bodies in this country as there are in Great Britain, we have to do a proportionately larger amount of grumbling. As pharmacists we have exercised this right quite liberally and have been free with our criticisms of the legislatures for what they have or have not given us in the way of pharmacy laws.

Candidly, however, very much of this criticism has been undeserved. As a rule our state legislative assemblies are composed of high-minded, honourable men who are desirous of enacting the best possible laws and when they fail in this respect it is generally because they have been misled by the persons to whom they have looked for information. The fact that we have not better pharmacy laws in the United States is chargeable more to the indolence and apathy of the pharmaceutical body than to the contumacy of the law-making bodies. It is the writer's belief that there is not a state in the Union where the enactment of a fairly good pharmacy law cannot be procured by determined, united effort on the part of the pharmaceutical profession. If the pharmacists of a state will unite upon a reasonable measure, one not too revolutionary in character, which does not ask for too much at once, which does not interfere with constitutional rights; if they will then take the pains to inform the members of the legislature individually as to the merits of the bill, their efforts will almost invariably meet with success. The main work in every case is to convince the individual members of the General Assembly of the honesty and propriety of the measure advocated. This

accomplished, the remainder of the task is comparatively easy.

In conclusion, we do not share the belief of those who hope to reform the practice of pharmacy by law. The law is one of the important factors of the reform and, as such, should be carefully studied and applied; but there are other and more important factors still.

The present conditions of pharmacy are the outgrowth of a century of a mistaken policy: they cannot be changed in a day or a year. They must be modified by a continuation of the process through which they came into existence—by a process of slow and gradual evolution. In this, however, we can borrow a method from the horticulturist and hasten the operation by bringing intelligent artificial selection to the aid of natural selection. To point out the favourable variations and perpetuate them, to discover the unfavourable and eliminate them, to prevent the taking of backward steps, to avoid development along lines which are too narrow or which do not promise tangible results, these it seems to me, are the principles which should direct our efforts.

Whether we will it or not, the evolutionary process will go on. Protests will avail us nothing. We can hasten or we can retard, but we cannot stop its operation. The struggle for existence among pharmacists, already keen and fierce, will become keener and fiercer. Nature punishes ignorance and weakness quite as sternly as crime. Those of us who are unable or unwilling to adjust ourselves to surrounding conditions, to harmonise with environment, will be crushed and eliminated from the contest.

Men have tried for ages to control the operation of economic laws by legal enactments and to force trade into artificial channels, by trade combinations, by associations and by unions. They never have succeeded, and they never will.

If pharmacy can find no better means than these by which to perpetuate itself, then it will perish from the earth. Unless the pharmacist can render the public a service which it cannot perform for itself and perform it better and cheaper than anyone else, the public will not avail itself of his services. Unless the pharmacist can make himself useful to the next century, the next century will have no use for him. And as the coming generation is no more likely to continue the use of the drugs and treatment of the present than it is to wear clothes of the same fashion, it is important that the pharmacist should be on the alert to anticipate and supply these new wants. If he shall sit idly by, as he has so often done in the past, and permit others to supplant him in this service, he will both invite and deserve the extinction which is sure to be his.

Nevertheless, we are not of those who despair of the future of pharmacy. We believe that what appears to us as chaos is merely the disorder attendant upon a new arrangement of things, just as a confusion of brick and mortar attends the conversion of a street of ancient tenements into one of modern business blocks. It is the transition period, when the old has lost its shape and before the new has appeared. Out of the present shapelessness we expect to see the new arise, on more substantial foundations, of more significant proportions, a nobler fabric and a fitter temple for the spirit of progress which typifies the age.

PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL.

At a special meeting of the Council held on Wednesday, September 28, the chair was taken by the President, Mr. Walter Hills, and there were also present: Mr. G. T. W. Newsholme, Vice-President, Messrs. Allen, Atkins, Bottle, Martindale, Savory, and Warren.

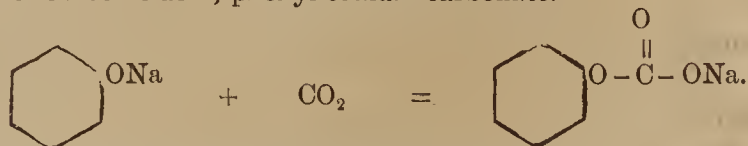
The PRESIDENT, having explained that the meeting was called for the purpose of reading the proposed new Bye-laws of the Society a second time, moved that those Bye-laws be taken as read. This was seconded by Mr. BOTTLE and agreed to.

The PRESIDENT then moved that the proposed new Bye-laws, which were read a first time at the meeting of the Council held on August 3, 1898, and published in the *Pharmaceutical Journal* of August 6 last, be now read a second time and confirmed. The motion was seconded by the VICE-PRESIDENT and unanimously agreed to, and the meeting then terminated.

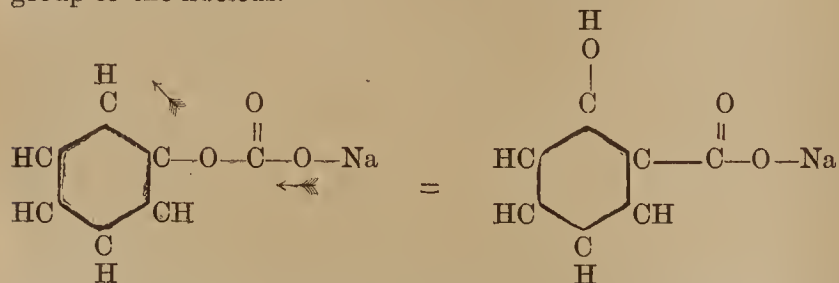
THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.*

Acidum Salicylicum.—The process by which this is prepared artificially is known as the "Kolbe synthesis." It is a general process for preparing the aromatic oxy-carboxylic acids from any given phenol. Ordinary phenol, $C_6H_5 \cdot OH$, gives, therefore, $C_6H_4 \cdot OH \cdot COOH$, oxy-benzoic acid. This, being a di-derivative, may occur in the usual three isomeric varieties, and the ortho-variety is known as salicylic acid. The process depends upon the reaction of carbon dioxide with the sodium derivative of phenol, $C_6H_5 \cdot ONa$, under certain conditions of temperature and pressure. In the original process of Kolbe the sodium phenate, very carefully dried, was heated in a current of dry carbon dioxide at a temperature of $110^\circ C.$, increasing finally to $200^\circ C.$ The first step is the entrance of CO_2 into the phenol molecule, forming a derivative of carbonic acid, phenyl-sodium carbonate.



This is analogous to ordinary sodium carbonate, one atom of sodium being replaced by the phenyl residue, C_6H_5 . As the temperature rises this is converted by intra-molecular re-arrangement into sodium salicylate. The oxygen atom connecting the carbon of the side chain with the benzene nucleus shifts its position and interpolates itself between the hydrogen and carbon of the next CH group of the nucleus.



The sodium salicylate so formed could not be isolated, because it reacted with more sodium phenate to give the basic sodium salicylate with regeneration of phenol



In Schmitt's modification of the Kolbe process the reaction between the carbon dioxide and sodium phenate takes place under pressure. Under these circumstances the intra-molecular rearrangement takes place as described and the further reaction—between the salicylate and a second portion of phenate—does not occur. Therefore, the whole of the phenol is finally obtained as sodium salicylate. It is interesting to note that if the temperature at which the reduction takes place be allowed to exceed $200^\circ C.$ the atom of oxygen which shifts its position takes up the para-position to the carboxyl group. In the official test for phenol advantage is taken of the difference between the behaviour of phenol and a true acid, like salicylic, towards alkali carbonates. The acid forms sodium salicylate, which is insoluble in ether, while the phenol does not react and may be extracted by shaking the mixture with ether.

Acidum Tannicum.—The term tannin really includes a large number of bodies having an astringent taste and certain points of analogy in their reactions and constitution. In the Pharmacopœia the term is used in a restricted sense to indicate the variety more exactly known as gallo-tannic acid. The group of tannins may be divided broadly into two classes:—

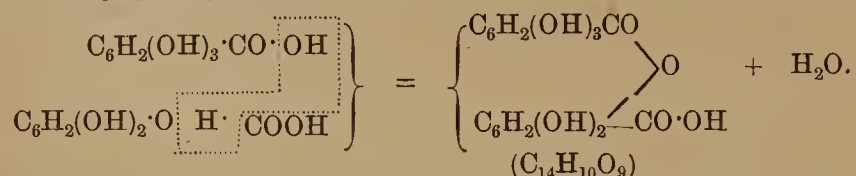
(1) Those which give a blue coloration with iron salts, and are derivatives of pyrogallol;

(2) Those which give a green colour with iron salts, and are derived from catechol.

Some of the tannins exist naturally as glucosides, which may be regarded as esters of glucose formed by elimination of water from the carboxyl group of the acid and one of the hydroxyl groups of the glucose—



Gallo-tannic is, however, not a glucose but a condensation product of two molecules of gallic acid one of the tri-hydroxy-benzoic acids, $C_6H_2(OH)_3COOH$.



When gallo-tannic acid is boiled with acidulated water hydrolysis occurs (*vide* method of preparing gallic acid), a molecule of water being taken up with formation of gallic acid. The reverse process, *i.e.*, the formation of tannic from gallic acid can be carried out by heating the gallic acid with certain reagents, like phosphorus oxychloride, which facilitate the elimination of the water. Such reagents react with the water as fast as it is liberated, forming other compounds which do not interfere with the progress of the reaction; thus



The tannins all precipitate with gelatin and albumin solutions. The alkaloidal tannates are also very insoluble in water and on this account tannic acid is sometimes used for separating alkaloids from solutions containing other substances not precipitated by tannic acid. The alkaloids may be recovered from such precipitates by digesting them with fresh moist lead hydrate which combines with the tannic acid. From the dried magma the free alkaloid may be then extracted by treatment with suitable solvents.

Acidum Tartaricum.—Tartaric acid furnishes one of the most interesting examples of physical isomerism. In order to fully comprehend the influence of the asymmetric carbon atom in producing physical isomerism, the student should construct two tetrahedra by joining four equilateral triangular pieces of cardboard by means of gummed paper. The four projecting points of the tetrahedra may be coloured red, blue, green, and yellow, to represent the four different elements or groups combined with the carbon atom. With these models before him the student should have no difficulty, after carefully reading the section on stereoisomerism in his text-book, in comprehending the constitution of dextro-, laevo-, meso-, and racemic tartaric acids. Note particularly that the optical inactivity of the meso and racemic acids is produced by *internal* and *external* compensation respectively.

The last test for tartrates given in the B.P. Appendix (p. 429) depends upon the formation by oxidation of a derivative, di-oxy-maleic acid, which gives the blue colour with caustic potash.



The oxidising agent is hydrogen peroxide, and the ferrous sulphate acts as a carrier of oxygen between the peroxide and the tartaric acid. The importance of the test lies in the fact that none of the allied organic acid (citric, malic, lactic, etc.) produce this particular substance when oxidised. Hence it serves to detect small quantities of tartaric in presence of citric acid—a procedure otherwise somewhat difficult.

The other test for tartaric acid in citric acid (*vide* tests for Acidum Citricum, B.P.) applies also to metallic particles, and to reducing agents generally. The blue colour is due to the reduction of the molybdate to a lower oxide. The metallic particles would be derived from the utensils used in the process of manufacture and they act as reducing agents in the acid solution by virtue of the hydrogen they are capable of liberating. The test for the detection of lead in both tartaric and citric acids, as described in the Pharmacopœia, depends upon the production of black lead sulphide. Addition of a saturated aqueous solution of sulphuretted hydrogen is said to give more delicate indications of traces of lead than are afforded by merely bubbling sulphuretted hydrogen gas through aqueous solutions of the acid.

* NOTE.—This series of articles should be read in conjunction with the series referring to the 1885 B.P., and published in the *P. J.* during 1897 and the earlier portion of the current year.

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REFORM OF PHARMACY BY LAW.

CONSIDERING that the working of economic laws must needs be the same in effect in all free and civilised countries, it is without surprise that readers will gather from Mr. J. H. BEAL'S address, printed at page 375, how it has become common of late years for prophets of evil in the United States to lament the approaching termination of the existence of dispensing pharmacy as a separate craft across the Atlantic. There, as here, it is urged that forces are now at work which must produce the speedy disintegration of pharmacy as a distinct calling, eliminating it from the list of recognised occupations whereby men may gain a livelihood. The question which this pseudo-prediction suggests is, as Mr. BEAL remarks, one of supreme importance and worthy of serious consideration. For if the pharmacists of to-day constitute the remnant of a decaying cult, and are engaged in the defence of a lost cause, they would appear to be wasting energy. It is, however, much more reasonable to assume that the circumstances which have called forth the gloomy prognostications alluded to are but indications of certain unsatisfactory conditions that must be remedied. The old-time idea which yet prevails to a marked extent in some parts of America, that anyone can run a pharmacy, must be totally eliminated, as well as the prevalent notion that pharmacy is a craft requiring but little capital and whilst involving less risk than other commercial ventures, yielding much larger profits. The outcome of the existence of such ideas has tended to lower the status of pharmacy as a profession, and since, as Mr. BEAL pointedly observes, a calling which is not careful of its reputation will not long have a reputation worth caring for, it behoves all who are interested in the matter to do their utmost to uphold and advance that status.

The favourite remedy for existing evils is, of course, a resort to legislation, and reformers by Act of Parliament undoubtedly take the first place by the vehemence with which they insist that theirs is the only true plan of procedure, and that all ills, pharmaceutic or otherwise, can be cured by a revision and extension of the law. It is so easy to contend that the demoralisation of the craft is primarily due to the lack of legal restriction in the past and, assuming that to be correct, to argue that the passing of comprehensive and

severe laws now will counteract the evil and effect a complete reformation. As is pointed out in the address commented on, it is one thing to check the development of an evil by timely legal enactment, and quite a different matter to uproot that evil by law after it has grown deep into the manners and customs of a people. Indeed, in the latter case, it may well be doubted whether the original evil continues to be one, for the working of natural laws tends under such conditions as premised to convert and remove the objectionable aspects of what originally were undoubtedly evils. But be that as it may, it cannot be gainsaid that, though a properly constructed pharmacy law, wisely interpreted and honestly enforced, may be capable of accomplishing great good, it is altogether utopian to imagine that the practice of pharmacy at the present day can be reformed by legislation. "Active, useful legislation is but the formal expression of public opinion. The only effective law is that which has overwhelming public sentiment at the back of its enforcement, and any legislative enactment which is not thus supported is law in name only. To this rule pharmacy laws are no exception."

Would-be reformers must not lose sight of the fact that the fundamental principles of constitutional jurisprudence are opposed to the advancement of class interests by the aid of the law. In this country no less than in America experience has plainly shown that "the only sound justification which can be alleged in support of pharmacy laws is their necessity to the public and general welfare." That has been the contention of the leaders of British pharmacy, as represented in the Pharmaceutical Society, for the last sixty years, and the growth of experience has only tended to confirm that view as time has rolled on. Such restriction as has been placed upon the practice of pharmacy has been intended solely in the public interest. If the statutory privilege of carrying on the business of a chemist and druggist is attended with any advantage to those who have acquired that right, compensation for it has been demanded and paid in the shape of proof of the qualification held to be "expedient for the safety of the public." If greater restrictions should ever be imposed the compensation demanded may be expected to be greater, more perhaps than British pharmacists are prepared to agree to voluntarily. And in the end it is certain that the prevailing conditions will not meet the views of the majority of those concerned better than at present. The reform of the practice of pharmacy cannot be effected by law, but must proceed from within the craft. If the present conditions are in any degree evil, that is partly, perhaps mainly, the fault of those who have accepted them so long, and they cannot be radically altered off-hand. Time must be allowed to effect improvement, and efforts must not be lacking to proceed in a reasonable manner to devise and carry out that improvement. If the pharmacist takes no steps to prevent others supplanting him he will both invite and deserve the extinction which, in that case, is sure to be his. In self-defence he must be prepared to do much more in the matter of training those who, in the fulness of time, will naturally become his successors; he should also neglect no opportunity of increasing and rounding off his own stock of knowledge; and by combination with his fellow-craftsmen he ought to ensure such thorough organisation that all attempts to supplant him in the position of trust which he occupies in relation to the general public must needs be unsuccessful.

ANNOTATIONS.

THE SCHOOL OF PHARMACY will be re-opened, for the fifty-seventh session, on Monday next, October 3, when the President of the Pharmaceutical Society will distribute the prizes to the successful students of last session, and the inaugural sessional address will be delivered by Sir James Crichton Browne, M.D., F.R.S., Treasurer of the Royal Institution. The meeting will open in the lecture theatre at 17, Bloomsbury Square, at 3 p.m., and the attendance of all pharmaceutical students and their friends is cordially invited. The Dean of the School—Professor Collie—will attend on the same day, between the hours of 10 a.m. and 1 p.m., to receive students and to furnish information relating to the courses of study. Copies of the School Prospectus will be sent free on application being made to Mr. Richard Bremridge, 17, Bloomsbury Square, London, W.C.

A SPECIAL GENERAL MEETING of the Pharmaceutical Society will be held at the House of the Society, 17, Bloomsbury Square, London, on Wednesday next, October 5, at 3 p.m., for the purpose of considering and if thought proper of confirming and approving new Bye-laws to be submitted to the said meeting by the Council in accordance with the Provisions of the Charter of Incorporation of the Society and of the Pharmacy Acts, 1852 to 1898. The text of the new Bye-laws to be submitted to the meeting will be found in the *Pharmaceutical Journal* for August 3 last, at pages 137 to 148. They were read a first time at a meeting of the Council of the Society on August 3, and a second time at a special meeting on Wednesday last. They will be read a third time at the ordinary Council meeting on Wednesday next, and if confirmed and approved at the general meeting to be held the same day, they must then be submitted to the Privy Council for confirmation, after which the working machinery of the Society, as modified by the Pharmacy Acts Amendment Act, 1898, will be complete once more. Subsequently all registered chemists and druggists will be eligible as members of the Society and also as members of the Council, and registered apprentices will be eligible for election as "Student-Associates" of the Society.

LINSEED MEAL has served as the bone of contention in what is described in a local paper as one of the most keenly fought cases that have been heard in Cupar Sheriff Court for some time past. The St. Andrew's District Inspector summoned the manageress of a co-operative society for selling as linseed meal an article that was not of the nature, substance and quality of the article demanded. In fact, he had been supplied with ground linseed cake, whereas he thought he ought to have been supplied with linseed crushed without removal of the oil. The 1885 Pharmacopœia applied the term "linseed meal" to the crushed seed, but in the new B.P. the synonym is altered to "crushed linseed," and linseed meal is no longer an official article. That point was clearly brought out during the hearing of the case, and judgment was finally given for the defendant, but the reasons advanced by the Sheriff for so deciding, left the Pharmacopœia and its standards out of the question altogether. He said he was satisfied, after hearing the evidence, that whatever view the British Pharmacopœia might take there certainly were two substances known to commerce as linseed meal, the one being prepared from linseed cake and the other direct from the seeds. He could not adopt the suggestion of the inspector, who contended that on asking for linseed meal he was entitled to get the article described in the British Pharma-

copœia as crushed linseed and that, if he did not get that article, the seller rendered herself liable under the Sale of Food and Drugs Act. It seemed to him that, as there were two substances well known to the trade, if the inspector asked for linseed meal and the person who was selling across the counter produced one of the substances known by that name, and showed it to him, if the inspector accepted the linseed meal which was prepared from the cake, it was difficult to see how he could say that he did not get the article that he demanded. If there had been only one substance known to the trade and also described in the British Pharmacopœia as linseed meal, then the contention of the prosecution could have been understood. The Sheriff held the words of the Act to mean that it must be proved that the buyer did not get the article demanded, and it seemed to him in this particular case, looking at it from the seller's point of view, who did not know what the purchaser wanted, that the seller was quite justified in supplying the linseed cake meal, there being no specification of what was wanted except that linseed meal was asked for. There seemed no doubt whatever that there was a demand for the linseed cake meal, and it might be that there were persons who, knowing all the facts, thought that the better substance. If that were so, they were quite entitled to buy it and to use it. Therefore it seemed to him that, as facts had developed, he had no alternative but to find the charge not proven.

THE SUBJECT OF HUMAN CREDULITY has engaged the attention of a *Times* leader-writer this week, and in support of his arguments he quotes "a well-known story" of the founder of a vast pill business, which, he says, if not true, is *ben trovato*. A friend visiting the great medicine man in his shop, where the manufacture of pills by the thousand was in progress, said, "Do you really expect people to believe that this stuff will cure everything?" For answer, the proprietor took him to the door, which opened on to a crowded thoroughfare, and said, "You see all these people going by? How many of them do you suppose are wise, and how many fools?" It was, observes the writer in the *Times*, a cynical, but not ill-natured or untrue, appreciation of that ever-green credulity which the knowing ones of the world can generally exploit to their own profit, and the more readily so as it is not altogether ill-founded. For the desire for health is independent of education or of civilisation, and each successive age places confidence in its own medicine men or its special nostrums. Just in the same way all men in all ages desire more wealth. "Hope springs eternal in the human breast that by some means denied to others each one can increase his own store, and a ready credence is given to those who offer the means of doing so. We call it credulity; but it is only human nature. The company promoter, no less than the quack or the fortune-teller, will always find a wide field ready to his hand; for no amount of experience or reasoning seems able to press home the undoubted truth that high interest means bad security." The survival of credulity, it is pointed out, even in its most primitive forms, is not necessarily a sign of retrogression or of the failure of civilisation and culture to raise mankind. It is rather an illustration of the old truth that if human nature be driven out with a pitchfork it will always come back, and those who believe in human progress and the increasing purpose of the ages must accept human credulity as a permanent fact, if they would not despair of the improvement of mankind.

PARA RUBBER is exhaustively dealt with in the *Kew Bulletin* for October, and in view of the increasing demand for rubber and the alleged restriction of supplies, the article will doubtless be perused

with considerable interest by many readers. The information given is historical, botanical, and economic, the methods of propagation, collection and preparation being described at length. It is interesting to note that Mr. Consul W. A. Churchill, who has furnished to the Foreign Office the latest and most authentic information in regard to the Para rubber industry, states that, though some people suppose that the supply of Amazonian rubber may become exhausted in the near future, the most competent authorities are not at all of that opinion, but maintain that the supply is inexhaustible, because the *Hevea* tree, from which it is so largely obtained, is continually being reproduced by nature. Certainly, he says, some areas become exhausted when overworked, but when left alone for some time they recover. The district of Cametá, on the river Tocantins, gave an excellent quality of rubber, and there was a special quotation for it in the foreign markets. That district, however, is now exhausted, because for about forty years thousands of men have tapped its trees, all new-comers flocking to Cametá to make their fortunes. There are still many districts that have not been tapped, and the area that is known to produce Para rubber is at least a million square miles in extent. Further exploration will, it is anticipated, show that this area is under-estimated.

THE INTRODUCTION OF PARA RUBBER INTO THE EAST has been referred to by Dr. Trimen, in the Appendix to the Report of the New Products Commission. The Government of India having determined upon the enterprise, a commission was given to Mr. Wickham, then living at Santarem, to collect seed at the rate of ten pounds per thousand. He succeeded in obtaining seventy thousand seeds in the Siringals of the Rio Tapajos, which he packed with the greatest care and, with a full knowledge of their evanescent vitality, conveyed to Kew in June, 1876. The day after his arrival the whole number was sown, but not more than about $3\frac{1}{2}$ per cent. germinated, some as early as the fourth day after sowing; many in a few days reached a height of 18 inches. At Sir Joseph Hooker's suggestion, it had been previously arranged between the India and Colonial Offices that, owing to the want of any accessible and properly constituted botanical garden in any part of India suitable for the growth of this completely tropical species, the seedlings should be sent to Ceylon to be cultivated and propagated for subsequent distributions to Burma and other hot and moist districts of the Indian Empire. Owing to the plants' rapid growth, Wardian cases of a special form had to be made for their transmission, and some nineteen hundred plants were despatched from Kew in charge of a gardener. In due course they were received at Peradeniya in very good order, and the results of the subsequent experimental planting in Ceylon seem to indicate that in this case it is Ceylon which (from climatic causes chiefly) is likely to benefit most largely from the successful action of the Government of India.

THE CLIMATE OF BENGAL, where there is a distinct cold season, was soon found to be unsuitable for the cultivation of *Hevea brasiliensis*. After experimental efforts in other parts of India it was ultimately decided, according to the account in the *Kew Bulletin*, to establish rubber plantations at Mergui, in Lower Burma, and Nilambur, in Southern India. In accordance with the arrangement with the Government of India a first lot of plants propagated at Ceylon was despatched to Mergui in 1878. Those consisted of five hundred rooted cuttings. In 1887 there was sent a further consignment of plants and seeds. To Nilambur from 1878 to 1887 rooted cuttings and stumps were forwarded, as well as

several lots of seeds. Of the latter three hundred were sent in 1885. Further, in 1880, two plants were sent to the First Prince of Travancore; in 1881 a Wardian case with twenty-eight plants was forwarded to the Andaman Islands, and in 1888 about three thousand seeds were sent to the Commissioner of Agriculture at Nagpur, in the Central Provinces. There are now numerous trees both in Burma and Malabar producing regular supplies of seed. The introduction of *Hevea brasiliensis* trees into India has therefore been successfully accomplished. In British Guiana the *Hevea* does not appear to have taken well, but other rubber-yielding plants thrive there, and it is suggested that it is very desirable that all these rubber trees should be carefully and exhaustively investigated in order to find out their true value. It is thought probable that it may be found profitable to establish natural plantations in districts where the best rubber trees are already found. That could be done with little difficulty, and is said to offer the best means of immediately extending the area under rubber trees in different parts of the Colony. Where plants are plentiful it would only be necessary to clear away some of the other vegetation and allow the rubber trees more light and air, as well as thinning out when too crowded. Where the conditions are favourable, and the plants only sparsely found, wild seedlings might be transplanted or fresh seeds "dibbled in" at intervals to fill the vacant places. The cost of this plan would not be considerable, as the trees would require little attention after they are well started.

LIEUT.-COLONEL PROBYN, head of the firm of Hooper and Co., Pall Mall, has been the recipient, on election as Sheriff of the City of London, of a mark of the high esteem in which he is held by numerous friends, who assembled in the old Council Chamber at the Guildhall, on Tuesday last, for the purpose of presenting him with his shrieval chain and badge. Mr. H. S. Foster, M.P., the Master of the Pattenmakers' Company (of which Mr. Probyn is a past-master), presided. The Chairman, in making the presentation, alluded to the fact that he was associated with Mr. Probyn many years ago as a member of the School Board for London, while he was also a member of the first London County Council. Reference was also made to the fact that Mr. Probyn had borne upon his shoulders the chain of the office of Grand Treasurer of the Grand Lodge of Freemasons of England, and Mr. Foster pointed out that both that office and the position of sheriff were associated with traditions of great liberality and charity. Lieut.-Colonel Probyn, in acknowledging the gift, assured his friends that he would, by upholding the distinguished office to which he had been elected, merit their confidence and esteem. A portrait of Lieut.-Colonel Probyn, who was formally admitted to office as Sheriff on Wednesday, is being painted by Mr. Seymour Lucas, R.A., and is to be presented at an early date.

PROFESSOR HENRY TRIMBLE, A.M., Ph.M., Editor of the *American Journal of Pharmacy*, who died at Philadelphia on August 24, was an active worker, and the Philadelphia College of Pharmacy—to the advancement of which he gave much of his time and thought—is the poorer by his loss. His death, observes the *American Druggist*, has come as a severe blow to all who had the privilege of his acquaintance, and particularly to the members of the College with which he had been so long connected. Of his scientific work in relation to chemistry, that concerned with his work on the tannins will, perhaps, be most familiar to pharmaceutical readers, as he was a recognised authority on that subject and the author of a monograph which has passed into two editions.

The accumulation of five years' work, subsequent to the publication of the second edition of 'The Tannins' in 1894, was almost ready for publication when the lamented teacher was touched by the hand of death. His life was marked by unremitting industry and a devotion to duty which was unexampled.

THE NEXT COURSE OF GRESHAM LECTURES will treat of the borderland between health and disease, and they will be delivered at the Gresham College, Basinghall Street, E.C., by Dr. E. Symes Thompson, on Tuesday next, October 4, and the three following days. The subjects of the four lectures will be "the borderland between sleeping and waking," "on pain and ease," "on normal and abnormal nerves," and "the borderland between sanity and insanity." The lectures will be illustrated by diagrams, are free to the public, and will commence each day at 6 p.m. Time will be given during the last lecture to answer questions bearing on the subject of the course, and such questions should be sent in to the lecturer as early as possible.

THE BRITISH PHARMACOPEIA OF 1898 is to be formally adopted in the Colony of Victoria as from January 1 next, a Bill to that effect having been prepared by the Colonial Government. The effect of the Bill, if passed into law, will be to repeal the section of the Medical Act, 1890, referring to the Pharmacopœia of 1885, and to authorise the adoption of the new Pharmacopœia and any subsequent ones as published. It would have been well if a definite date for the legal adoption of the Pharmacopœia had similarly been fixed by Statute in this country. But for the present we must content ourselves with admiring what can be done in such matters by our Colonies.

OPTICAL, MATHEMATICAL, AND SCIENTIFIC INSTRUMENTS will be on view at an exhibition promoted by the Worshipful Company of Spectacle Makers, which will be formally opened at the Guildhall, London, by the Lord Mayor and Lady Mayoress on Monday next, at 3 p.m. As the holding of the exhibition practically coincides with the initiation of the scheme of the Company of Spectacle Makers for securing the proper qualification of dealers in optical appliances, it should be of special interest to chemists proposing to apply for certification by the Company.

AT THE COUNCIL MEETING last Wednesday, Mr. Atkins attended with his arm in a sling and by special permission of his medical attendant. Our readers will regret to learn that a fall while walking on a slippery pavement caused a fracture of a bone at the elbow, from which Mr. Atkins has suffered much inconvenience.

AN ATLAS OF BACTERIOLOGY is a desideratum at the present time, and many of our readers will be glad to learn that such a work is now in the press. It has been prepared by Chas. Slater, M.A., M.B., M.R.C.S., lecturer on bacteriology at St. George's Hospital Medical School, and E. J. Spitta, L.R.C.P., M.R.C.S., whose articles on photo-micrography are appearing in the *Pharmaceutical Journal*. The atlas will contain more than a hundred original photo-micrographs with explanatory text, and it should prove of value as a supplement to any text-book on bacteriology. The specimen pages show that both the photographs and text are being printed with the utmost care, and the types illustrated have been selected with a discretion that betokens full knowledge of the subject by the authors.

British Association.

ADDRESS TO THE CHEMICAL SECTION

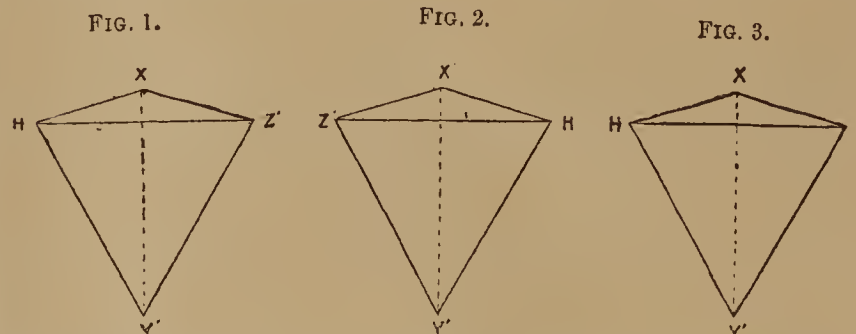
BY PROFESSOR F. R. JAPP, M.A., LL.D., F.R.S.

President of the Section.

STEREOCHEMISTRY AND VITALISM.

(Concluded from page 361.)

The four affinities, or directed attractive powers, of the carbon atom are not to be conceived of as lying in one plane. The simplest assumption that we can make with regard to their distribution in space is that the direction of each makes equal angles with the directions of the three others. We may express this differently by saying that the four atoms or groups attached to the carbon atom are situated at the solid angles of a tetrahedron, in the centre of which the carbon atom itself is placed. If the four atoms or groups are all identical they will be equally attracted by the carbon atom; consequently they will be equidistant from it, and the tetrahedron will be regular. If they are all different the force with which each is attracted will be different; they will arrange themselves at different distances from the carbon atom; and the tetrahedron will be irregular; it will have no plane of symmetry. Any compound of the formula $CHX'Y'Z'$ can therefore exist in two enantiomorphs, applying this term to the molecules themselves—in two non-superposable forms, each of which is the mirror image of the other: thus—



(In these figures no attempt has been made to represent the tetrahedra as irregular; the opposite asymmetry is indicated merely by the opposite order of the four attached atoms or groups. In reality, however, they would be irregular. The carbon atom itself is not shown.)

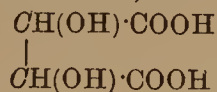
If we consider any particular set of three atoms or groups—for example, H, Z', and Y'—looking towards that face of the tetrahedron about which they are arranged, any order, thus HZ'Y', which is clockwise in one figure, will be counter-clockwise in the other. In like manner, a continuous curve, passing through the four atoms or groups in any given sequence, will form a right-handed helix in the one case and a left-handed helix in the other. We thus find that the foregoing assumptions—the very simplest that could be made—regarding the distribution of the four affinities of carbon and the different degree with which four different atoms or groups will be attracted by the carbon atom to which they are attached, lead to the asymmetric structures postulated by Pasteur to account for optical activity—namely, enantiomorphous irregular tetrahedra, and right- and left-handed helices.

That a spiral arrangement, right- or left-handed, will produce rotation of the plane of polarisation in its own sense, may be shown by various experiments: thus in Reusch's optically active piles of plates of mica, produced by crossing successive plates of biaxial mica at an angle of 60° to one another; or in the twisted jute fibres recently described by Professor Bose, which, according to the direction of the twist previously imparted to them, rotate the plane of polarisation of electric waves either to the right or to the left.

If two of the four atoms or groups attached to carbon are identical, there is no asymmetry, and no optical activity. Thus, in a compound of the formula $CH_2X'Y'$, which we may represent by our tetrahedral scheme as shown in Fig. 3, the two hydrogen atoms are equidistant from the carbon atom; the system has a plane of symmetry passing through X'Y' and the carbon atom, and has therefore a superposable mirror image.

If the molecule contains only one asymmetric carbon atom, the latter may be either positive or negative, so that the substance may exist in two forms of opposite optical activity; in addition to which we may have the racemoid combination of the two, which will be inactive but separable. Mandelic acid, $C_6H_5 \cdot CH(OH) \cdot COOH$,* is a case in point: it is known in these three forms.

If, as in the case of tartaric acid,



the molecule contains two asymmetric carbon atoms, and at the same time consists of two structurally identical halves, then these two atoms may be either both positive or both negative, reinforcing each other's effect in either case; or one may be positive and the other negative, when, owing to the structural identity of the two halves of the molecule, the effect of the one will exactly compensate that of the other, and the compound will be inactive, but not separable. Furthermore, there may be the racemic combination of the bi-dextro-form with the bi-laevo-form: a combination inactive, but separable. We have thus the explanation of the four forms observed by Pasteur.

In fact all the complex cases of isomerism that have been met with among compounds of this class—compounds structurally identical, but configuratively distinct as it is termed—may be satisfactorily explained, and their possible number accurately predicted, by means of the theory of the asymmetric carbon atom.

I must apologise to the organic chemists among my audience for inflicting on them this very elementary exposition of what to them is a well-known theory. But outside the circle of organic chemists the theory is, I fear, far from well known. Thus, an eminent physicist, in his "Theory of Light," referring to the rotation of the plane of polarisation by liquid or dissolved substances, says: "I am not aware that any explanation of it has ever been suggested." And in the "Proceedings of the Royal Society" for the present year, another eminent physicist, after quoting with approval this personal confession, goes on to suggest the possibility of the molecules having a twisted structure, and points out that a right-handed twist "would appear right-handed when looked at from either end," apparently unaware that such conceptions have been commonplaces of stereo chemistry for the past quarter of a century at least.

This brief sketch of the theory was therefore necessary in order that we may now effectively discuss Pasteur's views on the relation between optical activity and life.

Whenever we prepare artificially, starting either with the elements, or with symmetric compounds, any organic compound which, when it occurs as a natural product of the living organism, is optically active, the primary product of our laboratory reactions, however closely it may in other respects resemble the natural product, differs from it in being optically inactive. Pasteur was greatly impressed by this fact. In the lectures delivered in 1860 he says "Artificial products have no molecular asymmetry; and I could not point out the existence of any more profound distinction between the products formed under the influence of life, and all others." And again, he refers to "the molecular asymmetry of natural organic products" as "the great characteristic which establishes perhaps the only well-marked line of demarcation that can at present be drawn between the chemistry of dead matter and the chemistry of living matter." He would not admit that even racemoid forms, optically inactive by intermolecular compensation, might be artificially prepared; thus, to the suggestion that the malic acid which he had obtained from Dessaignes's artificial aspartic acid might possibly be the racemoid form (as we now know that it is), he replied: "That is improbable, for then not only should we have made an active body from an inactive one, but we should have made two—a right and a left."

The view that racemoids could not be prepared artificially did not long remain tenable. In 1860, the year in which the foregoing lectures were delivered, Perkin and Duppa, and, independently, Kekulé, obtained from dibromosuccinic acid a form of tartaric acid, which Pasteur recognised as racemic acid. But the succinic acid employed had been prepared from amber, a substance of vegetable origin; and there was still the possibility that herein lay the source of the optical activity of the two constituents of the artificial racemic acid. This objection, which was raised by Pasteur himself, fell to the ground when, in 1873, Jungfleisch

prepared racemic acid from Maxwell Simpson's synthetic succinic acid, and separated it into its right and left constituents by means of the sodium ammonium salt.

"Thus falls the barrier," wrote Schützenberger, "which M. Pasteur had placed between natural and artificial products. This example shows us how reserved we must be in attempting to draw distinctions between the chemical reactions of the living organism and those of the laboratory."

To these words, which, although written a quarter of a century ago, may fairly be taken as representing the prevailing belief of chemists at the present day, Pasteur replied as follows:

"Contrary to M. Schützenberger's belief, this barrier still exists. . . . To transform one inactive compound into another inactive compound which has the power of resolving itself simultaneously into a right-handed compound and its opposite (*son symétrique*), is in no way comparable with the possibility of transforming an inactive compound into a single active compound. This is what no one has ever done; it is, on the other hand, what living nature is doing unceasingly before our eyes."

On this and subsequent occasions Pasteur did little more than reiterate opinions which he had previously expressed. As he himself stated, he was then occupied with other problems which absorbed his entire time and energies. The result has been that the opinions have suffered neglect and even misrepresentation. Thus Ostwald, in his *Allgemeine Chemie*, translating, or rather paraphrasing, the foregoing passage, omits the word "single"—which is the key to Pasteur's meaning—and then condemns the statement as illogical.

Pasteur's point is, that whereas living nature can make a single optically active compound, those laboratory reactions, to which we resort in synthesising such compounds, always produce, simultaneously, at least two, of equal and opposite optical activity; the result being intermolecular compensation and consequent optical inactivity. Not necessarily implied in Pasteur's statement, but entirely in harmony with it, is the fact that we can sometimes produce artificially a single compound containing within its molecule two equal and opposite asymmetric groups, and therefore inactive by intramolecular compensation; thus in the oxidation of maleic acid to mesotartaric acid.

Let us consider the cause of this limitation of our synthetic reactions. Why cannot we produce, by laboratory processes, involving the play of symmetric forces and the interaction of symmetric atoms and molecules, single optically active compounds? To answer that question, let us turn our attention to the mechanism of the change in which a symmetric carbon atom becomes asymmetric.

A simple case of such a change, typical of all similar changes, is the transformation of a compound, $CH_2X'Y'$, by substitution, into $CHX'YZ'$. If we follow this process by means of our tetrahedral model, we see at once why, in our ordinary laboratory reactions, both enantiomorphs must be generated in equal quantity. The molecule of the compound, $CH_2X'Y'$, of which the tetrahedral representation is given in Fig. 3, has, as we have already seen, a plane of symmetry passing through $X'Y'$ and the carbon atom; and from this plane of symmetry the two hydrogen atoms are equidistant on opposite sides. Any purely mechanical, symmetric force, therefore—any force, for example, such as comes into play in the motions of the symmetric molecules of a gas or a liquid—which affects one of these hydrogen atoms in one molecule of the compound $CH_2X'Y'$, has an equal chance of affecting the other hydrogen atom in another molecule. If the right-hand hydrogen atom in Fig. 3 is replaced by the radicle Z' , we obtain the enantiomorph represented in Fig. 1; if the left-hand hydrogen atom, that represented in Fig. 2. The chances in favour of these two events being equal, the ratio,

Number of occurrences of event I.

Number of occurrences of event II.

will, if we are dealing with an infinitely great number of molecules, approximate to unity. We therefore obtain a mixture, optically inactive by intermolecular compensation.

All cases of the conversion of symmetric into asymmetric compounds may be referred to the same category, no matter whether the chemical process is one of substitution or of addition, or whether the resulting molecule contains one or more asymmetric carbon atoms. Thus, in the reduction of a ketone of the formula $X'CO \cdot Y'$ to a secondary alcohol of the formula $X'CH(OH) \cdot Y'$; in the transformation of an aldehyde by the addition of hydrocyanic acid in a nitrile of an α -hydroxy-acid; in the oxidation of

*The asymmetric carbon atom is represented by an italic C.

fumaric acid to racemic acid—eases typifying the various additive processes in which asymmetric groupings are produced—there is one condition common to all: in the symmetric compound, with which we start, there are, in every case, two identical points of attack, equidistant from the plane of symmetry of the molecule, and the result is that the two possible events happen in equal number, so that the mixture of enantiomorphs obtained is optically inactive by compensation. We are, of course, in many cases able afterwards to separate these enantiomorphs by the methods devised by Pasteur, and thus obtain the single optically active compounds; but we cannot produce them singly as long as we have at our disposal only the symmetric forces which we command in the laboratory.

Precisely the same state of things prevails when symmetric molecules unite, under the influence of symmetric forces, to build up an asymmetric crystalline structure. When, for example, sodium chlorate crystallises from its aqueous solution, the number of right-handed crystals is, on the average, as was shown by Kipping and Pope, equal to the number of left handed crystals. The same fact was proved by Landolt by observing the optical inactivity of the mixture of microscopic right and left crystals obtained by adding alcohol to a concentrated aqueous solution of sodium chlorate. The two possible asymmetric events occur in equal number.

Non-living, symmetric forces, therefore, acting on symmetric atoms or molecules, cannot produce asymmetry, since the simultaneous production of two opposite asymmetric halves is equivalent to the production of a symmetric whole, whether the two asymmetric halves be actually united in the same molecule, as in the case of mesotartaric acid, or whether they exist as separate molecules, as in the left and right constituents of racemic acid. In every case, the symmetry of the whole is proved by its optical inactivity.

The result is entirely different, however, when we allow symmetric forces to act under the influence of already existing asymmetric, non-racemoid compounds.

Thus, if we start with an optically active compound—a compound containing one or more asymmetric carbon atoms and non-racemoid—and, by appropriate chemical reactions, render asymmetric some carbon atom in the compound which was not previously so, then it does not follow that the two forms represented by the two possible arrangements of this new asymmetric carbon atom will be produced in equal quantity. The compound with which we start has no plane of symmetry; and, although there are still two possible points of attack, one will be more exposed than the other; in fact, one mode of attack may so predominate that apparently only one asymmetric compound is formed, the other compound, if formed at all, escaping detection by the smallness of its amount. A case in point is the conversion of *d*-mannose by combination with hydrocyanic acid into the nitrile of *d*-mannoheptonic acid, studied by Emil Fischer, in which only one nitrile is formed, although there are two ways in which the hydrocyanic acid may attach itself to the aldehyde group of the mannose. On the other hand the same general reaction, in the union of hydrocyanic acid with ordinary aldehyde $\text{CH}_3\cdot\text{CHO}$ —a symmetric compound—yields the right and left forms of lacto-nitrile $\text{CH}_3\cdot\text{CH}(\text{OH})\cdot\text{CN}$ in equal quantity, the two asymmetric events occurring in equal number, and the resulting mixture of compounds being inactive. It is the difference between guidance and no guidance; the asymmetric group present in the mannose guides into a particular path the symmetric forces which bring about the addition of the hydrocyanic acid; in the case of the symmetric aldehyde the result is left to pure chance. The latter action is like that of tossing a perfectly balanced coin; in the former the coin is heavily weighted on one side. The saying, “*les dés de la Nature sont pipés*,” is certainly true of living nature and its products.

This guiding action displayed by asymmetric compounds may even impart a bias to the crystallisation of those molecularly symmetric substances already referred to, which crystallise in enantiomorphous forms. Thus Kipping and Pope have recently made the interesting observation that the crystals of sodium chlorate which were deposited from an aqueous solution containing 200 grammes of *d*-glucose to the litre consist, on an average, of 32 per cent. of right-handed to 63 per cent. of left-handed crystals, the asymmetric carbohydrate, by its mere presence, favouring the formation of the one asymmetric form of the inorganic salt at the expense of the other.

These observations possibly afford a clue to the mode of action

of the living organism in producing single enantiomorphs. This production of single asymmetric forms may be a result of the asymmetric character of the chemical compounds of which the tissues of plants and animals are built up. The optically active products of the organism—the carbohydrates, the terpenes, tartaric acid, asparagine, quinine, the serum of the blood, and countless others—have been formed in an asymmetric environment, and their asymmetry is an induced phenomenon. They have been cast, as it were, in an asymmetric mould. According to this view they are a result of the selective production of one of the two possible enantiomorphous forms. The same would hold good with regard to the organised tissues themselves, developed from inherited asymmetric beginnings in the ovum or the seed, or obtained by fission. The perplexing question of the absolute origin of these asymmetric compounds I will discuss later.

Another view has been put forward by Emil Fischer. In his lecture on “Syntheses in the Sugar Group,” delivered before the German Chemical Society in 1890, he says:—

“Starting with formaldehyde, chemical synthesis leads, in the first instance, to the optically inactive *acrose*. In contradistinction to this only the active sugars of the *d*-mannitol series have hitherto been found in plants.

“Are these the only products of assimilation [of carbon dioxide and water]? Is the preparation of optically active substances a prerogative of the living organism; is a special cause, a kind of vital force, at work here? I do not think so, and incline rather to the view that it is only the imperfection of our knowledge which imports into this process the appearance of the miraculous.

“No fact hitherto known speaks against the view that the plant, like chemical synthesis, first prepares the inactive sugars; that it then resolves them into their active constituents, using the members of the *d*-mannitol series in building up starch, cellulose, inulin, etc., whilst the optical isomerides serve for other purposes at present unknown to us.”

There are therefore, two opposite processes which would account for the presence of optically active compounds among the substances generated in the living organism, and which we may briefly describe as selective production and selective consumption. An instance of artificial selective production is the formation of only one nitrile of *d*-mannoheptonic acid already cited. Selective consumption, dissociated, however, from the previous production of the racemoid form, may be illustrated by the fermentation of dextro-tartaric acid in the action, studied by Pasteur and already referred to, of a mould on racemic acid, the *lævo*-tartaric acid remaining untouched, and by numerous similar fermentations since discovered. Selective consumption is not restricted to living ferments; various cases are known of enzymes, or soluble ferments, which can effect the hydrolysis of the glucoside, but not of its enantiomorph. As Emil Fischer, who studied this phenomenon, says: “Enzyme and glucoside must fit each other like key and lock, in order that the one may exercise a chemical action on the other.” And a similar selective action, embracing the much more complex phenomenon of alcoholic fermentation, is displayed by E. Buchner’s soluble zymase obtained from yeast cells.

It is true, moreover, that the organism sometimes produces both enantiomorphs. Thus the lactic ferment converts carbohydrates into racemoid lactic acid; ordinary or *lævo* rotatory, asparagine is accompanied in plants, as Piutti showed, by a small quantity of its optical isomeride; and there are other cases.

These facts might be taken as evidence in favour of Fischer’s view that selective consumption is the cause of the phenomenon we are discussing. But I do not think that, in the present state of our knowledge, we can decide between the two views. For that matter both may be correct, each may explain particular cases. What I wish to point out is that Fischer’s statement that the “miraculous” character of the phenomenon is eliminated by his assumption, appears open to question. It is just as much, or as little, miraculous after as before. The production of a single asymmetric form, and the destruction of one of two opposite asymmetric forms, are problems of precisely the same order of difficulty, and there are only two ways in which either of them has ever been solved; first, by the direct action of living matter, and, secondly, by the use of previously existing asymmetric non-racemoid compounds, which are, in the last resort, due to the action of life. Directly, or indirectly, then, life intervenes.

Doubtless this will appear a very extraordinary statement in view of Jungfleisch’s synthesis of racemic acid and its resolution into dextro- and *lævo*-tartaric acids by the crystallisation of the

sodium ammonium salts. The process does not take place in a living organism, nor is the aid of life invoked in the shape of a micro-organism, as in Pasteur's third method of separation. No asymmetric base of vegetable origin is employed, as in Pasteur's second method, so that the indirect action of life through its products is also excluded; sodium and ammonium are symmetric inorganic radicles, and no substance of one-sided asymmetry is introduced from beginning to end. The process is one of ordinary crystallisation; the two forms are deposited side by side, the operator afterwards picking out the right and left crystals and separating them. The reason why the two tartrates crystallise out, and not the racemate, is that at the ordinary temperature of the air at which the crystallisation is conducted they are less soluble than the racemate. At a higher temperature, on the other hand, these solubilities are reversed, and the racemate is deposited. The conditions are precisely those which govern the formation or non-formation of ordinary double salts.

Consequently the overwhelming majority of chemists hold that the foregoing synthesis and separation of optically active compounds have been effected without the intervention of life, either directly or indirectly. Every manual of stereochemistry emphasises this point.

I have already hinted that I hold a contrary opinion. I have held it for some time, but have not ventured to give public expression to it, except in lecturing to my students. I was deterred chiefly by the impression that I stood alone in my belief. I find, however, that this was a mistaken impression. In a lecture on "Pasteur as the Founder of Stereochemistry," which Professor Crum Brown delivered before the Franco-Scottish Society in July, 1897, and which is published in the *Revue française d'Edimbourg*, he says, referring to the separation of enantiomorphs by crystallisation:—

"The question has often occurred to me: Do we here get rid of the action of a living organism? Is not the observation and deliberate choice by which a human being picks out the two kinds of crystals and places each in a vessel by itself the specific act of a living organism of a kind not altogether dissimilar to the selection made by *Penicillium glaucum*? But I do not insist on this, although I think it is not unworthy of consideration."

It is this question, so precisely posed by Professor Crum Brown, that I would discuss in detail. I think we shall find that the answer to it will be in the sense which he indicates. The action of life, which has been excluded during the previous stages of the process, is introduced the moment the operator begins to pick out the two enantiomorphs.

It will doubtless be objected that, if this is the case, there can be no such thing as a synthesis of a naturally occurring organic compound without the intervention of life, inasmuch as the synthetic process is always carried out by a living operator.

Here, however, we must draw an important distinction. In the great majority of the operations which we carry out in our laboratories—such as solution, fusion, vaporisation, oxidation, reduction and the like—we bring to bear upon matter symmetric forces only—forces of the same order as those involved in the chance motions of the molecules of a liquid or a gas. All such processes, therefore, might conceivably take place under purely chance conditions, without the aid of an operator at all. But there is another class of operations, to which Pasteur first drew attention: those into which one-sided asymmetry enters, and which deal either with the production of a single enantiomorph, or with the destruction (or change) of one enantiomorph in a mixture of both, or with the separation of two enantiomorphs from one another. We have already seen that such processes are possible only under one-sided asymmetric influences, which may take the form either of the presence of an already existing enantiomorph, or of the action of a living organism, or of the free choice of an intelligent operator. They cannot conceivably occur through the chance play of symmetric forces.

We must, therefore, in classifying the actions of the intelligent operator, distinguish between those actions in which his services might conceivably be dispensed with altogether, and those in which his intelligence is the essential factor. To the former class belongs the carrying out of symmetric chemical reactions; to the latter, the separation of enantiomorphs.

Take the synthesis of formic acid—a symmetric compound—by the absorption of carbon monoxide by heated caustic alkali. Given a forest fire and such naturally occurring materials as limestone, sodium carbonate, and water, it would not be difficult to imagine a set of conditions under which a chance synthesis of sodium

formate from inorganic materials might occur. I do not assert that the conditions would be particularly probable; still, they would not be inconceivable. But the chance synthesis of the simplest optically active compound from inorganic materials is absolutely inconceivable. So also is the separation of two crystallised enantiomorphs under purely symmetric conditions.

The picking out of the two enantiomorphs is, moreover, to be distinguished from the process of similarly separating the crystals of two different non-enantiomorphous substances, although this distinction is commonly ignored by classing both processes together as mechanical, in opposition to chemical separations. In the case of the non-enantiomorphs there may be differences of solubility, of specific gravity and the like; so that other means of separation, involving only the play of symmetric forces, may be resorted to. Such a process may justly be regarded as "mechanical." But the two crystallised enantiomorphs, as we have seen, have the same solubility—at least in symmetric solvents; the same specific gravity; behave, in fact, in an identical manner towards all symmetric forces; so that no separation by such means is feasible. It requires the living operator, whose intellect embraces the conception of opposite forms of asymmetry, to separate them. Such a process cannot, by any stretch of language, be termed "mechanical." Conscious selection here produces the same result as the unconscious selection exercised by the micro-organism, the enzyme, or the previously existing asymmetric compound.

I need not point out that if the operator chooses to bring about the separation by an asymmetric solvent, or some other asymmetric means, he is still making use of his conception of asymmetry. He merely effects his end indirectly instead of directly. But in either case he exercises a guiding power which is akin, in its results, to that of the living organism, and is entirely beyond the reach of the symmetric forces of inorganic nature.

In like manner, it is not of the least consequence, for the purposes of the present argument, whether the micro-organism, with which we have compared the operator, acts directly in fermenting one or two enantiomorphs, or whether it acts indirectly by first preparing an asymmetric enzyme which displays this selective action. The contention, therefore, of E. Fischer, Buchner, and others, that the discovery of enzymes and zymases "has transferred the phenomena of fermentation from biological to purely chemical territory," is true only as regards the immediate process, and leaves intact the vitalistic origin of these phenomena.

We thus arrive at the conclusion that the production of single asymmetric compounds, or their isolation from the mixture of their enantiomorphs, is, as Pasteur firmly held, the prerogative of life. Only the living organism with its asymmetric tissues, or the asymmetric products of the living organism, or the living intelligence with its conception of asymmetry, can produce this result. Only asymmetry can beget asymmetry.

Is the failure to synthesise single asymmetric compounds without the intervention, either direct or indirect, of life, due to a permanent inability, or merely to a temporary disability which the progress of science may remove? Pasteur took the latter view, and suggested that the formation of chemical compounds in the magnetic field, or under the influence of circularly polarised light, would furnish a means of solving the problem; and Van't Hoff also thinks the latter method feasible. As regards magnetism, Pasteur's suggestion was undoubtedly based on a misconception; the magnetic field has not an asymmetric structure; it is merely polar, since the rotation which it produces in the plane of polarisation of a ray of light changes sign with the direction of the field. As regards circularly polarised light, I must confess to having doubts as to whether it can be regarded as an asymmetric phenomenon: the motion of the ether about the axis of the ray is circular, not spiral; and it is only by considering the difference of phase from point to point along the ray that the idea of a spiral can be evolved from it. In fact, are there such things as forces asymmetric in themselves? Is the geometrical conception of asymmetry applicable to dynamical phenomena at all, except in so far as these deal with asymmetric material structures, such as quartz crystals, or organic molecules containing asymmetric carbon atoms? But this is a question which I would submit to the judgment of mathematical physicists.

One thing is certain—namely, that all attempts to form optically active compounds under the influence of magnetism or circularly polarised light have hitherto signally failed. These forces do not distinguish between the two equally exposed points of attack which present themselves in the final stage of the transformation of a

symmetric into an asymmetric carbon atom. But even if such an asymmetric force could be discovered—a force which would enable us to synthesise a single enantiomorph—the process would not be free from the intervention of life. Such a force would necessarily be capable of acting in two opposite asymmetric senses; left to itself it would act impartially in either sense, producing, in the end, both enantiomorphs in equal amount. Only the free choice of the living operator could direct it consistently into one of its two possible channels.

I will briefly recapitulate the conclusions at which we have arrived. Non-living, symmetric matter—the matter of which the inorganic world is composed—interacting under the influence of symmetric forces to form asymmetric compounds, always yields either pairs of enantiomorphous molecules (racemoid form), or pairs of enantiomorphous groups united within the molecule (meso-form), the result being, in either case, mutual compensation and consequent optical inactivity. The same will hold good of symmetric matter interacting under the influence of asymmetric forces (supposing that such forces exist) provided that the latter are left to produce their effect under conditions of pure chance.

If these conclusions are correct, as I believe they are, then the absolute origin of the compounds of one-sided asymmetry to be found in the living world is a mystery as profound as the absolute origin of life itself. The two phenomena are intimately connected, for, as we have seen, these symmetric compounds make their appearance with life, and are inseparable from it.

How, for example, could lævo-rotatory protein (or whatever the first asymmetric compound may have been) be spontaneously generated in a world of symmetric matter and of forces which are either symmetric or, if asymmetric, are asymmetric in two opposite senses? What mechanism could account for such selective production? Or if, on the other hand, we suppose that dextro- and lævo- protein were simultaneously formed, what conditions of environment existing in such a world could account for the survival of the one form and the disappearance of the other? Natural selection leaves us in the lurch here; for selective consumption is, under these conditions, as inconceivable as selective production.

No fortuitous concurrence of atoms, even with all eternity for them to clash and combine in, could compass this feat of the formation of the first optically active organic compound. Coincidence is excluded, and every purely mechanical explanation of the phenomenon must necessarily fail.

I see no escape from the conclusion that, at the moment when life first arose, a directive force came into play—a force of precisely the same character as that which enables the intelligent operator, by the exercise of his Will, to select one crystallised enantiomorph and reject its asymmetric opposite.

I would emphasise the fact that the operation of a directive force of this nature does not involve a violation of the law of the conservation of energy. Enantiomorphs have the same heat of formation; the heat of transformation of one form into the other is *nil*. Whether, therefore, one enantiomorph alone is formed, or its optical opposite alone, or a mixture of both, the energy required per unit weight of substance is the same. There will be no dishonoured drafts on the unalterable fund of energy.

The interest of the phenomena of molecular asymmetry from the point of view of the biologist lies in the fact that they reduce to its simplest issues the question of the possibility or impossibility of living matter originating from dead matter by a purely mechanical process. They reduce it to a question of solid geometry and elementary dynamics; and therefore if the attempted mechanical explanation leads to a *reductio ad absurdum*, this ought to be of a correspondingly simple and convincing character. Let us see how far this is the case.

Life is a phenomenon of bewildering complexity. But in discussing the problem of the origin of life, this complexity cuts two ways. Whilst, on the one hand, it is appealed to by one set of disputants as an argument against the mechanical theory, on the other it affords shelter for the most unproved statements of their opponents. I will take a concrete instance from the writings of an upholder of the mechanical theory of the origin of life, the late Professor W. K. Clifford. He says:

“Those persons who believe that living matter, such as protein, arises out of non-living matter in the sea, suppose that it is formed like all other chemical compounds. That is to say, it originates in a coincidence, and is preserved by natural selection. . . . The coincidence involved in the formation of a molecule so complex as to be called living, must be, so far as we can make out, a very elaborate coincidence. But how often does it happen

in a cubic mile of sea-water? Perhaps once a week; perhaps once in many centuries; perhaps, also, many million times a day. From this living molecule to a speck of protoplasm visible in the microscope is a very far cry; involving, it may be, a thousand years or so of evolution.”

It was easy for Clifford to write thus concerning life itself, for it was difficult for any one to contradict him. But had he been asked whether any mechanical (symmetric) coincidence would suffice to convert an infinitely great number of molecules of the type shown in Fig. 3 into that shown in (say) Fig. 1, or to the exclusion of that shown in Fig. 2; or whether, given a mixture, in equal proportions, of molecules of the types shown in Figs. 1 and 2, any mechanical (symmetric) conditions of environment would bring about the destruction of one kind and the survival of the other, I think his exact mathematical and dynamical knowledge would have prevented him from giving an affirmative answer. But short of this affirmative answer, his other statements, it seems to me, fall to the ground.

I am convinced that the tenacity with which Pasteur fought against the doctrine of spontaneous generation was not unconnected with his belief that chemical compounds of one-sided asymmetry could not arise save under the influence of life.

Should anyone object that the doctrine of the asymmetric carbon atom is a somewhat hypothetical foundation on which to build such a superstructure of argument as the foregoing, I would point out that the argument is in reality independent of this doctrine. All that I have said regarding the molecular asymmetry of naturally occurring optically active organic compounds, and all the geometrical considerations based thereon, hold good equally of the hemihedral crystalline forms of these compounds, about which there is no hypothesis at all. The production of a compound crystallising in one hemihedral form to the exclusion of the opposite hemihedral form, as in the case of the tartaric acid of the grape, is a phenomenon inexplicable on the assumption that merely mechanical, symmetric forces are at work. Nor is this conclusion invalidated even if we ultimately have to admit that the connection between molecular and crystalline asymmetry is not an invariable one—a point about which there is no dispute.

At the close of the lectures from which I have so frequently quoted, Pasteur, with full confidence in the importance of his work, but without any trace of personal vanity, says:—

“It is the theory of molecular asymmetry that we have just established—one of the most exalted chapters of science. It was completely unforeseen, and opens to physiology new horizons, distant but sure.”

I must leave physiologists to judge how far they have availed themselves of the new outlook which Pasteur opened up to them. But if I have in any way cleared the view towards one of these horizons, I shall feel that I have not occupied this chair in vain.

Some of my hearers, however, may think that, instead of rendering the subject clearer, I have brought it perilously near to the obscure region of metaphysics; and certainly, if to argue the insufficiency of the mechanical explanation of a phenomenon is to be metaphysical, I must plead guilty to the charge. I will, therefore, appeal to a judgment—metaphysical, it is true, but to be found in a very exact treatise on physical science—namely, Newton's “Principia.” It has a marked bearing on the subject in hand:

“A cæca necessitate metaphysica, quæ utique eadem est semper et ubique, nulla oritur rerum variatio.”

This is certainly true of the particular “rerum variatio” in which optically active organic compounds originate.

EUROPHEN INUNCTIONS IN TUBERCULOSIS.—Lawrence Flick concludes, after eight years' experience, that incipient cases of tuberculosis may almost always be cured by inunction of europhen or iodoform. As the odour of europhen is much less objectionable than that of iodoform, and it is at least as efficacious, the former drug is to be preferred for use. The formula employed is europhen, 1 drachm; oil of rose, 1 ℥; oil of anise, 1 drachm; olive oil, 2 ozs. The patients are instructed to rub about a tablespoonful of this thoroughly into the insides of the thighs and into the armpits before retiring at night. The treatment should be persevered in until after acute symptoms have entirely disappeared and perfect health is established. The internal administration of creosote and of tonics should accompany this method of inunction.—*Therap. Gaz.*, xxii., 33.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY.

The annual meeting of this Society was held in the rooms, New Surrey Street, on September 21, Mr. G. SQUIRE, the President, in the chair. Among those present were Messrs. G. T. W. Newsholme, J. Preston, H. E. Ibbitt, W. Ward, and J. B. Pater (Hon. Sec.).—The annual report of the Council, which was presented by the Secretary, stated that the Society had a membership of thirty-seven and sixteen associates, a reduction of one member and eight associates. The programme of the past year consisted of the annual dinner and meeting, which proved one of the most successful of the series, eight Council meetings, five general meetings, and a ball. Papers had been read on the following subjects:—The Proprietary Articles Trade Association; The Proposed New Pharmacy Bill, and Poor Law Dispensers. The Council announces that it has arranged for the reading of a series of papers for the coming season, and appeals to both members and associates to show their interest in the work of the Society by attending the meetings. The working of the School of Pharmacy resulted in a balance in hand of nearly £5. After careful and earnest consideration the Council has decided to carry on the classes in future in conjunction with the Sheffield University College, at which place will be taught chemistry (practical and theoretical) and botany, whilst the classes for pharmacy and materia medica will for the present be taught at the Society's rooms as heretofore. It is hoped ultimately to arrange with Sheffield University College for a three years' curriculum and for all classes to be conducted there.—The PRESIDENT, in moving the adoption of the report, expressed his regret at the decreased membership. The past year had, however, been a successful one as regards the work done. The Council had decided that the University College was the place they must look to for education in the future.—Mr. WARD, in seconding, said he had known both better and worse years than the one which had ended.—Mr. NEWSHOLME drew attention to the fact that the Society had taken an advanced step in regard to education. They had gone in for a much more extended and useful system in connection with the College. Institutions, such as the College, were making great advances throughout the country, and were being used on all hands by public bodies and associations. He was glad Sheffield was not behindhand. It should not be supposed, however, that they were going to hand the whole thing over to the College. It was more important than ever that the chemists of the city should bring pressure upon their young men to attend the College. They wanted to adopt the Nottingham system in Sheffield, and he was sure it would tend not only to their educational but their financial benefit. The only other business was the re-election of the six members of the Council, viz, Messrs. W. Ward, C. O. Morrison, J. Preston, J. B. Pater, A. R. Fox, and J. F. Eardley.—A further meeting of the Society was held on Monday evening last, Mr. G. SQUIRE presiding, for the purpose of electing officers for the ensuing year. The voting resulted as follows:—President, Mr. Geo. Squire; Vice-Presidents, Mr. S. T. Rhoden and Mr. J. Austen; Treasurer, Mr. J. Preston; Hon. Sec., Mr. J. B. Pater; Hon. School Sec., Mr. S. T. Rhoden; Auditors, Mr. R. W. Watson and Mr. J. P. Hewitt; Curator and Librarian, Mr. C. F. Carr; Council, Messrs. J. F. Eardley, A. R. Fox, G. T. W. Newsholme, F. C. S., G. Owen, W. Ward, F. C. S., and H. E. Hewitt. Arrangements are in hand for the formal inauguration of the fourteenth session of the Society's School of Pharmacy, which is to be held on Thursday, October 13, at the Masonic Hall. The programme consists of the distribution of prizes by the President, an inaugural address by Mr. J. Rymer Young, of Warrington, and a dinner.

CONDURANGO IN GASTRIC AFFECTIONS.—Although condurango as a remedy for gastric cancer, has been shown to be without curative effect, it would seem that it is not without valuable properties, since it is stated by A. Robin to act most efficiently as an anodyne in many painful affections of the stomach. In ulcer of the stomach, and in painful dyspepsias, it relieves the distressing symptoms and diminishes the frequency and violence of vomiting where it occurs. In this way it enables the patient to take a certain amount of nourishment. It may be given in the form of tincture (10 or 20 grammes per diem) or, preferably, since alcohol is, as a rule, not a desirable vehicle in these cases, in the form of the powdered bark in pills or cachets containing 10 centigrammes, 8 or 10 of which may be taken daily.—*Les Nouv. Rem.*, xiv., 340.

LETTERS TO THE EDITOR.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

UROTROPINE: WHAT'S IN A NAME?

Sir,—One of the classics of pharmacy is contained in the thirty-fourth chapter of the "Papers of the Pickwick Club," and this is a precious possession to the pharmacist. His whole case for exemption from jury service, whether actual or possible, may not rest on Dickens' description of "the long chemist" and his errand boy who held a theory of the isomerism of Epsom salts and oxalic acid, but our claim could not well have been put so effectively as by this concrete instance. The same chapter tells us how Mr. Justice Stareleigh confused himself and one of the witnesses, whom he severely questioned whether he was "Nathaniel Daniel or Daniel Nathaniel." If synthetic remedies are to multiply at their present rate of increase we may reasonably ask that their parents shall give them names that will not actively suggest confusion with old-established drugs. A few days since I heard a telephonic conversation in which "eu-atropine" was asked for, and I felt a cold spinal shiver at the explanation that Dr. — had prescribed eight grains for a dose. Now, it may be reasonable that the substance hexamethylenetetramine (urotropine) should find a shorter name for daily use, but I deny its right to disregard the danger of confusion with a widely different drug. The Registrar of Trade Marks would carefully guard against encroachment on existing commercial rights before he allowed a new name on his protected list. It is straining the well-known carefulness of the dispensing chemist too far when such a new danger of confusion of names is thrown in his path, with the belief that he will pick his way safely as usual.

Lcds, September 27, 1898.

RICHARD REYNOLDS.

THE PREPARATION OF LIQUID EXTRACTS.

Sir,—In reply to Mr. Moss (*ante*, p. 346), distilled water appears to exhaust cascara too well by the B.P. process for liquid extract of cascara, as on the addition of the diluted alcohol to the concentrated liquor this deposits, and continues to deposit, much that is not taken up, if 20 per cent. alcohol and fractional percolation be employed. As a laxative it is also more active, if anything, if made by the latter process. Mr. Bird (*P. J.*, August 25, p. 240) is in error in saying I refer the B.P., 1885, process, in which successive boilings in distilled water were directed. In my opinion in both these official processes, by heating so long, the preparation become overcooked. In regard to liquid extract of belladonna, manufacturers will, no doubt, exhaust the belladonna further than the B.P. directs, if it pays, as in doing so they will not break the new commandment, and be "found out" by the public analyst, so long as the preparation contains not less than 2 or more than 2.25 per cent. by volume of alkaloids.

London, September 28, 1898.

W. MARTINDALE.

LONDON UNIVERSITY SCIENCE DEGREES.

Sir,—The writer of the article you quote from the *Chemical News* on this subject (*ante*, p. 315) has not taken account of the new regulations that will come into force next year. Thus, for the Matriculation examination, candidates will then not be approved unless they have shown a competent knowledge of each of the following subjects: (1) Latin; (2) English Language, History, and Literature; (3) Mathematics; (4) "General Elementary Science." One other subject must also be taken, and a competent knowledge shown in it. This fifth subject may be either (α) Greek, (β) French, (γ) German, (δ) Chemistry, (ε) Sound, Heat and Light, (ζ) Electricity and Magnetism, (η) Botany, or (θ) Mechanics. The examination in chemistry will include elementary metallic, as well as non-metallic chemistry. It will not be the first six successful candidates that receive an exhibition of £30 per annum, but the first candidate only. For the Intermediate Examination in Science,

practical work will be required in both the Pass and Honours examinations, both qualitative and quantitative. It should also be stated that candidates will be examined in organic chemistry as well as inorganic. Extensive and important alterations have been made in the regulations and the syllabus for the various examinations in science. These affect the Intermediate Scientific examination principally, but changes are also made with respect to the B.Sc. examination. The syllabus in chemistry for the former has been greatly altered, organic chemistry and volumetric analysis having been added where previously only inorganic chemistry and qualitative analysis were required. The syllabus in physics and that in biology have also been slightly changed, that in mathematics remaining the same. It is now necessary to take three subjects only out of the above four; up to the present it has been required of candidates to pass in all the four subjects mentioned.

London, September 22, 1898.

RICHARD A. ROBINSON, JUN.

PHARMACEUTICAL SOCIETY ELECTION (IRELAND).

Sir,—I beg to solicit the favour of the votes of your Irish readers for election on the Council of the Pharmaceutical Society of Ireland. If elected, I believe that I could forward their interests by pressing the following reforms:—

1. The classification of methylated spirit as a poison, and the consequent restriction of its sale to registered persons.
2. The better enforcement of the Pharmacy and Poisons Act by the appointment of local secretaries throughout Ireland.
3. The recognition of the Irish Licence as a pharmaceutical qualification by all the prison boards, hospitals, asylums, infirmaries, etc., in Great Britain.
4. A periodical inspection and report on the quality of the drugs sold by grocers and others.
5. The restriction of Poor Law Union contracts for drugs to chemists or druggists.

Dublin, September 27, 1898.

J. C. McWALTER.

CELLULOSE ACETATE.

Sir,—My attention has been called to an inquiry, under initials "J. H. B." in your issue of the 24th of this month, respecting cellulose acetate. I have pleasure in informing you that I am the sole manufacturer of that article in this country.

Salford, Manchester, September 27, 1898.

I. FRANKENBURG.

ANSWERS TO QUERIES.

Special Notice.—Scientific, technical, legal, and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms, and the registered number added in each instance should be quoted in any subsequent communication on the same subject.

BOTANICAL.—A kind of buckwheat. [Reply to A. B. M.—16/25.]

PETROLEUM EMULSION.—You will find a formula for this in the Journal for April 23 last, page 408. [Reply to W. W.—16/14.]

LINIMENTUM AMMONIÆ.—Try the official formula, with almond and olive oils, and after thorough emulsification add one fluid ounce of water. [Reply to LIQ. AMMON.—16/17.]

RESIDENTIAL CLUB.—The article referred to appeared in the Journal for June 5, 1897. The address you require is the Hampden Club, Phoenix Street, N. W. [Reply to J. S. H.—16/24.]

CHEMICAL COMPOSITION OF FEATHERS.—We know of no book solely devoted to the pigments of feathers. You will find most information on the subject in the Journal of the Chemical Society. Doubtless you know that copper has been found in the feathers of the hornbills. A series of papers on the chemistry of the pigments of insects (chiefly butterflies) appeared in the *Entomologist*, about eight years ago. [Reply to GRAVITAS.—16/13.]

REDUCTION OF PERMANGANATE.—The precipitate formed by the action of sucrose on potassium permanganate is hydrated manganese dioxide. [Reply to GLYCYRRHIZA.—16/6.]

STRONTIUM BROMIDE.—This compound contains six molecules of water of crystallisation, the formula being $\text{SrBr}_2 \cdot 6\text{H}_2\text{O}$. [Reply to GLYCYRRHIZA.—16/6.]

TO RESTORE FADED INK.—If the ink has an iron basis probably washing the paper over with a dilute aqueous solution of tannin will restore the colour. Dilute solution of potassium ferrocyanide will restore it with a blue tint, or very dilute ammonium thiocyanate as a dull red. Try the effect on a few letters first, before treating the whole sheet. [Reply to C. G. E.—16/21.]

BOOK ON THE PHARMACY OF THE B.P.—No text-book of the kind you require has yet been published but Umney's 'Short Guide' to the new Pharmacopœia may serve your purpose to some extent, and you will also find the *P. J.* 'Synopsis of the British Pharmacopœia, 1898,' extremely useful. [Reply to J. C. B.—16/28.]

VETERINARY WORK FOR A FARMER.—Armitage's 'Every Man his own Cattle Doctor,' 21s., and the same author's 'Every Man his own Sheep Doctor,' 10s. 6d., will probably be the best works for your client. We do not recommend him, however, to do much in the way of amateur veterinary work. It will, in the long run, pay him better to consult a qualified practitioner. For those who are farming abroad, where the existence of the qualified veterinary surgeon is not within a reasonable distance, the above-named books are very useful. [Reply to LETA.—16/23.]

PREPARATION OF SODIUM CARBONATE.—On the experimental scale probably the method you name of passing carbon dioxide into strong solution of sodium hydroxide until saturated, and then heating the sodium bicarbonate formed, would be the easiest, but it is too costly to be used in practice. We cannot quite understand what you mean by the carbon dioxide not being quickly absorbed it is probably so rapidly taken up, that you cannot observe the fact, and conclude that no gas is passing because you see no bubbles. You should interpose a wash-bottle between the gas generator and the vessel containing the soda solution. When the bubbles pass through the water in the wash-bottle, and through the solution at the same rate, without diminishing in size, you will know that the hydrate is fully converted into bicarbonate. [Reply to GLYCYRRHIZA.—16/6.]

MIST. BISMUTHI CO. ET. PEPSINÆ.—Scale pepsin, 240 grains; ammonio-citrate of bismuth, 480 grains; morphine hydrochloride 4 grains; dilute hydrocyanic acid, 6 fl. drachms; dilute hydrochloric acid, 3 drachms; chloroform, 2 fl. drachms.; glycerin, 1 fl. oz.; compound tincture of cardamoms, 2 fl. oz.; tincture of nux vomica, 1 fl. oz., 5 drachms, 20 m; distilled water to produce 20 fluid ounces. Dissolve the pepsin in the glycerin and hydrochloric acid with the addition of a small amount of water; dissolve the bismuth in another portion of the water; mix the chloroform with the tinctures, add the prussic acid, the morphine hydrochloride, also dissolved in a little warm water. Mix all the ingredients, add enough water to produce 20 fl. oz., let stand a few hours, then filter through powdered pumice stone so as to obtain a clear liquid. [Reply to W. W.—16/14.]

INFORMATION WANTED.

STICKY FLY-PAPER MACHINE.—Wanted the name of makers of a clean handy sticky fly-paper spreading machine.—NEMO (16/29).

OBITUARY.

CRAGG.—On September 17, James Cragg, Chemist and Druggist, Woodhouse, near Milnthorpe. Aged 61.

BOURNE.—On September 25, Charles Matthew Kemsey Bourne, Chemist and Druggist, West Bromwich. Aged 46. Mr. Bourne was an Associate of the Pharmaceutical Society.

ABSORPTION OF CARBONIC ANHYDRIDE BY MAGNESIA.

BY DR. B. H. PAUL AND A. J. COWNLEY.

In the course of an investigation as to the quality of commercial calcined magnesia it was considered expedient to extend the inquiry so as to ascertain the extent of the absorption of carbonic anhydride by calcined magnesia when exposed to air under ordinary atmospheric conditions. This inquiry was deemed more essential as it has been alleged, in order to explain the abnormal presence of magnesium carbonate in medicinal preparations stipulated to contain magnesia, that calcined magnesia so readily absorbs carbonic anhydride that the discrepancy between theoretical requirements and practical results is not surprising. It was found necessary, first of all, to consider the most suitable method of analysis that could be depended on to furnish results that would not only be readily comparable with one another, but which could be relied on when determining small quantities of carbonic anhydride.

It is hardly necessary to say that no attempt was made to determine carbonic anhydride from the loss obtained on ignition. In determining carbonic anhydride in weighable quantities, the usual method adopted is, as is well known, either by loss of CO₂, as yielded in an ordinary CO₂ apparatus, or by absorption of the gas in soda lime or in potash bulbs. For such determination, when operating on materials free from organic matter, the most suitable method for determining CO₂ and water, at one operation, we have found is by placing the substance in a tube with a centre bulb connected with drying and absorption tubes, through which the evolved gases are drawn by an aspirator. This method answers admirably when dealing with weighable quantities of carbonic anhydride. For our purpose, however, neither of these methods was considered sufficiently delicate.

Finally, we employed a method consisting in the measurement of the carbonic anhydride actually evolved by the action of acid on the substance under examination. Such a method is not altogether new, as Scheibler's is well known, and C. S. Dyer has lately also suggested it (*P. J.*, lxi., 181). But all the hitherto described methods have not been worked out satisfactorily.

The method we have adopted may be sufficiently interesting to warrant the following short description of it:—In the first place it may be stated that the carbonic anhydride is measured over mercury in an ordinary nitrometer. In operating with magnesia or magnesia preparations, 0.5 gramme is rubbed down with 3 C.c. of water in a small glass dish of about 10 C.c. capacity, and the contents conveyed to the cup of the nitrometer and run into the measuring tube, and two portions of 1 C.c. of water are used to wash out the dish and cup. Five C.c. of concentrated hydrochloric acid are then added, the measuring tube slightly agitated, and the gas measured in the usual way and corrected for temperature, pressure on the dry gas, and solubility. The solubility of CO₂ in the 10 C.c. of acid and saline liquor was found, after careful experiments, when working under the conditions specified, to be 1 C.c. at 60° F. and 758 Mm.

This method is a very ready one, and is a great improvement on the ordinary methods of determining CO₂ by loss or absorption. For the purpose of the examination of commercial calcined magnesia, samples were obtained from several well-known manufacturers and examined by the method above described.

The following were the results obtained:—

Sample of Calcined Magnesia.	CO ₂ per cent. by weight.	B.P. Magnesium carbonate. Per cent.
No. 1.....	0.62 × $\frac{382}{132}$	= 2.894 = 1.8
No. 2.....	0.72	= 2.1
No. 3.....	1.13	= 3.3
No. 4.....	1.13	= 3.3
No. 5.....	1.65	= 4.8

It is apparent, therefore, that commercial calcined magnesia is not contaminated with an undue admixture of magnesium carbonate.

For the purpose of ascertaining the degree of absorption of carbonic anhydride by freshly calcined magnesia a portion of sample No. 1 was calcined and then exposed to air as freely as possible at a temperature of 60° F. The increase in weight during exposure was noted, and after four days the amount of carbonic anhydride was determined. The following results were obtained:—

No. 1A.—Gain in weight in 48 hours	=	3.5 per cent.
" " 72 "	=	4.9 "
" " 96 "	=	5.8 "

The carbonic anhydride found in the magnesia after exposure for four days amounted to—

CO ₂ Per cent. by weight.	=	MgCO ₃ Per cent.	=	B.P. magnesium carbonate. Per cent.
2.0	=	3.8	=	5.7

Freshly calcined magnesia, therefore, only slowly absorbs carbonic anhydride when exposed to the air, even under the most favourable conditions for carbonation.

A sample of calcined magnesia which had been kept by a pharmacist for ten years in an ordinary stoppered bottle which was rarely opened gave the following result:—

No. 6.....	CO ₂ Per cent. by weight.	=	B.P. Magnesium carbonate. Per cent.
	3.38	=	9.8

The sample was then exposed for five days (nearly) to the air of the laboratory by being spread out on a large watch-glass, so as to absorb as much as possible. It was weighed at intervals, and the CO₂ determined at the end of the period. The results were as follow:—

Gain in weight in 16 hours	=	9.1
" " 64 "	=	14.7
" " 84 "	=	15.2
" " 108 "	=	16.9

The amount of carbonic anhydride in the material after five days' exposure amounted to

CO ₂ Per cent.	=	CO ₂	=	Mag. Carb.	=	B.P. Mag. carbonate. Per cent.	=	Increase in weight. Per cent.
8.34	=	24.2	=	24.2	=	24.2	=	16.9
Summarised thus:—								
After five days' exposure contained	8.34	=	24.2	=	24.2	=	24.2	=
Before being exposed	" 3.38	=	9.8	=	9.8	=	9.8	=
Gain in five days	4.96	=	14.4	=	14.4	=	14.4	=

There is, therefore, a greater absorption of carbonic anhydride by a very old hydrated sample under these conditions, but such results would not obtain in practice, as is shown by the analysis of sample No. 6, which had been kept for ten years without undue exposure, of samples Nos. 1 to 5, and by experiment No. 1A.

In medicinal preparations prepared with calcined magnesia, according to B.P. requirements, there is therefore no reason that the preparation should contain more than a small percentage of magnesium carbonate, as it is not to be supposed that medicinal drugs are to be exposed to atmospheric deterioration. That this view is correct may be shown by the following results, obtained in examination of Gregory's powder which, according to the B.P., should contain 66.6 per cent. MgO. These samples were obtained in the ordinary course from pharmacists:—

A.....	CO ₂ by weight. Per cent.	=	B.P. Magnesium carbonate. Per cent.
B.....	0.55	=	1.6
C.....	0.55	=	1.6
	1.34	=	3.9

Another sample was found to contain :—

	CO ₂ . Per cent.	Magnesium carbonate. Per cent.
D.	14.62	= 42.3

Evidently this sample had not been prepared with calcined magnesia, but chiefly with the carbonate.

These results show that freshly calcined magnesia becomes so slowly carbonated when freely exposed to the air that there is no justification for the presence in pharmacopœial preparations of an abnormal amount of a drug "which is not of the nature, substance, and quality of the article demanded," and certainly in calcined magnesia and its preparations the amount of carbonate should not exceed 5 per cent.

SEEDS OF OROXYLUM INDICUM.

In a recent number of the *Agricultural Ledger* (No. 6 of 1898), published by the Reporter on Economic Products to the Government of India, there is an interesting account of the use of the above seeds as a medicine for cattle. The seeds known in Almora as "damree" were identified by Dr. Watt as those belonging to *Oroxylum indicum*, and their peculiar use in veterinary medicine was communicated by the proprietor of a large tea factory and dairy farm in Almora. The disease for which the seeds were said to be a cure strangely bore the same vernacular name as the tree—viz., "damree," but whether the disease was named after the plant or the plant after the disease the informant was unable to discover. The malady partook of the nature of ringworm, and appeared on calves as well as full grown cattle. Little reddish coloured patches from half to one inch in diameter spread over the face, ears, and neck, and hardened lumps formed on the roof of the mouth. The spotted nature of the disease gave the animals, especially the calves, a most peculiar appearance; they looked as if they had been stamped all over with a seal. The cattle at first do not seem out of sorts, but as the number of rings increase they get thinner, lose their spirits, and the smaller ones die.

The natives recommended "damree" seeds as the only cure, but at the time none were available. Next year every precaution was taken to keep out the disease; the houses were cleaned and fumigated, and a large stock of seeds was laid in. The disease appeared as predicted, but on the first ring showing itself a few seeds ground up with "bhut" (*Glycine hispida*) were administered daily to all the calves. The result was that the cutaneous patches disappeared and none of the other calves were attacked. As soon as it showed itself afterwards the young animals were dosed with the seeds, and always with success.

The Inspector-General, Civil Veterinary Department, had his attention called to the subject, and was asked to identify the complaint that was known in Almora as "damree." His reply stated that the disease was similar to *Tinea tonsurans*, which is common among cattle in England. It is said to be caused by the fungus *Tricophyton tonsurans*.

It affects young animals especially when exposed to damp, or those with dirty skins, and it is readily transmissible from ox to ox, or to man, and other animals. This disease generally yields to such remedies as nitrate of mercury, nitrate of silver, or sulphurous acid, and surprise was expressed by the Inspector-General at the satisfactory results of following the employment of a vegetable substance such as seeds.

A supply of the seeds of *Oroxylum indicum* was obtained from Manbhum, Bengal, for the purpose of examination, and an analysis was made of them by Mr. D. Hooper, Officiating Reporter on Economic Products, Calcutta. The following remarks are reproduced from the *Agricultural Ledger*:—

"The seeds are thinly discoid, flat, and very light buff coloured. They are winged and translucent (hyaline) all round except at the base, and the largest measure 3 in. by 1½ in. When powdered they have a yellowish colour and a peculiar rancid or oily odour, and a bitter and acrid taste.

"The powdered seeds, exhausted with various solvents, and the moisture and ash at the same time estimated, gave the following proximate composition:—

Moisture.....	3.65
Oil.....	20.34
Resin and Bitter Principle.....	12.96
Mucilage and Albumin.....	20.54
Fibre.....	32.71
Ash.....	9.80

100.00

"The oil was green in colour, bitter in taste, and fluid above 70°. The bitterness was due to a principle found also in the spirit extract of the seeds, which had a distinctly yellow crystalline appearance. This principle was insoluble in water, and gave a peculiar reaction with caustic alkalies which consisted in assuming a red colour, passing into a green on exposure to the air. This yellow substance is no doubt the same as that which was detected in the bark of this tree by Messrs. Naylor and Chaplin, and called oroxylin (*Pharmaceutical Journal*, September 27, 1890; *Pharmacographia Indica*, vol. iii., p. 16).

"Werner (*Beitr. z. Kenntn. neuerer Drogen, Diss. Erlangen*, 1896), since the discovery of oroxylin, has made a minute anatomical examination of the bark, and has performed an elementary analysis of its bitter principle. He found 67.49 per cent. of carbon and 4.38 per cent. of hydrogen. At the same time he tried the physiological action of oroxylin. A frog after a subcutaneous injection of 150 Mgm., intimately mixed with water, exhibited no perceptible change. A rabbit treated in the same manner showed a rise of 1° of temperature in three or four hours, the respiration was accelerated and on the other hand there was a decrease of the pulsation from 170—160 to 130.

"However active the seeds may be when medicinally applied their potency is much reduced by heat and boiling. In Balrampur, during the famine of 1897, the seeds of *Oroxylum* were parched, ground into flour and made into bread. The agent of this district also reported that on some occasions the seeds were eaten raw. (Innes.) It would thus seem that there is nothing present of a decidedly poisonous nature in the seeds, and this opinion seems to be supported by physiological tests made by Werner.

"Bitter oils are much esteemed in India as applications for skin diseases. The oils of *Melia azadirachta* and *Pongamia glabra* are widely used for these purposes, both on men and animals, and, like many other remedies, the nut of the seed is given internally, while the oil is used as a lotion or liniment on the affected portion of the skin. Pityriasis and other parasitic affections have been removed by applying the bitter oils above mentioned, and there is reason to believe that the yellow active principle operates in the same manner as chrysophanic acid and destroys the growth of disease.

"Mr. Bellairs is quite satisfied with the results obtained in using 'damree' seeds for skin affections in cattle, and although the remedy might not accord with the usages of modern veterinary science, the publication of the facts may induce others to try a simple remedy within the reach of every Indian ryot."

YEAST FOR ACNE.—Brocq states that the internal administration of yeast to the extent of half to one teaspoonful suspended in water, taken before meals, is a useful remedy for acne. If fresh yeast cannot be obtained, a piece of compressed yeast the size of a nut may be substituted.—*Repertoire* [3], cx., July 10, 1898, 310.

PHARMACY, POISONS, AND HYGIENE.*

BY SIR JAMES CRICHTON BROWNE, F.R.S.



It is my privilege this afternoon to address to you a few words of exhortation and encouragement on the occasion of your entering on a course of study which is the appointed avenue to that manor of usefulness in which you propose to dwell and earn your subsistence. I cannot, in doing this, hope to speak to you with the insight and exactitude of one who has actually followed the calling which you have chosen, but I can, at any rate, bring to the performance of the duty I have undertaken, a sympathetic interest in your life-work, and a knowledge of its needs, trials and opportunities second only to that of those who have personally borne the burthen of them. For the view which a medical man takes of the business of the pharmacist is not altogether exoteric. He has been behind the scenes if not the counter. The mysteries of the mortar are well known to him. The language of drugs is ever on his lips; their actions and reactions daily occupy his thoughts, and the responsibility attaching to their use weighs upon him incessantly. It is indeed sometimes difficult to say where the doctor ends and the chemist and druggist begins, and while, for my own part, I trust that the line of demarcation between them will become more and more sharply defined as time goes on, so that we shall have fewer prescribing chemists on the one hand and fewer dispensing doctors on the other, there must always remain a close alliance between your calling and mine. They have common aims; they use the same weapons; they are complementary to each other; and it is to be hoped that they will be always animated by mutual good feeling.

Progress in Pharmacy.

Reviewing from my medical standpoint the movements which have taken place in your department of late years, I cannot but be struck by the great progress that has been accomplished—progress that has corresponded step by step with improvements in your training and equipment. It is less than sixty years since the first attempt was made at a uniform system of education for those who are to engage in the practice of pharmacy. It is just thirty years since adequate statutory powers were obtained for the examination and registration of chemists and druggists, and to-day I find you with a curriculum of study prescribed to you, and with ordeals by question awaiting you which ensure a general efficiency in your craft which, even ten years ago, was possessed by only a few of those who followed it. Without any change in the subjects of examination, there has been, I understand, of late years, a gradual advance in the requirements of the examiners, which has necessitated increased diligence on the part of candidates, and has elevated the tone and temper of your guild as a whole. Now, we must all welcome measures calculated to enhance the usefulness and trustworthiness of chemists and druggists. They are servants of the public in matters of vital concern—the lives of most of us are in their hands from time to time; they should advance pharmacy as well as practise it, and be capable of mastering the rapid developments that are taking place in sciences collateral to their art. It is of great public consequence that they should be in all respects well qualified men, and we must contemplate with satisfaction their improved discipline and skill, the dropping out from their ranks by efflux of time or penal expulsion

of miserable hucksters who brought on them discredit, and the filling up of the gaps thus made by recruits who are not intellectual starvelings, or mere smart tradesmen, but students tinctured with science, and imbued with a high sense of duty.

Necessity of Circumspection.

But while we rejoice at the rectification and sublimation of chemists and druggists that is going on, we must see that this process is not carried too far or unduly accelerated. In this, as in so many other matters, it may be well to hasten slowly, for remembering the very special circumstances under which the studies of embryo chemists and druggists are carried on, there would seem to be a special danger in submitting them to sudden or severe mental strain. They are earning their bread all the time. They are able to give to their studies but brief periods carved out of toilsome days. They bring to them brains, not fresh and nimble but fatigued and sluggish. They pursue them, not with entire devotion, but harassed by the petty troubles of the shop, and they are liable therefore to be injuriously affected by a degree of mental pressure that would be harmless and even stimulating to young men who have nothing but their studies and their pleasures to attend to, and whose daily life is ordered with a single eye to their schooling. We are suffering largely in this country to-day from stupidity that has been manufactured by examinations, and I do not doubt that a point may be reached in the examination of chemists and druggists that will conduce rather to dulness than alacrity of thought, that will sacrifice to temporary mental engorgement, with a subsequent life-long disgust at learning in any form more concentrated than the newspaper, the well-regulated and wholesome nutrition of all the faculties, and an enduring appetite for knowledge, and that will at the same time stunt bodily growth and sow the seeds of ill-health. I do not for one moment suppose that the examinations to which you are exposed have reached that point or are approaching it. As far as I am able to judge, they are moderate and reasonable. I only wish to indicate certain risks which lie ahead, risks which will, I trust, as they arise, be obviated by the wisdom and caution of the Council of the Pharmaceutical Society.

The "First," or Preliminary, examination, as it now stands, does not demand higher attainments in Latin, English, and arithmetic than are essential to the intelligent performance of a chemist and druggist's work, and the abolition of this examination in 1900 in favour of the entrance or Preliminary examination of various British universities and examining boards will be a gain by ensuring a greater breadth of early education, for all these examinations include other subjects besides the three named. The general standard of preliminary education has risen and is rising all round, and the chemist and druggist, if he is to maintain his social status and profit by technical instruction, must be well grounded in those subjects that form the basis of a liberal education. The really important point in connection with the Preliminary examination is, it seems to me, that it should invariably be surmounted before apprenticeship is begun, so that preparation for it may not interfere with strictly professional studies.

The Qualifying Examination.

The Minor examination, which is the crucial point in your educational career, for it is essential that you should pass it if you are to be registered as chemists and druggists, comes when you are twenty-one years of age, after you have been engaged in translating and dispensing prescriptions for three years, and embraces six subjects in which you have been instructed in your School of Pharmacy and during your apprenticeship. I have looked

* Inaugural Sessional Address to the students of the School of Pharmacy, delivered on Monday, October 1, 1898.

into the published reports of that examination, and am convinced that it is an excellent and a thorough one, and combines science and practice in proper proportions, but it is, I believe, in connection with it that apprehensions of over-pressure may possibly arise. It will not be disputed, I presume, that this examination has steadily increased in stringency, and now that it is to be the passport to membership of the Pharmaceutical Society, its severity is not likely to be reduced. At present it involves a pretty stiff effort for those who present themselves for it, and there is perhaps some little danger that it may by and by become onerous and distressing to a degree that would impair its utility. Now I venture to suggest that this examination, without being in any way lowered in character, might be made safe and salutary by being divided into two parts. I throw out that hint with doubt and trepidation. There may be insuperable objections to it that are unknown to me, but it certainly appears to me that the bisection of this Minor examination, in accordance with a principle which has been adopted with advantageous results in the case of medical examinations, would be judicious. The examination naturally resolves itself into two parts; chemistry, physics, and botany might be taken at the end of two years of work and study, and the student, then freed from the obligation of keeping up the more theoretical and purely scientific subjects, might apply himself for a year, with concentrated attention, to materia medica, pharmacy and practical dispensing, the subjects of the proposed second part of the Minor examination at the close of his third year. Of course, no claim to registration or to the use of the title chemist and druggist would be conferred by the passing of the first part of the Minor examination.

Alternation of Work and Play.

But, whatever may be decided on as to the mode of conducting this Minor examination, I trust those in authority will see that all chemist and druggist apprentices are afforded reasonable opportunities of preparing for it. I am not intimately acquainted with the internal economy of chemists and druggists' shops in this metropolis, or throughout the country. I have no doubt that in many of them, especially in the large establishments, a satisfactory time-table is observed, but I suspect that in some instances the apprentice's lot is a hard one, and that his private studies have to be carried on in brief and irregular snatches of leisure, or in hours stolen from necessary rest and recreation. This should not be. The apprentice, from seventeen to twenty-one years of age, is growing in mind and body, and he must be a hard task-master who will not afford facilities for both kinds of growth. The work of the pharmacy and laboratory must no doubt be attended to, and in these keenly competitive days that work must often be arduous enough; but apart from that, a fixed time should always be allowed for attendance on classes in the school of pharmacy and at evening science centres, for private study, for meals, for exercise, for amusement. The branching neurons of the brain, with their mobile tentacles—and it is upon them that you have to depend for a living—are the most exacting of all the elements that enter into the human constitution. They insist upon food in due season, repose, relaxation, and suitable and varied exercise, and if you stint them in any of those respects, especially when they are young and active, while you still require of them their full tale of work, they will sooner or later revenge themselves upon you by plagues dire and manifold as those of Egypt. Good bodily health is the primary condition of good brain work. You must always bear in mind that you are men as well as chemists and druggists—men with souls to be saved, minds to be cultivated,

and bodies to be built up, and you must not allow "the trivial round, the common task" to swallow up all your energies. Earnest in business you must ever be if you are to be happy and successful, but earnestness and avarice are not the same thing, and honest work does not mean slavish drudgery. Thanking God that you have work to do, and hands with which to do it, you should still be able to raise your eyes from that work now and again, and allow your vision to range afar. I would advise each of you, as a safeguard to mental health, to have some interest or pursuit outside your business, not an excuse for idleness or dissipation, but a restorative bath into which you may plunge when vexed and jaded. The glorious and refreshing fields of literature are ever open to your leisured footsteps. Art invites you into her ennobling palaces. The drama holds up her magic mirror that you may gaze into its pictured depths with ever new wonder and delight. Music is ready to lift you on her balmy pinions above all sublunary cares. And manly sports offer you invigoration, and may be commended to your favour so long as they are kept clear of the contamination of gambling, that "hastening ill" of our age that narrows the brain and hardens the heart and sets up a stream of tendency that makes for madness and crime. You will be none the worse chemist and druggist, nay, you will be all the better for having a quiet corner into which to retreat occasionally from the hubbub of the trade route.

The Major examination, the last barrier in the higher education of the chemist and druggist, although optional, and now no longer necessary for admission to the membership of the Pharmaceutical Society, will still, I trust, attract a large and growing number of candidates. It carries with it the distinctive and honourable title of "Pharmaceutical Chemist," the value of which will, I opine, be more and more appreciated by the public as time goes on, and it confers the by no means contemptible privilege of exemption from service on juries. It implies a comprehensive knowledge of chemistry, botany, and materia medica, and it marks out the *élite* of your department, the men to whom we have to look for its advancement and for progress in pharmacology.

The New British Pharmacopœia.

The mention of the *élite* of your department recalls to me a work in which a group of them has rendered signal service recently, a work which it would be unpardonable not to refer to on an occasion like this. I mean the new British Pharmacopœia, published during the current year. A Committee of the Pharmaceutical Society, consisting of Mr. Walter Hills, Mr. Newsholme, Mr. Carteighe, Dr. Inglis Clark, Mr. W. G. Cross, Mr. C. Ekin, Mr. Joseph Ince, Mr. N. H. Martin, Mr. W. Martindale, Mr. Charles Umney, and Mr. H. G. Greenish, has co-operated with a Committee of the General Medical Council and with a number of medical and scientific experts and referees, in the preparation of that work, carefully supervising all questions connected with pharmacy, and thus contributing to make it the valuable compendium it is; that Committee has amply deserved the encomium passed on it by a resolution of the General Medical Council, which also bestows well-earned praise on Dr. Tirard, for his ability and assiduity as secretary of the Committee, and on Dr. Attfield, the editor of the volume, for the comprehensive accuracy of his labours, upon which indeed the success of the undertaking mainly hinged. It would be difficult to over-estimate the value of the advisory and experimental assistance given ungrudgingly by the Pharmaceutical Committee at every stage in the process of revision, and while noting with satisfaction the concurrent and harmonious travail of medical and pharmaceutical representatives in this affair,

we may express the hope that they will soon renew their co-operation in order to furnish us with an Imperial Pharmacopœia applicable to our Colonies and Indian possessions as well as at home, thus forging one little rivet to help in the consolidation of our Empire.

Some discontent is always bred by the shifting of landmarks, and to those who, like myself, have reached or passed middle life, it is distasteful to abandon old methods for new ones. We must, therefore, be permitted to grumble a little, to sneer at new-fangled remedies, to mourn over departed pills, to predict disaster from changes in dosage and to denounce a dual system of weights and measures. And having had our grumble, we will cheerfully admit that the new Pharmacopœia is worthy of all acceptance, and that the alterations introduced into it are almost without exception improvements and simplifications. Enormous labour has been expended on it, and in all departures from existing standards, the convenience alike of the medical man and of the dispensing chemist has been consulted. In the recognition of useful but hitherto unofficinal substances that have forced their way into common use, in the establishment of greater uniformity of composition, especially in tinctures, in the provision of concentrated solutions, in the increased exactitude of its chemical nomenclature, in the greater succinctness and clearness of its descriptions, and in the amplification of its tests, it is vastly superior to previous issues, those of 1885 and 1867. You are not for the moment immediately concerned with this new Pharmacopœia, for the Council of the Pharmaceutical Society has, I understand, ordained that your acquaintance with it is to date from next year, but when you have to grapple with it you will, I am sure, find it simpler, more consistent and intelligible than was the Pharmacopœia it is superseding.

The Pharmacy Acts Amendment Act.

Another notable event of this year in your department, besides the appearance of the new Pharmacopœia, has been the addition to the Statute Book of a Pharmacy Amendment Act, which has survived the slaughter of the innocents owing to the determined exertions of your President, Mr. Walter Hills. It is a modest measure providing for the election of apprentices or students as student-associates, and for registered chemists and druggists as members of the Society, and for the retirement by rotation of members of the Council, and I have no doubt it meets felt requirements. Unlike all previous pharmacy enactments, it has nothing to say about poisons, which have invariably been the real motive power in legislative measures affecting your trade. It is not so much as pharmacists as vendors of poisons that you have secured the attention of Parliament, and as that branch of your avocations is the most anxious and hazardous of any, has a peculiar interest for the public, and is very likely to be made the subject of a Bill next session at Westminster, it occurs to me that I may, not inappropriately, make poisons and poisoning the theme of some remarks to you this afternoon.

What, it may be asked, is understood by the term poison? And the first answer to that question that presents itself is any substance which, when introduced into the body, produces injurious or fatal effects. But, for practical purposes, that definition is much too comprehensive, for certain articles of food and drink, when taken too freely, or in disordered states of the system, or by persons of peculiar idiosyncrasies, may prove detrimental and even kill, while almost all the drugs in common use, if given in excessive doses, may cause symptoms of poisoning and death. The question of quantity enters into our conception of a poison which may be described as a substance

that, in small amount and by chemical action, has hurtful or lethal effects on the animal economy. This description cannot pretend to strict accuracy, for some poisons perhaps act mechanically, as, for instance, certain microbes which block up the blood vessels, and ground glass, which, in some parts of the world, has been not infrequently used as a slow irritant poison. But the vast majority of poisons destroy the living tissues by means of chemical action. Even thus restricted, however, the word poison covers a multitude of agents, for on every shelf in your shops stand chemical assassins, capable in small bulk of undermining health or taking life, and, indeed, so numerous are the drugs that must be scientifically regarded as poisons that it has been said that to select and schedule a few of them, which may not be sold without reservations, while the rest are left unguarded, is like prohibiting the carrying of knives while allowing stilettoes. But although, as you and I know very well, there remain outside Schedule A many drugs as mortal as any included in it, and more difficult of detection, and although with the advance of science the field from which the poisoner may cull his simples is ever widening, and becoming more variegated in its crop, it must still be maintained that Schedule A has done great public service. It may be logically indefensible, but it is practically useful. During the present year, we have had an illustration in the St. Neot's case of the way in which a faithful observance of the regulations connected with it may bring a criminal to justice, for it is quite likely, I think, that Horsford would have escaped conviction had Mr. Payne failed in keeping an accurate record of the sale of strychnine to him. As a matter of fact, the poisons enumerated in Schedule A are those which have been and are almost invariably employed for felonious purposes.

Poisoning in Olden Times.

In looking into the history of poisoning—I am speaking now of homicidal poisoning—nothing strikes one more than the way in which this kind of history repeats itself from generation to generation. The same old implements are used again and again. There is an absence of anything like originality or ingenuity in the choice of ways and means. Servile, clumsy imitation is the rule—fashion reigns supreme. Little or no advantage has been taken of the discoveries of science. No doubt we hear about the subtleties and mysteries of slow and secret poisoning in bygone times. We are told that Henry VI. was killed by a pair of poisoned gloves, and that victims were in those days simply and expeditiously got rid of by causing them to smell a poisoned rose, or to wear a tainted ring, but such stories are on a level with those which we now sometimes read in the newspapers of the instantaneous production of insensibility by holding a chloroformed handkerchief to the nose. They are simply incredible. We cannot believe that in pre-scientific days, unscientific persons were in possession of powerful agents of which modern science knows nothing. And when we investigate such cases of secret poisoning in these days as we have any account of, we find, as I have said, that there was nothing occult or wonderful in the process, and that in nine cases out of ten it was some preparation of arsenic that was employed. It was arsenic that was used by Wonderton in 1384 in his attempt to poison King Charles the Sixth of France, and the Dukes of Valois, Berri, Burgundy, and Bourbon. It was arsenic that was the active constituent in La Sarpa's wonderful elixir; that played such havoc in Rome in the seventeenth century. It was arsenic that formed the basis of the acquetta or manna of St. Nicola of Bari of Toffania of Naples, which caused the death of six hundred persons; and it was arsenic which was the leading

ingredient in the succession powders of Sainte-Croix, which were used by the Marquise de Brinvilliers, and with which she removed her father, two brothers, a sister and several other persons. It was arsenic that was no doubt mainly instrumental in carrying off Sir Thomas Overbury in the Tower, although in his case it was combined with cantharides, lunar caustic, and spiders, the *coup-de-grace* being given by corrosive sublimate. Wherever we turn, in mediæval toxicology, or that of the Renaissance, it is arsenic, arsenic, arsenic which was the mainstay not merely of the murderous fortune-telling hag, but of homicides of commanding intellect and power, like the Borgias and Catherine de Medici.

Of course in these days, and well up to the early part of the present century, it was impossible to distinguish arsenic with any certainty in the bodies of persons who had died of it, while only the vaguest notions prevailed as the pathological effects caused by it in the viscera, so that it could be used as poison with considerable impunity. But since Orfila, Reinsch, Marsh, and others have carried out their researches, it has become of all poisons the most easily recognised by chemical tests, while its symptoms and morbid anatomy are familiarly known to the medical profession. And yet, notwithstanding this, it is still, no doubt owing to the facility with which it may be procured and its old-established reputation, a favourite with the homicide. Mrs. Cotton, who was executed at Durham in 1873, was arraigned on four separate charges of poisoning by arsenic. Mrs. Maybrick was convicted of having administered it to her husband in 1886. Mrs. Sherman, of New Haven, United States, was proved at her trial in 1885 to have disposed of three husbands and some seven or eight children and step-children by means of it, while in the same year Mrs. Robinson, of Somerville, Massachusetts, was shown to have been indebted to it for the disappearance of six members of her immediate family.

Some Notorious Poisoners.

I am sorry to have to say so, but it is true that women and doctors are the classes which have supplied the most numerous and notorious poisoners. Man—in this connection minus medical men—bold and militant, is disposed to crimes of violence; woman, weak and timid, when she stoops to crime, inclines to craft and cunning; and hence she has often sought, by the arrow that flieth in darkness, to remove a rival, resent infidelity, avenge her wrongs, hide her shame, or gratify her cupidity. At certain periods, poisoning by women has been epidemic, and has anticipated the decrees of our modern divorce court. About the middle of the seventeenth century it was observed that young widows were extraordinarily abundant in Rome, and that most of the unhappy marriages were speedily dissolved by the illness and death of the husband; and inquiries set on foot by the Catholic clergy, who felt bound to make representations to Pope Alexander VII., resulted in the discovery of a secret society of young matrons, who met at the house of a reputed sorceress for technical instruction in toxicology and mutual improvement in marital euthanasia. A little later a similar organisation was brought to light in Paris, again by the action of the clergy, and here it was shown that under the guidance of two nominal midwives, La Voisin and La Vigoroux, large numbers of married women had hastened the decease of their husbands. It was not until upwards of a hundred culprits of this description had died at the stake or on the gallows that this epidemic was stamped out. In Hungary, in the latter half of the seventeenth century, and again only a few years ago, extraordinary disclosures were made as to wholesale husband poisoning by women of the peasant

class, who, like the Roman and Parisian matrons, employed arsenic to compass their ends.

We can understand in some measure the partiality of female poisoners, acting individually or in numbers, for arsenic, and their rigorous adherence to ancient methods, by remembering that arsenic has been long employed in many countries as the most popular domestic exterminator of vermin, and has also been extensively recognised as an article of toilette, so that they have been able to obtain it and explain their possession of it on these pretexts, but it is difficult to comprehend why poisoners of the other group alluded to, medical men, should have displayed such poverty of resource as is manifest in their published misdeeds; and should have confined themselves so strictly to the contents of Schedule A. One would have thought that medical men, with their knowledge of drugs and command over them, would have been able to ring the changes in an infinite variety of ways, to employ alkaloidal and other organic poisons in such a manner and in such combinations as to perplex the clinical observer, baffle the pathologist, and set at nought the skill of the analyst. But not so. With what might almost be called infatuation they have all but invariably worked on the old grooves, and carefully prepared a net for their own ensnarement. For the most part they have trusted to the inorganic poisons, which, owing to their unalterable character, ease of purification, and definiteness of reaction can be identified in the body with mathematical certainty, and when an alkaloid has been essayed it has been strychnine, which, of all the alkaloids, in unalterability and definiteness of reaction, approaches most closely to the inorganic poisons, and to which, too, very conclusive physiological tests can be applied. The rarer and more fugacious alkaloids, which I am not even going to name, and which, when detected, it would be impossible to affirm, might not be putrefactive products—ptomaines, albuminoses, and peptones—which result from the decomposition of the tissues, or of ingested food, have, as far as we know, never been tried, and even nicotine, the most widely-diffused of alkaloids, with which, I suppose, a third of the population is always poisoned, more or less, has not been resorted to with premeditated malice, except in one case, that of the Count Bocarme, who poisoned with it, in five minutes, his wife's brother Fougnyes, although in the body of a murdered smoker it might well pass as a relic of the pipe or cigarette. I cannot recall a case in which a medical poisoner has gone beyond Schedule A. Palmer used strychnine, Smethurst antimony, Pritchard antimony, Cross arsenic, Lamson aconite, Chantrelle, who, although not a doctor was a chemist, morphia, and Tawell, who was a chemist and druggist, hydrocyanic acid. Such are the ignorance, stupidity, and rashness revealed in a review of the trials of these medical poisoners that one is forced to conclude that they were like the miscreants who carry on illicit lines of practice at the present day; medical men only in name, professional pariahs and failures, and that in them, as in the criminal classes generally, intellectual incapacity was associated with moral debasement. Not one instance have we amongst them of average ability, to say nothing of originality or genius, in their nefarious transactions.

Of Medical Poisoners.

True, it may be said, that the medical poisoners who have been brought to justice have been the clumsy and incompetent members of their class. The bunglers, it may be argued, have been caught, while the adepts have escaped suspicion. It is, I fear, correct that there have been and are cases of undetected poisoning. In almost every instance in which a medical poisoner

has been convicted there have been good grounds for believing that he had had other victims besides the one whose death was brought home to him, and several medical men in large practice have told me that in their professional experience they have come upon cases in which they have had grave misgivings that poisoning was being or had been attempted. It may be that medical men have availed themselves of the discoveries of modern science for wicked and unlawful ends; and have lived on in the odour of professional sanctity unsuspected; but there is some consolation in the reflection that the more scientific a man is the less likely is he to stoop to any abuse of power that science puts in his hands; and that the improved education of the medical profession renders its members more expert than they have hitherto been in the recognition of the symptoms of poisoning of various kinds.

But here I must point out to you that, as regards the future of toxicology, very serious considerations arise, for numerous new poisons are being yearly added to our list; and many of these it is, and must always be, impossible to track and identify. Henceforth, the medical man or scientific expert desiring to remove any human stumbling-block in his way, if able to shake off old traditions, will not, unless demented, select his weapon from Schedule A, but from the recently discovered organic poisons that may be used with absolute impunity as regards detection.

As you know, we have of late years been enlarging our views as to the part played by poisons in the causation of disease, and have remodelled our pathology on a toxæmic basis. We know now that the human body, even in its normal state, is a cupboard of poisons, harmless as long as they remain shut up in their own box, bottle, vessel, wrapper, or cover, but capable when let loose of inducing disastrous and even fatal consequences to their individual owner or to his neighbours, for human beings in too close aggregation poison each other. Many of the ordinary constituents of the blood and tissues, such as carbonic acid and potash salts, are poisons, and many of the ingredients of the secretions of glands and of the products of assimilation are toxic in their effects, and set up morbid states, such as cholæmia, uræmia, diabetic coma, and stercoræmia, when introduced into the general circulation. And not only is the human body packed with home-made poisons, but it is being constantly plied with poisons from without. The soil it dwells on, the air it breathes, the water it drinks, the food it eats, teem with micro-organisms, some of which are poison-mongers of a virulent type, that quickly avail themselves of any lodgment given them in the body under favourable conditions to carry on their vicious practices. It has been demonstrated that a large number of the diseases that figure most largely in our bills of mortality are due to the action of poisons of complex composition—some alkaloids, some modified proteids, some of unknown structure manufactured in the protoplasm of microbes of such infinite minuteness that thousands of millions of them may be present in a single grain of matter, and that find their way into the body from without. As regards these pathogenic or disease-causing microbes, it is now practicable to cultivate many of them in suitable artificial media outside the body, to reproduce the cultivations for many generations, each capable of causing all the symptoms of the original malady when inoculated into animals, and to separate from them the toxins to which their effects are due. The true upas tree turns out to be a microscopic fungus.

Pathogenic Microbes and Toxins as Poisons.

Now pray observe that pathogenic microbes and their toxins when introduced into the organism, either by accident or design, set up, not like old-fashioned poisons, organic or inorganic, a

group of symptoms distinctive and unique, easily recognisable and not attributable to natural causes, but a disease to which anyone is liable, which may be prevalent in the neighbourhood at the time, and which may be contracted in a variety of ways. Pray note further that these pathogenic microbes and their toxins, when they have proved fatal, leave behind them either no traces or only the usual post-mortem appearances of a disease, and not, as in the case of the old-fashioned poisons, distinctive lesions, and substances capable of chemical identification that could have no legitimate business in the body, unless taken as medicine.

It is highly probable then, I think, that the medical or scientific poisoner of the future will resort to the pathogenic microbes and their toxins, and will induce a disease which it would be impossible to say might not have been contracted in the usual way. As our knowledge of the life history and habits of these microbes extends, and our skill in manipulating them increases, the number of them available for felonious purposes will become considerable; but even now there are not a few that might be employed with homicidal intent. Of those microbes that have hitherto been cultivated outside the body, and that when administered to human beings, not immune, either naturally or by previous attacks, produce a specific disease, the tubercle bacillus, and that of actinomycosis would be too slow and uncertain in their actions for a murderer's purpose, and that of anthrax, would probably awaken suspicion if employed upon anyone not a wool-sorter or engaged in the slaughter of animals. But it is not inconceivable that the bacilli of typhoid fever, of pneumonia, of bubonic plague, of enteritis, and of malignant œdema, the vibrio of Asiatic cholera, the *Staphylococcus aureus* of suppuration, the spirillum of relapsing fever, might be made to find their way into the system by the digestive canal, and thus set up their destructive operations. A little disorder of the stomach having been first induced by some indiscretion in diet, the organism corresponding with typhoid fever or cholera reared in a test tube might be administered in apparently pure water so as to cause these diseases, and the water in which they were administered, although it teemed with them, might be submitted to the examination of the chemist and, in the absence of other organic matter, be pronounced by him of great organic purity. Mixed with milk, the bacilli of diphtheria and of glanders would readily find their way to the follicles of the tonsils, for which they have a special affinity, and thence diffuse their pernicious influence; while in cool beef tea, or broth, or gruel, several other pathogenic microbes could be smuggled into the citadel of life, where, once established, they would increase and multiply at a prodigious rate. When sterilised broth, to which typhoid fever bacilli have been added in the proportion of two hundred and forty-six to the cubic centimetre, is kept for twenty-four hours in the incubator at blood-heat, it is found that at the end of that time there are twenty millions of these bacilli to the cubic centimetre. The spores of certain pathogenic microbes which offer enormous resistance to inimical influence might be stored for an indefinite period, to be planted as death seeds at any convenient opportunity. A few pathogenic microbes even exist in Nature, ready to the murderer's hand, without any preparation. Infanticide might be practised with tolerable certainty with milk from the tuberculous udder of a cow. Even in the case of the larger parasites, as for example *Echinococcus veterinorum* and *Bellharazia hæmotibia*, their ova might be given in water and produce very severe illness and death.

The risk, from the poisoner's point of view, that pathogenic microbes, surreptitiously conveyed into the body, might not prove fatal, but induce an attack of disease ending in recovery,

may yet be obviated by the improvement of our cultural methods. Such microbes are exceedingly susceptible to the influence of external conditions and diet, and by a slight change of temperature or the addition of a minute quantity of a chemical substance to the fluid in which they are grown, or by associating them with other depraved bacilli, those of them that are comparatively benign may be raised to a high degree of virulence. The connoisseur in poisoning of the future might, therefore, having caught his microbe, nourish and train it into intense malignancy and ferocity, and make sure of its doing its deadly work.

The Poisonous Energy of Toxins.

I have been speaking of the possible use of disease-causing bacilli for homicidal purposes, and I would next remind you that the toxins derived from them are still more readily capable of being put to the same vile use. By the cultivation of certain specific microbes in special media powerful toxins have been produced which in very small quantities cause fatal results in a very short time, with symptoms difficult if not impossible to differentiate and refer back to their source. The toxins of tubercle, of glanders, of typhoid fever, of tetanus, of diphtheria, of plague, of cholera, have thus been separated, can be preserved for a longer or shorter period, and administered with lethal effects. Such toxins might be given by hypodermic injections, mixed with or in place of the medicines which are now so commonly administered in that way, or they might be planted on any small wound, scratch, or abrasion on the surface of the skin, and even should a medical attendant of unusually keen penetration suspect their criminal administration, he dare scarcely express his belief that there was anything wrong, for it might be that the poison came into the system quite innocently. Dr. Sims Woodhead has lately come across cases in which erysipelas and anthrax have been set up by the inoculation of the infective material carried by flies, gnats, and bugs, and his observation is one of great importance in its medico-legal aspect, and well justifies our insecticidal instincts, for it is clear that an army of toxiferous fleas, flies, or bugs manœuvring at large might do enormous damage.

The poisonous energy of some of these microbic toxins which I have mentioned is extraordinary, and far exceeds anything for which our knowledge of even the most potent of the old vegetable alkaloids has prepared us. Two-tenths of a milligramme of tuberculin injected into the human body, sixty trillion times its weight, raises the temperature of its whole mass several degrees, and one milligramme of tetanus toxin will kill a horse, or six hundred million times its own weight of living tissue. In order to cause death it is necessary to inject only one five-hundredth part as much tetanine as atropine and one hundred and thirtieth part as against strychnine. It is, therefore, obvious that we have, in these microbic toxins, poisons of tremendous energy, that by the very minuteness of the doses by which they demolish animal life lend themselves specially to criminal designs in the hands of those who are acquainted with their properties and are capable of preparing them.

But in addition to the pathogenic bacteria properly so called to which, with their toxins, I have been referring, there are others which, although they do not induce diseases known to our nosologies, yet fabricate strong toxins—ptomaines, and similar chemical bodies—which when administered to animals, cause rapid poisoning, and which presumably would have the same effect if administered to human beings. The common saprophytes, *proteus vulgaris*, *Bacillus coli communis*, *Bacillus mesentericus*, *Bacillus prodigiosus* and vibrio of Finkler, are known to produce

toxins, and "theoretically," says Professor Klein, "there is no reason why some specialist should not discover methods and media by, and in which these and other saprophytes might create powerful toxins which, even in small doses, would cause an acute fatal result."

About six weeks ago eight cases of serious illness and two deaths occurred at Surbiton from ptomaine poisoning, caused by a joint of lamb which was not itself offensive or unpalatable, but had stood near a tongue that was putrid and maggoty. "The poisons found in tinned meats, sardines, hams, veal pies, etc.—ptomaines, alkaloids, and toxins—may be derived," says Professor Crookshank, "from the action of putrefactive bacteria, or of specific bacteria, as for example in the meat of animals that have died of anthrax, and may be extracted from the suspected food and tested by administration to animals."

The Science of Toxicology.

You will admit, gentlemen, I think, after what I have said, that the science of toxicology is becoming infinitely more complex and intricate than it has hitherto been, and that very difficult and curious problems are not unlikely to arise in connection with it, in its relation to medical jurisprudence, problems that may puzzle the discernment of even a twentieth-century Sherlock Holmes. "Chemists," exclaimed Count Fosco with an eye to their toxicological attainments, "chemists—I assert it emphatically—might sway if they pleased the destinies of humanity. . . . On my sacred word of honour, it is lucky for society that modern chemists are by incomprehensible good fortune the most harmless of mankind. The mass are worthy fathers of families, who keep shops. The few are philosophers, besotted with admiration for the sound of their own lecturing voices, visionaries who waste their lives on fantastic impossibilities, or quacks whose ambition soars no higher than our corns. Thus society escapes, and the illimitable power of chemistry remains the slave of the most superficial and the most insignificant ends." But if Count Fosco thus estimated the empire of chemistry and the boundless power which it places in the grasp of its votaries, what would he not have said of bacteriology and of the hidden and thaumaturgic control over their fellowmen which those initiated into its mysteries possess? Into what rhapsodies would he not have risen over these microbic poisons of superlative virulence and subtlety to which we have now attained, the very existence of which may suggest to you that it is superfluous any longer to surround with special safeguards the sale of such comparatively harmless substances as are contained in Schedule A?—But in entertaining any such suggestion you would be in error, for whatever the future—the remote future—may bring forth, it is certain that for a long time to come a large majority of poisoners will cling to old methods, and stake their necks on arsenic, antimony, and strychnine. For one bacteriological Mephistopheles who can possess himself of a microbic poison, and use it dexterously, there will be at least a dozen despicable wretches who will take what comes to hand most readily in common life and blunder with it egregiously. And beyond all this, we must remember that Schedule A is not solely intended for the prevention of murder, but is meant to act as a check on suicide, and to avert, as far as may be, deaths due to carelessness and accident. Those bent on self-destruction are not likely, unless to cheat an insurance company, to attempt to induce a lingering illness, or to seek out an inaccessible and inscrutable toxin, but are certain to prefer "such soon speeding gear" of yours "as will despatch them straight," and the obstacles which this Schedule enables you to put in their way may occasionally

frustrate their object or afford them that brief interval for reflection in which the suicidal impulse, when it has reached a crisis, often suddenly dies out. And independently of this Schedule, members of your calling are, I believe, not rarely instrumental in preventing miserable beings from shuffling "off this mortal coil," for some of them have acquired a quick eye for a would-be suicide, and, as in instances which have fallen within my own knowledge, by refusing altogether to supply him with the poison asked for, or by substituting for it an innocuous fluid or powder not unlike it in appearance, have given him pause and so saved his life. Then, as regards accidental poisoning, which has become more frequent in recent years, as the demands of our advancing civilisation have become more complex and various, there can be no doubt that the provisions of the Pharmacy Act, when rigidly observed, tend to limit it, and that they will be still more efficacious in this direction when the recommendation which the Pharmaceutical Society have repeatedly pressed upon the Privy Council to include in the Schedule carbolic acid, to which so many deaths are now attributable has been adopted.

The Poisonous Substances Bill and its Fate.

A Bill to regulate the sale of certain poisonous substances was introduced into and passed through the House of Lords last session, but was withdrawn, I cannot regret to say, before it reached the House of Commons, for the Bill seemed to me to be retrogressive, in permitting the sale of the substances named in its Schedule, and of others that the Privy Council might from time to time add thereto, subject to certain regulations, by any person without licence or evidence of special qualification. The sale of poisons hitherto has been confined to chemists and druggists, who have been trained to caution in dealing with dangerous commodities, and who have proved their fitness for such work by passing a stringent examination; and the wise policy would seem to be to entrust to them the sale of other poisonous substances that have come into vogue and in regard to which the public require protection. No regulations, however carefully worded, can make up for the want of knowledge and a sense of personal responsibility; and free trade in poison is not to be desired any more than free trade in alcohol. Labelling alone is not a sufficient safeguard, and indeed it may be argued that whenever it becomes very general in its use it will in great measure cease to be protective for familiarity breeds contempt, and the warning word "Poison" is apt to lose its effect when it is incessantly cropping up. The fact that a particular substance has to be procured at a druggist's shop with certain formalities is, to my thinking, much more likely to create caution in its storage and use than the most glaring superscription of poison, if it can be purchased at any ordinary dealers. Of course one would wish to put no unnecessary obstacle in the way of the distribution of carbolic and cresylic acids, which are so largely used as disinfectants, or of the materials sold for the purpose of destroying insects and vermin, which are now acknowledged to play some part in the dissemination of disease, but it should always be borne in mind that cleanliness is the best of all disinfectants and vermin destroyers, and that sound sanitation should render the use of chemical antiseptics only occasionally necessary. There can, I think, be no hardship in confining the sale of these chemical antiseptics to properly qualified chemists and druggists; indeed there would seem to be great danger in permitting them to be retailed under any conditions by grocers, drysalters, oilmen, or general dealers in whose shops they would necessarily be mixed up with various other kinds of goods in regard to the vending of which no special care is requisite. The

habitual caution of the chemist and druggist counts for much; an habitual caution which has become second nature to him and enters into all his doings, even, I fancy, into the sale of a sponge or a bottle of perfume; for anyone who has bought such an article over a chemist's counter must have felt that the transaction was conducted with great circumspection and solemnity, and that in making the purchase, he was regarded almost as an object of suspicion.

I venture to believe that all the advantages sought by the Bill of last Session could be secured by the inclusion of the substances named in its Schedule in Schedule A of the Pharmacy Act, and I feel strongly that the Council of the Pharmaceutical Society should continue to advise the Privy Council as to the articles to be comprised in that Schedule. The Privy Council must have special technical guidance in such a matter, and I know not where they could obtain more trustworthy guidance than from the chosen representatives of that body of men who have an intimate practical acquaintance with all the difficulties and dangers attending the sale of poisons, and who will not, I am sure, allow their trade interests to stand in the way of the public welfare.

Pharmacists as Bacteriologists.

But whether your powers and duties in connection with poisons and poisonous substances are to be extended or curtailed, I have no hesitation in saying that the subject of poisons and poisoning generally must henceforth engage the attention of all who follow your calling to a far larger extent than they have ever before done, and, indeed, I feel sure that, however reluctant those responsible for the education of chemists and druggists may be to add to the brain burdens which already, as I have hinted, press somewhat heavily upon them, they will be compelled to provide some instruction in bacteriology in your schools of pharmacy, so that you may make acquaintance with those micro-organisms which have been shown to be influential in the production of disease, and which are certainly destined to play an important part in its diagnosis, prevention, and cure. I have spoken of the microbial origin of infectious diseases, and of the toxins which pathogenic microbes secrete or produce by their digestive operations, toxins which cannot be chemically defined, but which are in almost every case the efficient cause of the symptoms of the disease, and I would now call your attention to the fact that many of these toxins contain protective or remedial substances bound up with their toxic ingredients. The bane carries its own antidote, and by certain procedures the bane may be abolished while the antidote survives. It has been experimentally proved that animals that have been inoculated with the microbe of certain infectious diseases, and that have survived the illness thus induced, have become refractory to the action of the same microbe subsequently inoculated. It has been also proved that the same power of resistance has been conferred by the injection of the solutions in which pathogenic microbes had been grown, but from which they had been filtered out, so that only their toxins remain. And it has been further proved that the serum of the blood of animals protected by an attack of the disease artificially induced, although itself incapable of setting up the disease, yet communicates to unprotected animals into which it is injected a remarkable power of resisting it, so that large quantities of its toxin may be administered without poisonous effects. Whatever be the origin of antitoxins and antivenins, whether due to reaction set up in the tissues of the body, to proliferation of white blood corpuscles, or to a breaking up of the toxin, with destruction of its toxic constituents and retention of those that are antitoxic and protective, it is certain that

they possess a power of counteracting the effects of the toxin and venoms with which they correspond more decisive and far-reaching than that of any known antidotes in the case of mineral and vegetable poisons. A dose of a microbic toxin much larger than that which is necessary to produce a fatal issue is administered to an animal; several hours later, when the characteristic symptoms of the disease have clearly displayed themselves, the antitoxin derived from an animal which has suffered from the disease is injected, with the result that the symptoms of the disease vanish and the animal is none the worse. And the same thing occurs in human beings. The progress of a certain infective disease is arrested or modified by the administration of antitoxins drawn from animals that have been subjected artificially to attacks of the disease or have been immunised against it by repeated and graduated injections of its toxins. You are all familiar with the brilliant results achieved by Pasteur in the treatment of hydrophobia, during its incubation period, by the injection of emulsions formed from the spinal cords of rabbits that have suffered from the disease. You cannot be ignorant of what has been done in diphtheria, and how thousands of lives have been saved from that rancorous malady by means of the serum of the blood of the horse, immunised by a series of injections of the toxin. The authoritative judgment of a committee of the Clinical Society of London, that has, during the last three years, conducted an exhaustive investigation, is that in cases of diphtheria treated with antitoxin, not only is the mortality notably lessened, but the duration of life in the fatal cases is prolonged, while no prejudicial action beyond transient skin rashes has been shown to follow its use, even in large amounts. Doctors Sidney Martin and Bertram Hunt have demonstrated that in cases of diphtheria observed in University College Hospital, the total mortality in the whole, without distinction of ages or the sites of the local lesions, has fallen from between 33 and 43 per cent. in the years before the antitoxin treatment was inaugurated, to 29, 17.7 and 17 per cent. in the three years during which antitoxin has been used, and that in tracheotomy cases the mortality has been reduced from 65.5 to 26.4 per cent. The poison of tetanus may be overtaken by its antitoxin and prevented in many cases from killing, as it would otherwise do. Excellent results are reported from Naples obtained from anti-pneumonic serum in a recent epidemic of pneumonia there! Observations are accumulating tending to establish the utility of antistreptococcus serum in septicæmia, and two cases which I have myself watched, although not absolutely free from sources of fallacy, have deeply impressed me with its value in that fell disease. Experiments recently performed at Monte Video, by Sanarelli, indicate that the serum of the blood of the horse vaccinated with the *Bacillus icteroides*, in doses of gradually increasing intensity during twelve months, greatly diminishes the mortality and mitigates the severity of yellow fever. The poison of venomous snakes is counteracted by antivenin, and it may be reasonably expected that this remedy, which we owe to the admirably devised experiments of Fraser and Calmette, will enable us to cope successfully with the effects of the bites of venomous serpents which, in many countries cause widespread havoc.

Antitoxins as Remedial Agents.

Step by step, armed with our antitoxins and our serums and our lymphs, we are encroaching on the ghoulish regions of disease, and bringing hope and healing where before all was darkness and despair. There is no extravagance in the prediction that all the infective diseases will before long be brought under control more or less, and have their power of evil vastly

restricted if not abolished. And that means more than might at first sight appear—vast although even then is the prospect of benefit to mankind—for diseases hitherto not regarded as infective are being brought into that category or shown to be of toxic causation, and, therefore, amenable to our new methods of treatment. Should it prove, as Nissl and McLane Hamilton have alleged, that a considerable number of cases of mental disease are due to auto-intoxication, then antitoxins may be instrumental in checking that alarming increase of insanity that is going on amongst us, and that statistical ingenuity can no longer explain away. Should Dr. Westura Sambon be correct in maintaining that sunstroke is an infective disease we shall shortly be combating insolation by an antisiriasic serum. If Dr. Buzzard is right in arguing that anterior polio-myelitis is due to a bacterium, we shall soon teach that bacterium to circumvent itself and leave little limbs unwithered. It is within the bounds of possibility that by means of an antitoxin, we may yet restrain the course of cancer, that “perilous stuff which weighs upon the heart” of the present generation, for we may counteract a poison which it generates and which is perhaps more pernicious than the structural changes associated with it. And this brings me to a consideration in connection with antitoxins which should not be omitted in any survey of their therapeutic powers, and that is that in some instances, besides saving life, they mitigate the sequelæ which infective diseases so often leave behind them. Given therefore to patients who might survive without their aid they still promote speedy and complete recovery by warding off secondary structural alterations in muscle and nerve fibre and in the viscera. We are all aware of the disasters that small-pox leaves in its trail—blindness, deafness, and lameness—although happily we see less of these than our forefathers did and than our children may do, unless the faddists be effectually muzzled and effect be given to the conscientious objection of the nation to the conscientious objector. We know something of the kidney disorders and disorganisation of the middle ear that so often follow on scarlet fever, and of the paralysis that dogs the footsteps of diphtheria, but perhaps we scarcely realise that every infective disease leaves its mark upon the system. I have heard the late Sir William Gull say—and most of his sayings were worth remembering—that it takes a man ten years to recover perfectly from an attack of typhoid fever, and it is certain that the health and happiness and kinetic energy of the community at large will be sensibly augmented by the employment of medicaments that not merely diminish the mortality of a large group of diseases but limit their secondary ravages.

Preventives of Disease.

I have touched on the actions and uses of antitoxins and serums in the cure of disease (and I can but touch in passing on a subject already very voluminous and expanding daily), and I would next touch even more casually on the still more momentous rôle assigned to them in relation to its prevention.

Instances of constitutional insusceptibility to certain poisons in certain animals such as that of cows to belladonna and pigeons to opium, have been long recognised, and so has the tolerance of poisonous doses of many toxic substances, such as opium and arsenic, established in man and animals by their habitual use. It has been long known that many infectious diseases confer on those who have suffered from them an exemption, more or less complete and lasting, from subsequent attacks, but it is only since Pasteur taught us the “Open Sesame” of fermentation that we have come to understand that a power of resisting certain infectious diseases, analogous to that bestowed by vaccination

in the case of small-pox, may be secured by the injection of the microbe which causes them, of the fluid in which it has lived or of the blood serum of an animal in which it has lived, and died. An animal thus treated becomes proof against the particular disease, so that as much as fifty times the original minimum lethal dose may be injected without causing inconvenience. The duration of the immunity thus artificially induced has not yet been very precisely measured in any case, but this seems to be established, that the immunity conferred by a toxin is less than that conferred by the microbe itself, and feasibility is therefore given to Professor Fraser's theory that long-continued immunity depends on the continued existence in the body in an attenuated form of the microbes causing the disease, and on the continual manufacture by them of the antitoxin or immunising substance.

The grand instance of protracted immunity is, of course, small-pox, in which the mild attack brought on by vaccination protects completely for seven years and partially for a much longer period, and in which two such mild attacks give lifelong freedom from the major malady. In cholera and in typhoid fever prophylactic inoculations have been practised with encouraging results, and in other infective diseases experiments of much promise are being carried on, and we are entitled to hope that the microbes of a number of infective diseases may yet be so tamed and domesticated as to be changed from ravening wolves into faithful house-dogs, warding off all wolfish attacks. It may be that attenuated microbes of infective diseases do even now occasionally confer immunity upon certain persons spontaneously and by stealth, for, by their unsuspected reception into the body as well as by inherited insusceptibility we might account for the fact that a few individuals set at defiance the virus of certain infective diseases—yellow fever, malaria and typhoid fever, for example—even when exposed to it in the most intense concentration.

There are infective diseases—influenza, erysipelas, rheumatic fever, and others—attacks of which afford no guarantee against recurrence—nay, in which one attack almost seems to predispose to another by the debility or vicious habit it leaves behind it, but even in these we need not despair of ultimately reaching protection, for their microbes, which cannot apparently within the body be reduced from the toxin to the antitoxin phase of existence, may yet be capable of such conversion under the wider range of altered conditions to which it is easy to subject them during extracorporeal treatment.

Serotherapy and Organotherapy.

We are entering upon an era of serotherapy and organotherapy. Marvellous advances are in store for us. So rosy is the prospect that it increases one's constitutional disinclination to die. We should all much like to live and see the wonders that are to be revealed hereafter, when the new remedies are perfected. Of course, the new remedies cannot altogether supersede the old ones. They must supplement them and crown the edifice of medical science. When they have come in their fulness and strength, sanitary precautions will still be called for to prevent the multiplication and spread of pathogenic microbes, to ensure the purity of light, air, and water, to prevent the contamination and adulteration of our food and drink and physic. Hygienic measures will be none the less needful to maintain a high standard of health, which means effectual resistance to many microbial assailants. Eliminants will be as useful as ever in aiding the expulsion of poisonous products, and sedatives, antipyretics, stimulants, hypnotics, narcotics, tonics, alternatives, and specifics, will still retain their value in the alleviation

of symptoms and the correction of innumerable morbid aberrations. But beside and beyond those the new remedies will take their place and, unless we are strangely deceived, bring about an enormous diminution of preventable disease. That outlook, I am sure, causes you no dismay, for, like my own profession, of which you are an offshoot, you must not only regard with equanimity but hail with delight any falling off in your own earnings that corresponds with a prolongation of human life or an abatement of human suffering. Vaccination must have done immense damage to your trade. In pre-Jennerian days every case of small-pox—and they were plentiful enough—was good for six draughts and two boluses daily for a month, with a portentous number of ointments, lotions, and clysters as well, and now-a-days even a modified case of small-pox makes a substantial contribution to the druggist's till; but not the less earnestly on that account do you advocate vaccination, and pity the conscientious objector and his progeny who must become your proper prey. And so with other infective diseases, you will welcome the antitoxins that disarm them even although they should reduce your output and profits.

The Effects of Immunisation.

How far immunisation may go it is as yet impossible to foretell, but giving rein to our imagination, we can conceive of a time when sure and permanent protective antitoxins against all the more prevalent infectious diseases having been discovered, a course of immunisation will be made obligatory upon every child, as elementary education now is. Out of that course of immunisation the child will emerge, not as after a course of education docile, but refractory in the highest degree, proof for life against small-pox, tuberculosis, scarlet fever, diphtheria, whooping-cough, measles, and all the zymotics that do so easily beset us. In these apocalyptic days, too, a man going to the tropics will call on his doctor and take out a patent of protection against the dangerous diseases endemic in the region he is about to visit, and thus the West Coast of Africa will be stripped of its terrors, and yellow fever will cease to be a bugbear in Brazil.

But however triumphant immunisation may become, and however widely successful the antitoxic treatment of disease may prove, your occupation will not be gone. It will be merely enlarged, for new duties and responsibilities will devolve on you as purveyors of new remedies very difficult of preparation and requiring much technical skill and vigilance in their storage and distribution, and hence it is that I foresee the necessity of your having some bacteriological training. The preparation of vaccines and serums—a delicate process, involving biological experience and insight, and a tedious one, for it takes several weeks to produce the anti-diphtheritic serum and six months to elaborate the anti-pneumococcus serum—must always remain in the hands of medical bacteriologists, but as regards antitoxins, I have little doubt that they will finally fall within your sphere of operations. Professor Fraser holds that antitoxins originate not from vital reactions but from chemical changes in the toxins themselves, and prophesies that the time will come when they will be prepared not by inoculation of animals, but by chemical processes in the laboratory, and seeing that we can already in the case of some drugs so modify their action by the introduction of a new molecule that they not only lose their original properties, but become pharmacologically active in the reverse direction, there would seem to be good ground for his belief and prediction. When that time does come, those antitoxins will assuredly take their place beside the other potent and beneficent poisons of which you are the recognised custodians.

Concluding Remarks.

When I stood on the brink of this address, I proposed to myself, after a few preliminary remarks, to plunge into a subject of some depth but of great allurements and of special interest to you in relation to your present studies. I proposed to speak to you of a great philosopher who was also a practical pharmacist, and to show you how Bishop Berkeley's treatise on "Tar Water," published in 1744, has a bearing on the medicine and surgery as well as on the speculative thought of to-day. But my preliminary remarks have run away with me. What have, I fear, proved the ill-favoured and lean-fleshed kine of my introduction have eaten up what I flatter myself must have proved the well-favoured and fat-fleshed kine of my main discourse, and I find myself beyond bounds both as regards time and your patience, without having as much as mentioned Berkeley's name. I must postpone, therefore, to some future opportunity what I have to say about *Siris*, its rational empiricism, its optimism, its curious anti-septic anticipations, its learning, its lucidity, and its marvellous chain of philosophical inquiries and reflections, leading up from a humble nostrum to the throne of the Divine Ruler of the Universe. Meanwhile I may recommend it to the private reading of such of you as are not afraid of metaphysics, sure that you will find food for thought even in its therapeutical extravagance, and that it will help you in some measure to escape from that dreary materialism to which your avocation perhaps somewhat disposes you. Its pure and lofty idealism, which you may trace flowing on in a continuous but differently reflective stream in the writings of Carlyle and Emerson, may help you, as it has helped many a man, to lay hold of a sustaining faith. Berkeley said, "He who hath not meditated upon God, the human soul, and the *summum bonum* may possibly make a thriving earth-worm, but must indubitably make a sorry patriot and a sorry statesman." It is not perhaps within your visions of your lot to be statesmen, but one and all of you should aspire to be good patriots and something more than thriving earth-worms, and in all your laudable ambitions "Tar Water" will prove a safe stimulant and roborant. Let me thank you for the indulgent audience you have given me, and wish you all with my heart a prosperous and pleasant journey on the road that is opening out before you.

PHARMACEUTICAL POLITICS.

BY BARNARD S. PROCTOR.

The parties affected by pharmaceutical legislation are first the public, who have a care naturally and properly for only such changes as promote the public good, the general safety and convenience of the masses at the smallest cost.

Second, the small pharmacists, Minor men who have little anxiety but for their own profits, who have small qualifications and little intellectual ambition.

Third, the Major men, small in number but great in desire for professional status, who have pharmacy enough to keep them above money anxiety, unless it be an anxiety to get professional pay for trade transactions.

Each of these three parties aims at a different goal, consequently each goal has one advocate and two opponents. No one aim is calculated to acquire popularity till time, it may be generations, opens the eyes of all to the impracticability of accomplishing any one aim without having regard to the others, especially to the public safety and convenience.

So long as the forces are pulling in different directions it is better that they should not pull violently, but with such gentleness and observation as will enable them to see the good points in the two

parties which oppose them, while having sufficient reserve of energy to take care of their own well-being.

Our policies have thus different aspects according to the point of view from which they are contemplated, pharmaceutical politics no less so than the politics of church and state, or nation and nation.

In the beginning, Bell created the Pharmaceutical Society, and the Society was without Charter or Act of Parliament, and there was great darkness in the body; but chaos disappeared as fellowship grew; as life and light increased it was seen that one ray differed from another in kind, that these were red, yellow and blue rays. The blue or most refrangible rays were those most ready to leave the old course and, by their more rapid vibration, to stir up mental activity and promote chemical action. But the less refrangible were sluggish and could not be so much diverted from their old course; they were content with the golden medium when they could get it, their aim being to make this golden medium more easily obtainable by themselves. The red rays are made of tape and are represented in Parliament, they are the most difficult to move and they control the movements of the other two, preventing them from getting out of gear and beyond the range of useful action.

The efforts of the original movers were directed to uniting the whole body of pharmaceutical practitioners under the one grade of pharmaceutical chemists, but the Legislature only slowly and reluctantly gave power to the Society to control the procedure of those who did not choose to become members of the Society. What benefit was it to the public that chemists should become learned men? It might turn out a public inconvenience to require that none but pharmaceutical chemists should be allowed to carry on the old-established and customary trade of chemist and druggist. So when Parliament gave the pharmaceutical craft an Act it only sanctioned the Minor examination, as the requirement for being put on the Register of Chemists and Druggists, and restricted the privilege of registered men to dealing in and dispensing certain poisons. The title of pharmaceutical chemist and the consequent exemption from jury service being the special privilege which Parliament was willing should be given to the learned pharmaceutical chemists, including the unlearned who had vested interests in the title at the time the Act was passed. But though the Minor examination was to be the door to the title and privileges of the chemist and druggist, the quality of the examination was not defined, it had to satisfy the examiners and the inspector appointed by the Privy Council. The elasticity thus imported into the test is at once a source of power and of danger. Bell's aim was one grade of qualification for carrying on the craft of pharmacy, and the Council of the present day has very much the same view. It has so far influenced the scope and quality of the Minor that it is at least equal in severity to the Major of the earlier date. But however they may increase the severity of the Minor, it will never possess the value of the Major, which carries an honour, from showing that its graduates do not stop short at the lowest status which law requires for the practice of pharmacy. If the Council could see its way to so modify examinations and bye-laws, that in some not far distant future all who pass the Minor should be registered as pharmaceutical chemists. I should rejoice in the change, inasmuch as it would carry jury exemption to the men who stand most in need of that relief, and are as much entitled to it as the bulk of those who were on the Register of Pharmaceutical Chemists at the time the Juries Act was passed. If this were within the range, even of telescopic vision, I should not think it desirable to purchase it at the price of any considerable increase in the severity

of the Minor examination, but think it would have to be accompanied with the institution of a lower grade of druggster, to deal in "poisonous substances" such as recently suggested in Parliament. Increased difficulty of entering the pharmaceutical ranks would increase the temptation to carry on all the collateral trades not prohibited and no practicable widening of the protected field of work would secure to the qualified man so much of pharmacy as would enable him to make a living in a thinly populated district. On the other hand, if the numbers of qualified men became much reduced, the public would be inconvenienced and dispensing by medical men perpetuated, especially in outlying places.

This would not personally affect any individual on the Council, but is a point not to be overlooked in the interests of their country cousins, both lay and pharmaceutical. A town of three or four thousand inhabitants, with such villages as may be within driving range, will support three or four doctors, but not one pharmacist, unless he lives upon the solid pudding of sundry trades and cultivates his pharmacy, like parsley, as a garnish to more nourishing food. Under such conditions the chemist and druggist cannot be a skilful pharmacist, because he lacks the constant exercise of his processes which alone can keep his skill alive. He can scarcely be a warm supporter of the Society which has made his calling a thing of great price, but of little profit; which has made his path a path of labour but of labour lost, for want of opportunity of making use of the many clever things he learned at the school and the many square things that do not fit his all-round hole. To make a pint or two of tincture of opium by B.P. process would be an unreasonable and unprofitable waste of his time. It would be better and cheaper that he should buy the factory-made tincture than risk the errors of operating or assay consequent upon his interruption by frequent callers—unavoidable in a one-man pharmacy—and so of many other pharmaceuticals. The public do not like home-spun Bland's pills so well as those which are factory-made. No amount of argument is likely to outweigh the practical experience of the country chemist in dealing with his drugs and his customers. The natural laws of demand and supply settle what the supply must be. If ever the time is to come in which the small towns will demand and can maintain one or two expert pharmacists, it can only be in the far-distant future when the public have learned to pay more for what they require, or the pharmacist is willing to work more for less percentage of pay. In the large towns there will always be two grades of pharmacists. Even if all are passed through the same sieve, there will be an ascending and a descending class, the former increasing their skill and reputation, the latter reducing their prices and meeting the wants of the poor or parsimonious. Both may prosper and fill useful places in the social economy if their evolution and their environment are in harmony.

The Council may well set before itself a series of questions requiring definite replies upon which its policy should be based.

How many one-man pharmacies are in existence—pharmacies carried on by one qualified man with unqualified helps? And in such pharmacies what percentage of the income is made by dispensing, by pharmacy other than dispensing, by sale of drugs for medicinal use, by sale of poisons not for medical use, by sale of proprietary medicines, by sale of such goods as are altogether outside of pharmacy or the drug trade?

How often does the one-man pharmacist find useful application of the knowledge he required to pass him through his examination in syllabus subjects?

What is the value of examinations as appraised by the Army and Navy authorities, by guardians of the poor and prison governors, and by the public?

Why are there so many chemists and druggists indifferent to membership of the Society, and why so many members of the Society so indifferent to the election of Council?

Why is it so difficult to keep on the Register the numerous men entitled to be there, but not to be found when the Register is to be corrected?

Why are the failures in the exams. more numerous in the practical than in the theoretical departments?

Why is there so little union and patriotism in the kingdom of pharmacy?

What amount of pharmaceutical work is sufficient to keep a pharmacist in good working order, what population is likely to supply this amount of work and what is to be done for the small towns with insufficient population to provide this demand?

If it requires 4000 inhabitants to keep a good working pharmacist, what is to be the fate of towns of two or three thousand?

Parliament may provide that where the population will not support a pharmaceutical chemist another dealer in poisonous substances, cattle medicines, photo goods, etc., might be permitted, but who is to decide when a town is too small to require a pharmaceutical chemist? If a small town grows, what is to be done about the unqualified dealers? Are they to be hanged?

Some of these queries I know must be difficult to answer, but the American Pharmaceutical Association has found answers to many interesting queries, and so might our Council if it had the pluck of Joseph Jacobs the cutter to show what information can be collected by those who are willing. On the other hand, some queries almost suggest the replies that will come in response. For example, we would not expect the unqualified dealer to be either drowned or hanged when a pharmaceutical chemist is ready to try if he can make a living in Littleton. We would only suspend his licence and if the learned man could not make a living, allow the unqualified man to resume his operations.

The Pharmaceutical Council is conservative and its members are gentlemen. I am Rad. Gent. They regard my aim as a bitter end. I regard theirs as conserve of roses and concentrated rose water. They believe in the Government stamp for pharmacists. I believe in native worth.

The alleged moribund tendency of "Ph.C." indicates that its money value is judged to be less than it costs.

The money value of "C. and D." is estimated to be as much as it costs so long as the birth-rate of new candidates counterbalances the death-rate. But many investments turn out to be worth less than they were estimated. The "C. and D.," plus trade instincts, may be valuable, but the difficulty is to assess the value of each factor.

The Legislature regarded the Minor examination as sufficient for public safety when the Pharmacy Act was passed. Apparently it considers the Minor, as at present conducted, more than is requisite for dealers in poisonous substances and that holders of the Minor do not afford all desirable facility to the public for obtaining carbolic acid and sundry other useful poisons. The more the Minor examination is raised the more the numbers of Minor men will be restricted, the more will this Parliamentary view be justified and the more certain we are to have a lower grade dealing in drugs and dangers whether with or without a legal status.

PILLS OF POTASSIUM IODIDE.—M. de Toledo finds that if the potassium iodide be massed with light magnesia and honey, and the pills kept in light magnesia after rolling, they will be perfectly preserved.—*L'Union Pharm.*, xxxix., 363.

PHARMACEUTICAL SOCIETY.

MAJOR EXAMINATION QUESTIONS.

PHYSICS.

September 29.—Time allowed, three hours.

[Not more than six questions to be attempted.]

1. State briefly the meanings of the following terms:—Weight, Mass, Density, Specific Gravity, Vapour Density, Double Refraction.
2. Describe the methods employed for measuring temperature. How is a mercurial thermometer made, graduated, calibrated, and verified?
3. What is the meaning of the term latent heat! Give illustrations and show, in one instance, how it may be determined.
4. An object is placed in front of a convergent lens at a distance of twice the focal length of the lens. State and prove the relation between the size of object and image.
5. What is meant by achromatism, and how is it applied in the construction of optical instruments?
6. Describe the construction and the action of two of the following instruments:—Bennett's Doubler, Thomson's Replenisher, Thomson's "Mouse-Mill," Holtz's Machine, the Voss Machine, and Wimshurst's Machine.
7. What data are required in order to determine:—
 - (a) The resistance of a wire of length l ;
 - (b) The specific resistance of the same wire;
 - (c) The specific resistance of a solution of common salt?
8. Describe what happens when the same electric current is passed simultaneously through vessels containing respectively, dilute sulphuric acid, dilute hydrochloric acid, a mixture of dilute sulphuric and chromic acids, concentrated nitric acid, a solution of sulphate of copper, and a solution of nitrate of lead.
9. Describe the principle and construction of an electromotor.

CHEMISTRY.

September 29.—Time allowed, three hours.

[Not more than six questions to be attempted.]

1. 15 C.c. of hydrogen measured at 15° C. and 730 Mm. pressure, and 7.6 C.c. of oxygen, measured at 15° C. and 690 Mm. pressure are mixed and exploded. Is there any gaseous residue? And if so, what would be its volume at 0° C. and 760 Mm. pressure?
2. Describe exactly how you would test samples of (a) hydrochloric acid, (b) sulphuric acid, for each of the impurities commonly found in the crude commercial products.
3. Give two methods by which you could obtain nitrogen from nitric acid without employing any other substance containing nitrogen.
4. State what you know of the behaviour of the following substances when heated:—Oxalic acid, citric acid, lactic acid, ammonium sulphate, ammonium oxalate, benzoic acid, urea, potassium hydrogen sulphate.
5. How is the basicity of an acid determined? Illustrate your answer by examples, selecting for the purpose some cases where the principles are easily applied, and some in which the basicity may be considered doubtful.
6. Compare chromium and manganese in respect of the salts in which the metal forms the cation and also in respect of the salts in which the metal forms part of the anion.
7. Anhydrous ethyl alcohol is treated in separate portions with about ten times its weight of each of the following substances at ordinary temperatures:—(a) acetyl chloride, (b) phosphorus pentachloride, (c) concentrated hydriodic acid, (d) concentrated sulphuric acid. State what occurs, and give some indication of the extent to which the alcohol undergoes change in each case.
8. Write a short account of the alkaloids as a class, dealing more particularly with the following points:—Composition; physical and chemical properties; decomposition products.
9. Describe the preparation, properties, and more important reactions of acetylene.

BOTANY AND MATERIA MEDICA.

September 30.—Time allowed, three hours.

1. Describe in detail the features observable in a Dicotyledonous tree in winter and in summer respectively. Explain how these features are severally developed, and give reasons for the differences between the winter and summer form.
2. Enumerate the chief colouring matters occurring in plants. State where they are found and what service, if any, they discharge.
3. Write a concise account of the characteristic features—external and internal—of (a) Water plants, (b) Desert plants, (c) Parasitic plants. Mention three examples of, a, b and c. (Flowering plants only.)
4. Name the official Balsams and Balsamic Resins. How would you demonstrate their balsamic character and ascertain the purity and quality of each respectively?
5. What are the chief constituents of the following essential oils, viz.—Oils of Nutmeg, Cinnamon, Peppermint, Aniseed, Caraway, and Eucalyptus?

PRACTICAL BOTANY AND MATERIA MEDICA.

September 30.—Time allowed, three hours.

1. Give a description of the external morphological features presented by specimen A. Refer the plants C and D to their natural orders, giving reasons for your references.
2. Make a transverse section of D. From what group of plants and what part of the plant is it derived? Draw your preparation and give explanatory references to your sketch.
3. Prepare and leave for inspection not more than two slides of the root provided. Sketch and fully describe your preparations.
4. Identify the powder and state whether pure or adulterated.

EXAMINATIONS IN LONDON.

October, 1898.

MAJOR EXAMINATION.

Candidates examined	18
„ failed	9
„ passed	9

Battle, Ernest Wm. Chatterton.
Douglas, Jas. Forrest Reid.
Dyson, Joshua.
Epps, James Washington.

Peck, John Wicliffe.
Smalley, Robert.
Smith, Gilbert.
Smith, Harold James

Stabler, Edgar.

EXAMINATIONS IN EDINBURGH.

October, 1898.

MAJOR EXAMINATION.

Candidates examined	2
„ failed	0
„ passed	2

Cockburn, Bertram.

Simpson, Gilbert.

MINOR EXAMINATION.

Candidates examined	108
„ failed	66
„ passed	42

Adamson, William Peter.

Askew, Thomas.

Barclay, John.

Bate, Alexander.

Bland, William Rowland.

Chalmers, Andrew.

Coutts, John.

Davison, Henry Spours.

Draper, Frederick Louis.

Duncan, William Balderston.

Dunsire, Robert.

Easton, Robert Alexander.

Ferrier, James Peebles.

Gemmell, David.

Grant, Peter.

Hamilton, George Alexander.

Holding, John Thomas.

Jackson, Alexander Logan.

Keir, Robert.

Kirkpatrick, Arthur Chichester.

Laidlaw, James.

MacDonald, Alexander.

McHardy, William.

Park, David Scott.

Raywood, Vaughan Rycroft.

Riley, Alfred.

Sanderson, John.

Smalley, John Robert.

Smart, William.

Stalker, John Falconer Young.

Steven, Edward.

Taylor, Alexander Nicol.

Urwin, Albert.

Vernon, George H.

Walker, Thomas.

Whaley, Edwin Archer.

Wherby, Charles.

Whittaker, Frank.

Wingfield, Thomas Arthur.

Wither, William Matthew.

Woodhead, Herbert.

Wyllie, Alexander Dick.

SELECTED FORMULÆ.

CAMPHORATED TOOTH POWDER.

Camphor, 60 grammes; powdered orris root, 30 grammes; calcium carbonate, 320 grammes; magnesia carbonate, 90 grammes; rose oil, 10 drops.

PERU BALSAM COLLODION.

This is a mixture of 1 part of Peru balsam and 9 parts of collodion, and is recommended as an excellent protection for small cuts and other minor lesions.—*Practitioner*, lxi. 110.

DENTAL POWDER.

Creta precipit., 30 grammes; lap. pumicis, rad iridis, āā 15.0 grammes; sapo. med., 7.5 grammes. Mix and perfume with 4 to 6 drops of wintergreen oil.—*Zahnt. Ref. Organ.*, xviii., 130.

ADHESIVE GUM.

Dextrin, 120; powdered alum, 6; white sugar, 30; carbolic acid, 1; distilled water, 300. The dextrin, alum, and sugar are gradually stirred into the water and boiled until dissolved. After cooling the carbolic acid is added.—*Zeit. d. allg. oest. Apoth. Ver.*, lii., 442, after *Apoth. Ztg.*

PHARMACEUTICAL JOURNAL.

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LONDON: SATURDAY, OCTOBER 8, 1898.

THE COUNCIL MEETING.

THE resumption of official business transactions at the Council meeting last Wednesday was not marked by any occurrence more important than the third reading of the amended Bye-laws by which the provisions of the Pharmacy Acts Amendment Act, 1898, are to be carried into effect. At the opening of the meeting the PRESIDENT first referred to several letters which had been received since the last sitting—one from LORD HARDWICKE thanking the Council for the resolution passed in appreciation of the assistance given by him towards the passing of the Bill last session, and others of like nature from Mr. SMITH and Colonel BROOKFIELD. A letter from Mr. EDGAR M. CHAPMAN expressed his thanks for the award of the Burroughs Scholarship, one from Mr. HAROLD WILSON resigning his position as demonstrator in the Society's School, one from Mr. UPSHER SMITH in acknowledgment of the award of the Pereira Medal, one from Mr. HERBERT PAYNE in acknowledgment of the permission to continue his studies in the Research Laboratory, and one from Mr. J. I. SCOTT communicating his election to an exhibition at Merton College, and his consequent inability to take up the Bell Scholarship which had been awarded to him.

The PRESIDENT then moved that the scholarship rendered vacant by Mr. SCOTT's resignation should be awarded to Mr. P. B. GRAY, the candidate next in order and practically almost equal to Mr. SCOTT. This was seconded by Mr. CARTEIGHE, and agreed to.

The PRESIDENT then mentioned the death of a distinguished honorary member, Brigade-Surgeon AITCHISON, who has done much useful work in elucidating the natural history of drugs.

The report of the Finance Committee gave the usual information as to receipts during the last two months, and the payments recommended were adopted.

On the recommendation of the Benevolent Fund Committee nine grants, amounting in all to one hundred and two pounds, were ordered to be paid.

Particulars relating to the financial state of the Fund, the number of annuitants, and the deaths during the past year were submitted in a statement by the Secretary. On the recommendation of the Committee a resolution was passed that four annuitants should be elected on Tuesday, December 13 next, and that the names of six candidates should be placed on the approved list.

In moving the adoption of the report, the VICE-PRESIDENT referred to the large amount granted as being due to the circumstance that it covered the applications of two months and he especially urged the need for liberal provision of funds to enable the Committee to meet all the calls made upon it.

The VICE-PRESIDENT also referred to the unsuccessful attempt last year to get ROBERT KIRKBY into the London Orphan Asylum at Watford and mentioned that, as he is again bringing the case forward, he would be glad to have the assistance of the members of the Society.

The PRESIDENT reported that he had received a letter from Mr. WARD, of Sheffield, resigning his position as local secretary, and after speaking of the services rendered by Mr. WARD for many years, requested the Council to authorise him to write thanking Mr. WARD for his long and zealous services. Mr. CARTEIGHE added that he had a lively recollection of Mr. WARD's services, both in his official capacity and otherwise, when the Pharmaceutical Conference met in Sheffield and on other occasions. The VICE-PRESIDENT also expressed pleasure in having been associated with Mr. WARD during the past twenty years, and bore testimony to his loyalty to the Society, as well as to the success with which he overcame the many difficulties incident to the performance of the duties of local secretary.

In connection with the subject of local secretaries, the PRESIDENT drew attention to the fact that the nomination cards for the appointment of local secretary have just been sent out, and he pointed out that at the present time it is more than ever desirable that interest should be taken in the selection of the most suitable representatives of the Society to fill the office of local secretary. He hoped, therefore, that all members would do their utmost to secure the nomination of the best men in their immediate localities.

The PRESIDENT mentioned a letter received from Mr. COWLEY, the Honorary Secretary of the Federation of Local Associations, enclosing a resolution passed at a meeting held in Belfast, congratulating the Council on the passing of the Pharmacy Acts Amendment Act and urging it to press forward the question of company trading, as it affects the interests of registered chemists and druggists. A similar resolution was received from the Dewsbury and District Chemists' Association.

As one of the delegates to the Pharmaceutical Conference, Dr. SYMES reported that the meeting was fully as successful as had been anticipated. The papers read were numerous and good. The honorary secretaries displayed their usual untiring energy, and the excellent organisation arrangements of the Local Committee contributed to the success achieved. The hearty welcome and generous hospitality of the Lord Mayor (Alderman HENDERSON) and the Lady Mayoress, added a most agreeable feature to the meeting.

Dr. SYMES' remarks were endorsed by Messrs. ATKINS, MARTINDALE, WARREN and JOHNSTON, while the PRESIDENT expressed his regret that he was unfortunately unable to attend the Conference.

On the motion of the PRESIDENT the proposed Bye-laws were taken as read a third time, and confirmed in accordance with the provisions of the Charter and Acts of Parliament.

The report of the General Purposes Committee was considered, and resolutions were passed authorising the Registrar to take proceedings in various cases of alleged infringement of the Pharmacy Acts.

RECENT PROGRESS IN MEDICAL SCIENCE.

IN the Huxley lecture delivered by Professor RUDOLF VIRCHOW on Monday, it was stated that the greatest difficulty in the advance of biology has been the natural tendency for investigators to set the search after the unity of life in the forefront of their inquiries. Hence arose the doctrine of vital force, which still reveals its influence from time to time, although now discarded. Before satisfactory progress could be made it was necessary that highly-organised living things should cease to be regarded as units, and that they should be recognised as organisms, each constituent part of which has its special life. In the higher animals and plants alike, ultimate analysis brings us to the cell, and cells alone are to be regarded as the factors of existence. No gap now remains between isolated living cells and complete organisms, and the discovery of the development of complete beings from the ova of animals and the germ-cells of plants has enabled the study of isolated cells to be employed in elucidating the life of organisms. That the organism is not an individual but a social mechanism ought to be emphatically proclaimed in every medical school where the teaching is almost exclusively concerned with human beings, and two corollaries should also be stated—first, that every living organism, like every organ and tissue, contains cells; second, that those cells are composed of organic chemical substances which are not themselves alive.

VIRCHOW, studying the process of inflammation in vascular organs, succeeded in demonstrating that the presence of cells in inflammatory exudates is not the result of exudation, but of multiplication of pre-existing cells. Extending this to the growth in thickness of the long bones, VIRCHOW was thus eventually able to extend the biological doctrine of *omnis cellula e cellula* to pathological processes, every new formation pre-supposing a matrix or tissue from which its cells arise, and the stamp of which they bear. "Herein also lies the key to the mystery of heredity. The humoral theory attributed this to the blood, and based the most fantastic ideas upon this hypothesis; we know now that the cells are the factors of the inherited properties, the sources of the germs of new tissues, and the motive power of vital action." With regard to the occurrence of hereditary disease, that is now generally assumed to depend on the transmission of a predisposition which is present, though not recognisable, in the earliest cells, being derived from the paternal or maternal tissues. But the most elaborately constructed doctrines as to the hereditary nature of a given disorder may break down before the discovery of an actual *causa viva*, a notable example of that having been found in the case of leprosy, the transmission of which by inheritance was at one time so firmly believed in that a law was nearly passed in Norway, thirty years ago, forbidding the marriage of members of leprous families. It was found by VIRCHOW, however, that some cases at least were not due to hereditary transmission, and the subsequent discovery of the leprosy bacillus by HANSEN confirmed the view that the disease is actually acquired by contagion.

Parasitism has been shown to be the cause of many diseases, the occurrence of tropical fevers being explained by the detection of parasitic protozoa. But the chief infectious diseases are the work of the minutest kind of parasitic plants, bacteria, the study of which practically dates from PASTEUR's immortal researches upon putrefaction and fermen-

tation. In connection with this subject three important points, in VIRCHOW's opinion, require comment. One is the necessity for distinguishing between the cause and the essential nature of infectious diseases, the latter being determined by the reaction of the tissues and organs to microbes. Then there is the relation between the smaller parasites and the diseases determined by them, that relation being summed up in the general word "infection." Finally, there is the question as to the mode of action of infection. "It is only the larger parasites whose main effect is the devouring of parts of their hosts, the smaller act mainly by the secretion of virulent poisons. The recognition of this latter fact has led to the brilliant work of LISTER on the one hand and to the introduction of serum-therapeutics on the other." Before anyone had succeeded in demonstrating by exact methods the microbes which are active in different diseases, LISTER had discovered the means by which protection against the action of putrefactive organisms can be attained, and the consequence has been the opening up of further regions of clinical medicine to the knife of the surgeon, and a perfect revolution in the basis of therapeutics.

THE SOCIETY'S BYE-LAWS.

THE proposed new Bye-laws, having been read a third time at the meeting of the Council of the Pharmaceutical Society, on Wednesday, were submitted the same afternoon to the members of the Society for confirmation and approval at a special general meeting. The PRESIDENT explained that the proposed Bye-laws provided a better preliminary definition of terms, for the transfer of associates in business to the list of members, without troubling them to make special application, and for the abolition of the fine now payable on restoration to membership. The grade of "Associate" will be abolished, all registered chemists and druggists being eligible as "Members" and also for seats on the Council. Further changes that will be effected by the new Bye-laws include an alteration in the procedure with regard to Council elections, only one-third of the members retiring annually instead of two-thirds as at present; an extension of time will be allowed for persons, nominated for election to the Council, to signify their acceptance of the nomination; there will be no restriction in the number of chemists and druggists eligible for seats on the Council; and, finally, the appointment of the examiners will take place a month earlier than usual, in order to prevent any difficulty arising through the names submitted to the Privy Council not being approved in time for the January examinations. After this explanation by the PRESIDENT, it was agreed that the proposed Bye-laws should be taken as read, and they were then unanimously approved and confirmed. They must now be submitted to the Privy Council for confirmation and approval, after which they will become law.

HERR FRÖLICH, the talented President of the German Apotheker Verein, has been appointed advisory member (*dezernent*) of the Ministerial Department by which pharmaceutical affairs in Prussia are regulated, and at a recent very largely attended meeting of the Berlin apotheker, HERR FRÖLICH received the hearty congratulations of that body, together with a very complimentary expression of the feeling that, supported by the confidence of his colleagues, his services in that official position will be no less beneficial to the interests of the craft than his past labours in that direction have been.

ANNOTATIONS.

THE REVIVAL, IN A MORE SCIENTIFIC FORM, of the ancient hypothesis that diseases are caused by poisons, has not only given the art of medicine a new direction, but has opened up possibilities of danger which cannot be wisely ignored. In addressing an audience of persons who are the special custodians of public safety in connection with recognised poisons, Sir James Crichton Browne not unnaturally directed their attention to the possibility of their being called upon, in conjunction with the medical profession, to extend their function towards devising safeguards against misuse of the still more subtle poisons which modern research has made known.

THE HEAD LINES attached to some of the brief notices of Sir James's address which have appeared in the newspapers indicate facility of making paragraphs attractive, rather than appreciation of the address taken as a whole. "Hints to Poisoners" is the heading one London newspaper gives to its summary of Sir J. Crichton Browne's address to the students of the School of Pharmacy, and it would appear as though the lecturer's suggestive remarks on the possibilities that present themselves to the truly scientific poisoner have been singled out for comment in most of the daily papers. This is not surprising for the sensational is everything to the ephemeral press, and nothing more sensational could well be published than a statement to the effect that a connoisseur of poisons could, by keeping his own microbes, slaughter hundreds of innocent people without the slightest fear of his crime coming to light. Apparently, therefore, it is with a real sense of relief that the newspaper scribes note the expression of opinion that for a long time to come murderers will continue to stake their necks on the use of such old methods as arsenic and strychnine poisoning. Another leading London daily heads its summary of the address with the words, "Improved Methods of Poisoning," and a third adopts the heading "Folly to be Wise." On the whole then it would appear that the address has not been found lacking in the sensational element, and it is interesting to notice the unanimity with which all the newspapers have seized upon the same point—the suggestion that the intentional destruction of life by poison is still unlikely to rank either as a fine art or as a science.

THE WINTER SESSION is now fairly opened, and local associations all over the country are recovering from their summer slumbers. On Wednesday next the chemists of Plymouth and District begin the work of the session by holding their annual meeting, which will be followed by the fifth annual dinner, to be held at the Farley Hotel, Union Street, Plymouth. The guests on the latter occasion will include the President of the British Pharmaceutical Conference (Mr. J. C. C. Payne, J.P., of Belfast), and Mr. J. Burns Browne, B.Sc., head master of the Plymouth Technical Schools. On the same day Mr. John Harrison, of Sunderland, is expected to deliver an address on "Pharmacy and Parliament" at the opening meeting of the Manchester Pharmaceutical Association, and the Newcastle-on-Tyne and District Chemists' Association will be addressed by the President elect, Mr. F. E. Schofield, of Morpeth. The Sheffield and North Staffordshire Associations announce their opening meetings for Thursday next. At Sheffield the introductory address to the students will be delivered by Mr. J. Rymer Young, of Warrington, and the annual dinner will follow. At Stoke an address will be given by the President of the North Staffordshire Association, Mr. J. Averill, and a smoking concert will be held later in the evening.

THE CHEMISTS' ASSISTANTS' ASSOCIATION recommences operations on Thursday, October 13, when the President, Mr. F. W. Gamble, will deliver the inaugural address. A week later Mr. T. Morley Taylor is to read a paper on "Vegetable Secretions," and subsequent fixtures include short papers by members; a paper on "The Biology of Yeast," by Professor J. Reynolds Green; a discussion on "Advertising in Pharmacy"; and a demonstration of the Röntgen rays, by Mr. W. Coldwell. The social side of the programme has not been overlooked, Cinderella dances being announced for October 27 and December 8, the "Annual Reunion" for November 24, and a musical and social evening for December 15.

SCIENTIFIC CRITICISM OF PROPRIETARY ARTICLES now rests upon a firm legal basis in France, an important decision on this subject having been given in March last by the civil tribunal of first instance of the Department of Seine-Inférieure, and the time having elapsed during which an appeal might be lodged, so that the decision has now become an expression of the French law upon the point. According to a summary in the *Times*, the question arose in an action for damages, to the extent of 20,000 francs, brought by a firm of opticians in Paris against Dr. Javal, the Director of the Ophthalmological Laboratory of the Sorbonne. The plaintiffs were the proprietors of a glass containing baryta, from which they manufactured spectacle lenses, which were described as "isometric," and extensively advertised as possessing special excellencies. Dr. Javal instructed two of his assistants, MM. Durault and Tscherning, to institute a careful examination of the glass and of the lenses made from it, and to report fully to him upon the subject. They carried out his instructions, and reported that the differences between baryta glass and ordinary glass were insignificant, that they were not in favour of the former, and that the "isometric" lenses did not offer any advantages to purchasers. Dr. Javal having published this report by presenting it to the French Academy of Medicine, the action referred to was brought, and the Court decided that a scientific man might rightly examine and criticise on public grounds any manufactured article for which special merits were claimed. Accordingly they found for the defendant upon all the issues, condemning the plaintiff in costs. The decision has naturally been received with much satisfaction by the medical profession in France, and it is stated that the liberty thus secured is likely to be employed with reference to many pharmaceutical preparations and alleged remedies, as well as to the wares of opticians.

IN THE RECENT ACTION of the Pharmaceutical Society *v.* Acme Chemical Co., Ltd., heard at Tonbridge Petty Sessions, on September 6 last (see *ante* p. 323), judgment was given for the plaintiff Society with costs. The solicitor for the defence asked the Bench to state a case for a higher Court, on the point that the words of Section 17 of the Pharmacy Act, 1868, do not apply to a corporate body. A case was stated accordingly, but we are now informed that the solicitors to the Pharmaceutical Society have received an intimation that the proposed appeal will not be proceeded with.

THE PHARMACEUTICAL SOCIETY OF IRELAND has been successful in prosecutions instituted against certain Belfast druggists for breaches of the Pharmacy Act of 1875 (see p. 411), and the *Irish News* remarks that the Society deserved success for the pertinacity with which it followed up the cases, if for no other reason. It was not suggested that in any of the cases the prescriptions had been improperly compounded, but that the spirit of the Act had been violated. The decision of the magistrates is said to open up a question of great

interest to the general public, whose protection was contemplated by the Act, which requires that anyone compounding a prescription containing a scheduled poison shall be duly qualified and licensed by some recognised body, such as the Apothecaries' Hall or the Pharmaceutical Society. The question decided in the present instances, however, resolved itself into a matter of sale. Though a qualified man be on the premises and compound the prescription, it is held that the law has not been complied with if he does not personally hand the medicine over to the customer and effect the sale. This, observes the local newspaper, may seem hard lines for those who act *bonâ fide*, but if the strict letter of the law is not observed irregularities leading to abuse would be certain to develop. "It is said that a great many deaths are to be attributed to carelessly written prescriptions and improperly compounded and administered medicines, so that in order to maintain public confidence the law must be enforced. The dispensing of drugs has not escaped the keen competition of the present day, and cutting of prices has been a feature of the rivalry. It is just possible this might lead to the employment of cheap and unqualified assistants, and thereby endanger the lives of the public if stringent measures were not adopted."

FASHION IN MEDICINE was the theme of the discourse addressed by Dr. J. Walter Carr, senior physician to the Royal Free Hospital, to the students attending that institution, on Tuesday last. He spoke of the influence which had always been exerted upon medicine, and especially upon treatment, by fashion, custom, habit, and authority. At the beginning of the century bleeding was so universal that a doctor might well have been accused of malpractice if he had not bled for a fever; now he might be subject to the same accusation if, under precisely similar conditions, he were to bleed his patient. Then towards the middle of the century an actively stimulant treatment became fashionable, enormous quantities of alcohol being frequently administered to fever cases. Consequently, another reaction followed, of which the Temperance Hospital may be regarded as the outward and visible sign. Later came the fashion of trying to reduce the temperature in fever by powerful drugs, such as antipyrine. The public, learning of this, thought they could cure themselves of influenza, and disastrous results frequently followed their endeavour to improve upon the teaching of their medical advisers. At the present time the fashion is running on animal extracts, a result of the success, in suitable cases, with treatment of thyroid extract, and on antitoxins, a consequence of the benefits obtained from the use of an antitoxin in diphtheria. Both methods are undoubtedly useful in their place, but must have their limitations, and are in danger of being pushed to excess and so brought into discredit.

A NATIONAL PHYSICAL LABORATORY is definitely recommended by the committee appointed last year by the Treasury, with Lord Rayleigh as chairman, to consider the desirability of establishing such a laboratory. Many eminent scientists have been called as witnesses, and the committee in the report just issued recommends that a public institution should be founded for standardising and verifying instruments, for testing materials, and for the determination of constants. It is suggested that the institution should be established by extending the Kew Observatory in the Old Deer Park, Richmond, and the scheme should include the improvement of the existing buildings, and the erection of new buildings at some distance from the present observatory. A further recommendation is that the Royal Society should be invited to control the proposed

institution, and to nominate a governing body, on which commercial interests should be represented, the choice of the members of such body not being confined to Fellows of the Society. Finally, it is proposed that the permanent secretary of the Board of Trade should be an ex-officio member of the governing body, and that such body should be consulted by the Standards Office and the Electrical Standardising Department of the Board of Trade upon difficult questions that may arise from time to time or as to proposed modifications or developments.

A CASE OF PRACTICAL SPIRITUALISM is reported by the *Daily Telegraph* from Dewsbury, where one married woman brought an action against another to recover sixty-seven pounds. Defendant carried on business as an herbalist, and combined with this the profession of spiritualistic medium. The parties became acquainted in 1893, and defendant had borrowed from that time the whole amount, in sums varying from five pounds downwards. Spiritualistic services were held monthly at the plaintiff's house, and defendant, at the commencement of the series, told plaintiff that the spirit which was guiding the course of the universe at that particular time said she (defendant) must give up work and become a medium if someone could be found to advance her the money with which to live upon. Meanwhile plaintiff advanced her money at every meeting, defendant telling her more than once that all would come right in the end, as the spirit had told her she would receive the sum of five hundred pounds from a bachelor living at Thornhill. The defence was an absolute denial that money had been borrowed, but the verdict was for plaintiff for the full amount.

BRIGADE-SURGEON JAMES EDWARD TIERNEY AITCHISON, M.D., C.I.E., F.R.S., LL.D., Bengal Army (retired), who died on the 30th ult., at Priory Terrace, Kew Green, had been an honorary member of the Pharmaceutical Society since 1891. He was the son of the late Major J. Aitchison, H.E.I.C.S., and was born in 1835. After studying at Edinburgh University and graduating M.D. and L.R.C.P. in 1856 he entered the Bengal medical service in 1858, in which he remained for thirty years. He obtained the qualification of F.R.C.S. Edin. in 1863. In 1878 he served in the Afghan War. Finally, Edinburgh University conferred on him the degree of LL.D. in 1889.

AN EXPENSIVE DENTAL OPERATION was the subject of litigation in the Westminster County Court this week, when an action was brought by a dentist to recover thirteen pounds, the balance of an account for stopping five teeth. Plaintiff said it was arranged that payment should be by time, and at the rate of a guinea for each half-hour. There were twenty-eight half-hours, and he sent "a diagram" to the defendant, which Judge Lumley Smith compared to "a picture out of Euclid." Fourteen separate half-hours were devoted to one tooth, and there were often three operators at work upon it at the same time—one placed the gold, another fixed it in the tooth, and the third tapped it. The judge said he had heard of two men to one spade, but never of three men to one tooth. He also calculated that the fees charged worked out at six pounds a tooth. Defendant—a lady—said the arrangement she made was to pay ten pounds, but she had actually paid half as much again, and only five teeth had been treated. In the event judgment was given for the defendant with costs, the judge being of opinion that fifteen pounds was enough for the work done, *i.e.*, at the rate of three pounds per tooth.

PHARMACEUTICAL SOCIETY.

RE-OPENING OF THE SCHOOL OF PHARMACY.

The fifty-seventh session of the School of Pharmacy was opened on Monday, October 3, when the prizes of the last session were distributed by the PRESIDENT, Mr. Walter Hills. There was a large gathering of students, members of the Society, and friends. After briefly stating the purpose of the gathering, the PRESIDENT called upon Professor Norman Collie, Dean of the School, to read his report on the past session.

THE DEAN'S REPORT.

Professor COLLIE said that in reporting upon the progress of the School of Pharmacy during the past session he should like specially to draw attention to the manner in which the changes that had been made in the School curriculum had worked. Those changes, which had been instituted two years ago, enabled a student to spend eighteen months over the Minor and Major courses, and were instituted in order to relieve both the student and the teacher from the pressure of work under the old and shorter course. The end of the first complete course of eighteen months came last April, and, therefore, for the first time the staff was able to report on the effects of that change. It had been feared that the longer course would diminish the number of students; that, however, had not been found to be the case. Moreover, out of seventeen candidates who presented themselves for the Major examination last April fourteen passed. The success of the change, therefore, seemed quite assured. The number of students who had attended the School during the year was up to the average of recent years, there being a larger number of Major students and a rather smaller number of Minor students.

The School staff regretted the loss of the services of Mr. Harold Wilson, Demonstrator in Materia Medica and Pharmacy, who has recently obtained the post of Senior Dispenser to the University College Hospital. An able successor has been found, however, in Mr. F. A. Upsher Smith, the Pereira medallist of the last and Bell Scholar of the previous session.

Professor GREENISH had reported that thirty-eight students entered for the elementary, and twenty-one for the advanced course of lectures in materia medica, and that the work was maintained with unusual regularity throughout both courses. In the elementary course the Bronze Medal was awarded to Mr. T. E. Wallis, and Certificates of Honour to Mr. Nundy and Mr. Payne. In the advanced course Mr. Matthews obtained the Silver Medal, and Mr. Chapman and Mr. Perrédès won Certificates of Honour. The course of lectures in pharmacy had been attended by thirty-eight students, and in this class also a similar satisfactory report can be made. The Silver Medal was carried off by Mr. Payne.

The elementary class in botany was conducted with fair success during the session. Thirty-six students joined, and the average attendance during the year was thirty-two at the lectures and thirty-four at the laboratory work. The attention and demeanour of the students were satisfactory. At the end of the session the Bronze medal was awarded to Mr. T. E. Wallis and a Certificate of Honour to Mr. Jno. Evans. Twenty-one students attended the advanced course. The work was done throughout in an exemplary manner. Mr. Harold Matthews won the Silver Medal at the examination at the end of the session, and Certificates of Honour were awarded to Mr. Upsher Smith and Mr. Perrédès.

In the chemistry classes the work and general attendance of the students have been perfectly satisfactory. At the end of the elementary course the Bronze Medal for practical chemistry was awarded to Mr. T. Wooldridge and Certificates of Honour to Mr. A. W. Turner and Mr. J. Evans. In theoretical chemistry Mr. T. E. Wallis was awarded the Medal and Mr. W. J. Spurway and Mr. H. Payne received Certificates. At the termination of the advanced course the Silver Medal in theoretical chemistry was won by Mr. H. E. Matthews, and Certificates of Honour by Mr. T. Farrow and Mr. W. B. Nelson. In practical chemistry the Silver Medal was awarded to Mr. H. M. Morgan, and Certificates of Honour to Mr. E. M. Chapman, Mr. H. E. Matthews, and Mr. F. A. Upsher Smith. The work of the department had been carried out with the help of Dr. Lapworth, Mr. Dewhurst, and Mr. Frye in a thoroughly efficient manner.

The PRESIDENT then handed the prizes and certificates and the

books given by Mr. Thomas Hanbury to the successful candidates, adding a few words of encouragement to the recipients in doing so.

THE HERBARIUM COMPETITION.

Professor GREEN was next called upon to report on the Herbarium competition. He said he never remembered examining a better collection of herbaria than those submitted in July last; in fact, he was almost appalled at the amount of work before him, but, fortunately for him, three collections stood out prominently from the rest, and he was able to recommend the Council to award not only a Silver and Bronze Medal, but also a Certificate of Honour.

The PRESIDENT, in conferring these medals and the certificate, remarked that two out of the three successful competitors hailed from Plymouth, and suggested that such an unusual occurrence spoke very forcibly in praise of the good work which was being done by the local association there.

Mr. FARR, who was next called upon by the President, read the following report on

THE COUNCIL PRIZES EXAMINATION.

"On behalf of the examiners in the competition for the Council Prizes, I have the honour to report that nine candidates entered for the examination, all of them in London. Last year, it will be remembered, only a single candidate reached the standard necessary to secure a prize, and this year we regret that one of the Medals cannot be awarded. With reference to the work of the prize-winners, my colleague, Professor Harvey Gibson, reports that the botanical portion was quite above the average standard of Major work, and showed a good range of reading and practical acquaintance with botany. Professor McLeod was well satisfied with the chemistry paper of the candidate who obtained the highest place, but the others were somewhat disappointing, no doubt owing to the fact that the questions were of a rather advanced character. The knowledge exhibited was on the whole accurate, as far as it went, but in some cases it was by no means above the average of that of an ordinary Major candidate. In materia medica three of the candidates did excellent papers and showed a good practical knowledge of the subject, but the answers of the others were far from satisfactory."

The PRESIDENT then presented the Pharmaceutical Society's Silver Medal and Hills' prize of books to Mr. P. E. Perrédès, and the Pereira Medal and Hills' prize of books to Mr. F. A. Upsher-Smith.

Mr. SAUL was next asked to report on

THE JACOB BELL AND MANCHESTER ASSOCIATION SCHOLARSHIPS.

He said this was the fourth occasion on which he had had the honour to examine for the Bell Scholarship, and he never read a better set of papers, and Mr. Pinches, his colleague, with Mr. Phillips, expressed himself particularly pleased with the Arts papers. There were twenty-five candidates distributed over England and Wales, and no less than ten out of that number obtained sufficient marks to qualify for the Scholarship. The two foremost were Mr. John Irwin Scott and Mr. Horace Finnemore. For the Manchester Scholarship there were only two candidates, but one of these, Mr. A. W. Ryder, submitted a very satisfactory paper, and the Scholarship had been awarded to him.

The PRESIDENT said he could only formally present one Bell Scholarship on that occasion, as Mr. Scott, the gentleman who stood first, had been fortunate enough to obtain an open exhibition at Merton College, Oxford, and it was not quite certain whether he would be able to fulfil the conditions attached to the Bell Scholarship, in which case the Council might probably award the second scholarship to one of the other candidates who had obtained the requisite number of marks.

The following is a full list of the awards:—

Elementary Course.

CHEMISTRY.

Bronze Medal	Thos. Edward Wallis.
Certificates of Honour	{ Herbert Payne.
	{ Wm. James Spurway.

PRACTICAL CHEMISTRY.

Bronze Medal	Thos. Wooldridge.
Certificates of Honour	{ John Evans.
	{ Alfred Wm. Turner.

BOTANY.

Bronze Medal	Thos. Edward Wallis.
Certificate of Honour	John Evans.

MATERIA MEDICA.

Bronze Medal	Thos. Edward Wallis.
Certificates of Honour	{ Wm. L. Nundy. Herbert Payne.

PHARMACY.

Silver Medal.....	Herbert Payne.
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Advanced Course.

PRACTICAL CHEMISTRY.

Silver Medal.....	Harold Marston Morgan.
Certificates of Honour	{ Edgar M. Chapman. Harold E. Matthews. F. A. Upsher Smith.

CHEMISTRY AND PHYSICS.

Silver Medal.....	Harold E. Matthews.
Certificates of Honour.....	{ Tom Farrow. Wm. B. Nelson.

BOTANY.

Silver Medal.....	Harold E. Matthews.
Certificates of Honour.....	{ Pierre E. F. Perrédès. F. A. Upsher Smith.

MATERIA MEDICA.

Silver Medal.....	Harold E. Matthews.
Certificates of Honour	{ Edgar M. Chapman. Pierre E. F. Perrédès.

Council Prizes.

PEREIRA MEDAL (SILVER) AND PRIZE OF BOOKS.
F. A. Upsher Smith.

PHARMACEUTICAL SOCIETY'S SILVER MEDAL AND PRIZE OF BOOKS.
Pierre E. F. Perrédès.

Herbarium Competition.

Silver Medal	Wm. W. Hellyer.
Bronze Medal	J. G. Hawksworth.
Certificate of Honour	H. J. Reynolds.

Scholarships.

JACOB BELL MEMORIAL SCHOLARSHIPS.

Horace Finnemore.
John Irwin Scott.*

MANCHESTER PHARMACEUTICAL ASSOCIATION SCHOLARSHIP.

Arthur W. Ryder.

BURROUGHS SCHOLARSHIP.

Edgar M. Chapman.

The Inaugural Address.

The presentation of prizes and certificates having been completed, the PRESIDENT then called upon Sir Jas. Crichton Browne, M.D., to deliver the inaugural address, which will be found printed in full at page 391. At the conclusion of the address,

The PRESIDENT, in proposing a cordial vote of thanks to Sir J. Crichton Browne, said the lecturer had throughout shown considerable sympathy with the needs, trials, and opportunities of the pharmacist. He had also shown an intimate knowledge of the present condition of pharmacy and the difficulties under which it laboured. He should have liked to say something on several points referred to in the address, but must confine himself to one or two only. In the first place, as a body, he thought they all regretted that they were regarded by the Legislature as vendors of poisons rather than as pharmacists, they agreed with Sir J. C. Browne that almost everything on their shelves was a poison, and they thought that pharmacy, not the sale of poisons only, should be protected. He might further say that many of them concurred in the suggestion that it would be wise to make a further division in the qualifying examination. He (the President) had thought so for many years, and though it had been done to some extent—the practical part being separated from the oral—he felt that the latter still made very great demands on the candidate, and might with advantage be divided into two portions. He was glad to find that Sir J. C. Browne believed that, notwithstanding the wonderful changes which were coming, there would still be important duties left for the chemist to perform, not only for his own benefit but also for that of the public.

Mr. BOTTLE seconded the motion, which was carried by acclamation, and

Sir J. CRICHTON BROWNE, in responding, thanked the audience for their attention to his address. He said he had been agreeably surprised to find so many present, seeing that two such powerful competitors for public attention as Virchow and De Rougemont—and there could not be a greater antithesis—were both to speak on the same day.

* Since resigned and P. B. Gray appointed in his place.

MEETING OF THE COUNCIL.

WEDNESDAY, OCTOBER 5, 1898.

Present :

MR. WALTER HILLS, PRESIDENT.

MR. G. T. W. NEWSHOLME, VICE-PRESIDENT.

Messrs. Allen, Atkins, Bateson, Bottle, Carteighe, Corder, Cross, Grose, Harrison, Johnston, Martindale, Park, Savory, Southall, Storrar, Symes, Warren, and Young.

The minutes of the previous Council meeting of August 3, and of the special meeting of September 28, were read and confirmed.

The PRESIDENT read a letter he had received from Lord Hardwicke, thanking the Council for the resolution which had been passed in appreciation of his work on the passing of the Pharmacy Act (Amendment) Bill. Similar letters had been received from Mr. Smith, M.P., and Mr. C. L. Brookfield, M.P.

THE BELL SCHOLARSHIP.

The PRESIDENT said he had received a letter from Mr. John Irwin Scott, one of the recently appointed Bell Scholars, saying that he had been elected to an open exhibition at Merton College, Oxford, and he must therefore resign the Bell Scholarship. They would all unite in congratulating Mr. Scott on having obtained this exhibition and in wishing him a successful career, but it was considered desirable that the vacancy occasioned by his resignation of the Scholarship should be at once filled up by the appointment of one of the other candidates who had obtained the qualifying number of marks. The next man was practically almost on a line with the second Bell Scholar, and he would therefore move—

That P. B. Gray be appointed Bell Scholar for 1898-9 in place of Mr. John Irwin Scott, resigned.

Mr. Gray had been communicated with, and was quite prepared to come up at once and commence work.

Mr. CARTEIGHE seconded the proposition, which was at once agreed to.

DEATH OF BRIGADE-SURGEON AITCHISON.

The PRESIDENT said a few days ago information had been received of the death of one of their distinguished honorary members in the person of Brigade Surgeon Aitchison, late of the Bengal Army, who had been an honorary member of the Society since 1891. He died at the comparatively early age of 63, and it might have been hoped that he would have lived some time longer in order to add to the useful work he had already carried out. It was hardly necessary to remind the Council that the deceased was a distinguished traveller and botanist, and represented one of the very useful class who travelled with their eyes open, and being a scientific man, had been able to make very considerable additions to their knowledge of materia medica. His death would be very much regretted by all.

REPORT OF THE FINANCE COMMITTEE.

This report was read, and recommended the payment of various accounts.

Mr. MARTINDALE, in moving the adoption of the report, said although the accounts comprised practically two months of the Society's work there was nothing particular to refer to.

The resolution was carried unanimously.

REPORT OF THE BENEVOLENT FUND COMMITTEE.

The report of this Committee recommended grants to the amount of £102 in the following cases:—

A registered chemist and druggist (65), who has had four previous grants. (Pontefract.)

A registered chemist and druggist (69), who has had a grant annually for several years. (Landport.)

The widow (55) of a chemist and druggist, who has had several small grants from the Fund. (Earlsfield.)

A pharmaceutical chemist member (75), who has had two previous grants, and whose wife is invalided. (Sherborne.)

The widow (50) of a registered chemist and druggist, who is partly supported by her daughter, and suffers from ill health. (Cumb.)

An associate and member (67), 1852-84, who has had two previous grants. (Chatteris.)

A registered chemist and druggist (67), who has had two previous grants. (Peckham.)

A former member (70). (Anstruther.)

The widow (57) of a chemist and druggist member who died recently after a long illness. (London.)

Three other cases were considered, but the Committee deemed them ineligible, and another applicant was recommended to be placed on the list of approved candidates for an annuity.

ANNUITANTS.

The SECRETARY submitted a statement showing the financial condition of the Fund, the balance on the current account on September 30 being £717 7s. 6d., and on the donation account, £487 13s. 5d. The number of annuitants on the list in October, 1897, was forty-one, and six were added in December. Three had died during the year, and one had resigned, leaving forty-three annuitants on the list.

The Committee recommended that four annuitants be elected on Tuesday, December 13, and recommended that the following be put on the approved list:—

Biggs, Walter	70	.....	Oxford.
Bosley, Emily J.	63	.....	Forest Gate.
Bowman, Jane	67	.....	Chelsea.
Field, Wm. C.	73	.....	Mablethorpe.
Stangroom, Fredk.	63	.....	Cley-next-the-Sea.
Young, Jas. J.	78	.....	Ipswich.

The VICE-PRESIDENT, in moving the adoption of the report and recommendations, said the amount granted was large, but considering that the Committee had the applications for two months to deal with he did not know that the number was above the average. Every case was carefully considered—in fact, it was the longest Committee meeting he remembered. Of course, the Committee had to bear in mind the amount required for the annuities, and it was therefore very important that sufficient funds should be placed in its hands to enable it to deal with these applications from time to time.

Mr. ATKINS seconded the resolution, which was carried unanimously.

ELECTION OF ANNUITANTS.

The VICE-PRESIDENT moved that four additional annuitants of the Society should be elected in December next, and that the election should take place on Tuesday, December 13, at 12 o'clock. The Committee had spent considerable time in considering the names to be submitted for election, and felt that the funds would be sufficient to allow of the election of four additional candidates. There were six candidates for annuities, and the Committee would have been glad if they could have gone further and recommended the election of all. He regretted the unavoidable absence of Mr. Hampson from the Council that day, because he, no doubt, would have liked to give expression to his views that it was undesirable that the names of the candidates for annuities should be advertised. No doubt many of Mr. Hampson's colleagues shared his feelings in the matter, but after all it was a question of policy. Many people who gave money to the Fund liked to have something to say in the expenditure of it. It was the duty of the Council to decide on the best means of raising the necessary funds, and if subscribers did take the view that they ought to have something to say in the spending of it, and if money could only be raised on that basis, the existing policy was the best to adopt.

The resolution having passed unanimously,

The VICE-PRESIDENT reminded the Council that last year he had asked for assistance in getting a lad named Robert Kirkby into the London Orphan Asylum at Watford. Unfortunately, their efforts on that occasion, owing to the shortness of time, had been unsuccessful, and he now begged to bring the case again before the members. The mother of the boy was well known to the Benevolent Fund Committee. She was a very deserving woman, and had been left with a large family, one child being already provided for in the London Orphan Asylum, whom the mother wrote saying was very happy and comfortable.

RESIGNATION OF A LOCAL SECRETARY.

The PRESIDENT said he had received a letter from Mr. Ward, of Sheffield, resigning his office as local secretary, tendering his thanks for the confidence which had been reposed in him for so many years, and saying it would still be his pleasure to do what he could to further the interests of the Society. He was sure that the Council would receive this resignation with regret, because Mr. Ward had been a very loyal and energetic local secretary for many years, but he had well earned his retirement, and he would, with the approval of the Council, write to Mr. Ward thanking him for his long and zealous services.

Mr. CARTEIGHE said he had a lively recollection, not only of Mr. Ward's services to the Society in his official capacity, but also of his great courtesy and kindness privately on the occasion when the Conference met in Sheffield, and at other times when he had enjoyed his hospitality.

The VICE-PRESIDENT said it had been a great pleasure to him to be associated with Mr. Ward for twenty-one years, in fact, ever since he had been at Sheffield. They all knew how loyal Mr. Ward had always been to the Society. The work of a local secretary was not always pleasant, but Mr. Ward had managed to get over the difficulties which arose, and did the work admirably. He was also one of the oldest members of the local Society, and was still one of the most energetic.

The PRESIDENT, in connection with this subject, desired to call the attention of the members, through the press, to the nomination cards for local secretaries which had just been sent out. It was very desirable always, but especially at the present time, that general interest should be taken in the appointment of local societies, and he would therefore urge on all the members to do their best to find out the best man in their own locality for the office, and fill up the nomination cards accordingly.

CORRESPONDENCE.

The PRESIDENT said a letter had been received from Mr. Cowley, Hon. Secretary of the Federation of Local Pharmaceutical Associations, enclosing a resolution passed unanimously at a meeting of delegates held in Belfast during the Conference, congratulating the Council on the successful passing of the Pharmacy Acts Amendment Bill, and urging it to press forward the question of company trading, as it affects the legitimate interests of registered chemists.

A similar resolution of congratulation had also been received from the Hon. Secretary of the Dewsbury and District Chemists' Association.

THE BELFAST CONFERENCE.

Dr. SYMES, as one of the delegates appointed to attend the British Pharmaceutical Conference at Belfast in August last, rose to report. Prior to the meeting, the pharmaceutical press pointed out the great advantages to be gained by meeting at Belfast, and the hearty reception they were likely to get, and a successful meeting was prophesied, and that, no doubt, had in a great measure caused the prophecy to be fulfilled. His colleagues who had attended the Conference would bear him out when he said that it had been exceedingly successful. A number of very excellent papers were read, without which no conference could be regarded as a complete success. There was the usual untiring energy of the honorary secretaries, who were always alive to the advantages to be gained from making the Conference successful; also the splendid organisation and arrangements of the Local Committee were altogether beyond praise, and contributed very largely to the success of the gathering. He also referred to the hearty welcome by the Lord Mayor and his generous hospitality. The Conference had an excellent place for meeting, the Library of Queen's College being placed at their disposal by the Principal. Not only the members of the medical profession and pharmacists, but the citizens at large all concurred in giving the Conference a most hearty welcome. They had exceedingly fine weather; the social functions were of the most pleasurable kind, the excursion was most enjoyable, and on the Friday and Saturday also arrangements were made for those who could stay so long to visit certain works and the Giant's Causeway. He was exceedingly pleased to see that sixty-two members attended from Scotland, which he took to be partly the result of the successful meeting in Glasgow the previous year. He hoped that the meeting at Plymouth would be, if possible, more successful, and that many of their Irish friends would be present. He could not conclude without expressing his regret at the absence of several well-known faces, including the Presidents of the Pharmaceutical Societies of Great Britain and of Ireland, but when a suggestion was made that those two gentlemen were afraid to meet each other, it was at once repudiated. He would ask the Council to accept a framed photograph of the group outside the Queen's College.

Mr. ATKINS said one of the things which greatly contributed to the success of the recent Conference was having an excellent President. For himself he had been exceedingly delighted with his visit, and thought it would be well to go to Ireland more frequently, and so cement more firmly the good feeling between the two countries. He spent some five weeks in Ireland, and saw many

things which afforded much food for reflection. He was much impressed with the position occupied by the dispensing chemists in some of the large cities, Dublin, Belfast, and Cork, and probably it was similar in other places. There he found that dispensing was almost exclusively in the hands of the pharmacist, none practically being done by medical men. He could not speak in too high terms of the hospitality and sincerity of the Irish people, and it was quite out of his power to describe the beauties of the scenery.

Mr. MARTINDALE said he could thoroughly support what had been said by Dr. Symes as to the cordial reception the Conference received in Belfast, and with regard to the more serious side of the business, he thought the scientific character of the discussions had been well maintained. The new Pharmacopœia came in for a good deal of attention, and although there were some criticisms, he thought on the whole it had a very good reception.

Mr. WARREN also expressed his appreciation of the kindness with which all the members of the Conference were received in Ireland.

Mr. JOHNSTON, as the only Scotch member who attended the Conference, also added his testimony to the success of the gathering, especially the garden party given by the Lord Mayor of Belfast.

The PRESIDENT said he had no right to say anything on this subject, having unfortunately been unable to attend the Conference, which he much regretted, especially as he had a lively recollection of the meeting at Dublin. He was glad to hear from Dr. Symes that the idea that he and the President of the Irish Society were afraid to meet each other was indignantly repudiated, for in fact Mr. Downes and himself had met already and would have been only too pleased if they could have met again on the occasion referred to.

DATES OF COUNCIL MEETINGS.

The PRESIDENT moved that the Council meetings for January and April next be held on the 11th and 12th of those months respectively, instead of the first Wednesday in each month.

The proposition was agreed to,

THE NEW BYE-LAWS.

The PRESIDENT next moved that the proposed new Bye-laws be taken as read.

This having been agreed to,

The PRESIDENT then moved that the proposed new Bye-laws, read for the first time on August 3, published in the *Pharmaceutical Journal* of August 6, and read for the second time on September 28, be now read a third time and confirmed. This motion was in accordance with their Charter and Acts of Parliament, and it was quite unnecessary for him to make any remarks on the amended Bye-laws. The few remarks which were rendered necessary on the subject were made by him on the occasion of the first reading. The Bye-laws did not involve any new principles, other than those incorporated in the present Act of Parliament.

The resolution was carried unanimously.

REPORT OF THE GENERAL PURPOSES COMMITTEE.

The report of this Committee, which dealt with legal matters only, was read and considered in committee.

On resuming, the report and recommendations were received and adopted, and special resolutions passed authorising the Registrar to take proceedings against the persons named.

DETERMINATION OF ARSENIC IN ANTIMONY AND IN OTHER METALS.—Ducru finds that the method of Clark for the separation of arsenic from copper is equally available for antimony and other metals. About five grammes of the metal is distilled with 200 C.c. of pure hydrochloric acid and 100 C.c. of a solution of pure ferric chloride, containing 15 per cent. of metallic iron. The end of the delivery tube of the condenser is immersed in water in the receiver. Each time 100 C.c. have distilled over another 100 C.c. of acid are added. When 300 C.c. have been collected the whole of the arsenic will, as a rule, have come over. This distillate is freed from the small quantity of antimony by a second distillation with three successive additions of hydrochloric acid as before; or, if from 50 to 100 C.c. of pure concentrated H_2SO_4 be first added, all the arsenic will then, as a rule, distil over in the first 150 C.c. The method is equally applicable to other metals and alloys. The arsenic in the distillate is then precipitated as sulphide with H_2S .—*Comptes Rendus*, cxxvii.

SPECIAL GENERAL MEETING.

A special general meeting of the Pharmaceutical Society of Great Britain was held on Wednesday, October 5, at 17, Bloomsbury Square, for the purpose of confirming the new Bye-laws, as recommended by the Council, and read the third time on the morning of the same day.

The PRESIDENT took the chair at 3 o'clock, the number attending, apart from members of the Council, being small.

The SECRETARY having read the notice convening the meeting, The PRESIDENT said he did not propose to speak at any length on the various alterations suggested by the new Bye laws, as he had already referred to them on the occasion of their being read the first time at the Council. He would, however, briefly recapitulate the points contained. They included a better preliminary definition of terms, a provision for transferring associates in business to the list of members without troubling them to make a special application, the abolition of the fine payable on restoration, disappearance of the grade of associate, provision for altering the procedure with regard to the Council elections, one-third retiring annually, thus bringing the mode of election into line with that generally prevalent in municipal bodies, an extension of the time for the reception of voting papers, which, he thought, would be found convenient, an extension of the time for persons nominated for election to the Council to signify their acceptance, the disappearance of the restriction on the number of chemists and druggists eligible for seats on the Council, and lastly, a provision for appointing the Examiners in November instead of December, which was proposed in order to avoid difficulties which might arise if from any reason the approval by the Privy Council of the names submitted was not received before the commencement of the January examination. These amended Bye-laws were necessary in order to carry out the Act of Parliament passed last session. The principles of that Act had been fully discussed, both here and in Parliament, and he need not further allude to them. The Bye-laws had been read a third time that morning by the Council, and he had every hope that the meeting would approve and confirm them, so that they might be sent on to the Privy Council. He would first move that the proposed Bye-laws, which had already been circulated, be taken as read.

This was seconded by the VICE-PRESIDENT, and at once agreed to.

The PRESIDENT then moved that the proposed new Bye-laws now submitted be approved and confirmed.

The VICE-PRESIDENT seconded the motion.

Mr. MACEWAN said he was curious to know how the first Council was to be created. Did the present Council cease to exist?

The PRESIDENT said No; the present Council continued in office until May next.

Mr. CARTEIGHE said there was no alteration made in the Council, only in the mode of election, or rather in the manner in which the vacancies were created.

The SOLICITOR said the Charter fixed the month of May as the date for the election of the Council; there would be no election until then, and it would take place on the lines laid down by the new Act.

Mr. MACEWAN said it followed that chemists and druggists did not get complete enfranchisement at once; it was delayed for three years.

Mr. CARTEIGHE said in the case of enlargement of the political franchise it was usual to have a dissolution and a new election on the new principle, but the Pharmacy Amendment Act did not contemplate that. It simply provided that certain men were eligible for seats on the Council as vacancies arose.

The PRESIDENT then put the resolution, which was carried unanimously, after which

Mr. CARTEIGHE moved a vote of thanks to the President, not merely as Chairman of the meeting, but for his unwearied exertions in carrying through the Act which had rendered the new Bye-laws necessary.

Mr. BOTTLE seconded the resolution, which was carried by acclamation.

The PRESIDENT, responding, said his duties that day had been exceedingly light, much more so than on a former occasion when the amended Bye-laws were submitted. He sincerely trusted that the Act recently passed would have the effect of strengthening the position of the Society, and would help to make its work more useful, both to the country at large, and to every one who practised pharmacy.

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE IRISH PHARMACY ACTS.

PROSECUTIONS AT BELFAST.

In the Summons Court on September 29, before Mr. F. G. Hodder, R.M., and other city magistrates, the Pharmaceutical Society in Ireland, having an office at 67, Lower Mount Street, Dublin, summoned several chemists' assistants in Belfast for selling and compounding medical prescriptions, they not being duly qualified—not being registered chemists themselves—to do so according to law.

It will be remembered that these summonses were heard about three weeks ago, when Mr. Hodder dismissed them, mainly on the grounds that it was not proved by the prosecution that the persons summoned (who were not properly qualified to compound prescriptions) had compounded them.

David Manser, assistant in a chemist's shop on Peter's Hill, a branch shop of the Ulster Chemists' Co., Ltd., was summoned for selling a medical prescription on July 6 to one Stewart McWilliams, and also for compounding the same.

Mr. Wm. McGrath, B.L. (instructed by Mr. Joseph Donnelly) prosecuted for the Society, and Mr. Norman Charley, Lisburn, defended.

Mr. McGrath, in stating his case, said the prosecution was instituted under Section 30 of the Pharmacy Act of 1875. That Section provided that it should be unlawful for any person to sell poisons or medical prescriptions unless such person be a registered chemist. On the date in question Mr. McWilliams entered the premises and found the defendant in sole management of the premises. He gave him a prescription, and asked that it should be compounded. Mr. Manser told him to call again. He did call again, and the bottle purporting to contain the ingredients in the prescription was given to him by Mr. Manser. Now, to his mind that constituted a distinct offence under Section 30 of the Pharmacy Act. The reason why the Act was passed seemed to him to have been put very well by Mr. Justice Hawkins in a case practically on all fours with the present cases. It was the case of the Pharmaceutical Society in England against Wheeldon. This was practically under the 15th Section of the English Pharmacy Act of 1868, which provided that any person who should sell poisons without being duly registered as a chemist should for every such offence be fined £5. It was held in the case that an unregistered chemist's assistant, who, in the absence of his master, sold any poison, was liable to a penalty, notwithstanding that he effected such sale on behalf of his master who was registered. That seemed to him conclusive.

Stewart McWilliams was then placed in the witness box, and in reply to questions, stated that he handed the prescription produced to Mr. Manser, who was alone in the shop. He asked him would he fill the prescription, and he said he would. He called again, and Mr. Manser handed him the bottle produced. It was then proved that Mr. Manser was not a registered chemist.

Mr. Hodder wished to know, did Mr. McGrath's contention go so far as this—that every person behind the counter in the shop of a chemist company must be registered?

Mr. McGrath: Yes, if he sells.

Mr. Charley, in his defence, quoted a regulation of the Pharmaceutical Society stating that before it could license a chemist he must have a certificate that for two years he had compounded in a chemist's shop. That was doing the very thing for which they were now prosecuted. He also urged that the decision in the case of the Queen against Wheeldon did not apply in the present case.

Mr. Hodder, in giving judgment, said he could not himself distinguish the case of the Queen against Wheeldon from the case presented there. The Bench had decided to convict on the selling summons, and defendant would be fined £5, the maximum penalty. Mr. McGrath then withdrew the summons for compounding.

Mr. James Hogg, York Street, was fined £5 for keeping open shop, he not being duly licensed, and Mr. H. McIntyre, assistant to Messrs. John Clark and Co., Ltd., was fined a similar amount for selling a medical prescription.

PHARMACEUTICAL SOCIETY OF IRELAND.

ANNUAL MEETING.

On Monday evening, the 3rd instant, the annual meeting of the members of this Society was held at the Society's House, 67, Lower Mount Street, Dublin, commencing at half-past seven o'clock. There were present: The President (Mr. R. J. Downes), the Vice-President (Mr. Beggs), the Honorary Treasurer (Mr. Grindley), and Messrs. Wells, Simpson, Bernard, Porter, Thomas O'Sullivan (Waterford), Ryan, Conyngham, Professor Tichborne, and Dr. Walsh (Members of Council), and also Messrs. Gibson, Turner, McKnight, J. T. Holmes, T. W. Robinson, J. Burnett, W. Corrigan, A. J. Allan, John Smith, T. J. Jackson, H. O'Connor, A. Farrington, J. C. McWalter, David O'Sullivan, J. S. Ashe, H. Hunt, H. C. Brady, Thomas Ball, and Miss A. Wyatt (Members of the Society).—The REGISTRAR (Mr. Ferrall) read the minutes of the last annual meeting, which were confirmed.—The Registrar announced that 113 members and 21 associate druggists had returned voting papers. The Vice-President was nominated by the President, and Messrs. Gibson, O'Connor, and Porter by the meeting as Scrutineers of the Ballot.—Mr. GIBSON: Is there to be no business transacted until we come back?—The VICE-PRESIDENT: That has been the rule, and I think we had better follow it.—Mr. KELLY: We were kept here until one o'clock at the last annual meeting.—Mr. GIBSON: I do not think we have any authority to take the voting papers out of the room.—The VICE-PRESIDENT: I have been at many public meetings and voting papers have invariably been taken into an ante-room. If the meeting does not think the Scrutineers honest enough to return a true statement we should give it up.—Mr. GIBSON: As long as the matter is in your hands it is all right, but I shall be satisfied if no business be transacted until we come back.—Mr. MCKNIGHT suggested that the business of the meeting should go on.

An Anonymous Circular.

Mr. GRINDLEY rose to bring under the notice of the meeting a matter which intimately concerned him and others who were up for election.—Mr. SMITH: Might I ask is Mr. Grindley in order?—The PRESIDENT: I think he is. He wants to repudiate a circular which should be repudiated before the Scrutineers retire.—Mr. GRINDLEY: An anonymous circular has been sent out to the voters of the Society purporting to be from the "Pharmaceutical Society of Ireland, Dublin, Lower Mount Street, September, 1898, Council Election," and at the end it recommends the members to vote for myself and other gentlemen. I wish, in the strongest language that I can command, to repudiate all knowledge of, sympathy with, or hand, act, or part in this circular. My notion is that our elections should be fought fairly and squarely, and that there should be no striking below the belt; and I think I can appeal to the testimony of anyone who knows me that I never at any time lent my name to anything underhand. I therefore repudiate in the strongest manner any knowledge of or sympathy with this circular, directly or indirectly. That is all I have to say.—Mr. ROBINSON: I think the opportunity that has been afforded to Mr. Grindley has been very well taken advantage of by him. No one that knows him would accuse him of any act or part in it. I do not care a straw what people think. I say it was with a thrill of satisfaction that I voted for Mr. George Henry Grindley at this election. But I regret that the officers of the Society did not think it was their duty to repudiate this scurrilous and slanderous thing. Last year, a day or two before the election, I got an anonymous communication saying, "serve you right for allowing scandalous libels to be published." It is not on the night of the election that the repudiation should come.—The VICE-PRESIDENT: Mr. Robinson, I may mention that if I had got the circular I would have decidedly repudiated it through the press, but unfortunately I did not get it until I came here to-night.—Mr. KELLY: As one of those named in the circular I wish to say that I knew nothing whatever about it. I spoke to Mr. Grindley about it and asked him would it be well to telegraph to the organ of the Society repudiating it; but Mr. Grindley said that telegrams were often misunderstood, and it would be better to wait for this opportunity of doing what he has done to-night. I think I can say with Mr. Grindley that those who know me will give me credit not only for telling the truth but for this also—that nothing would tempt me to put my name to anything dishonourable or unprincipled. I repudiate this circular on principle, as I would not use anything in

the shape of slander or take from the honour of my opponents.—Mr. WELLS: Mr. Grindley and Mr. Kelly have spoken for themselves, and I claim the right of speaking for myself and also for Mr. Montgomery, Mr. Tate, Mr. Michie, and Mr. Brittain. I say that none of us knew anything whatever about the circular in question—where it came from or who wrote it. The same thing applies to the circular of last year. I have not the remotest idea of where the one or the other came from. But it is only right to tell you that gentlemen who find fault with one man for committing a slander or a libel ought to be very careful themselves not to libel others. Limited companies may be—
—Mr. GIBSON: Excuse me, Mr. Chairman.—The PRESIDENT: Mr. Wells is in order.—Mr. GIBSON: Let me state my point of order and then you will see whether he is in order or not.—The PRESIDENT: State it—I am waiting for you.—Mr. GIBSON: My point is that he is going outside the liberty you gave to repudiate the circular. Mr. WELLS: I want to defend myself from an imputation which has gone abroad, cast in the circular signed by Mr. McKnight.—The PRESIDENT: That is another thing, and I think it would be well to let it stand by itself.—Mr. WELLS: I will, at all events, say that I know nothing about this circular, and I have already taken pains to let Mr. McKnight and his friends know that.—Mr. ROBINSON: In the interests of the Society the circular referred to has not been named by Mr. Grindley; but the circular now repudiated is that coming from the "Pharmacy Protection Association."—Mr. ALLAN: I would like to know what it is about.—Mr. BERNARD: It is a thorough insult to the Society. Its language is simply scandalous. It is an audacious attempt to belittle us made by some poltroon, and is a continuation of the system that was started last year. It speaks of a "nefarious system of trading"—of men who "basely betrayed" interests—and asks "were they honourable men," speaks of "common decency," and asks if the "slightest confidence could be placed in them." I think it is for our Society to find out who the persons are that call themselves the

"Irish Pharmacy Protection Association"

as a cover for their libels. There is no such society in existence. I addressed a letter to them, and it was delivered here, which brings it home to us. It is all very fine for gentlemen to dissociate themselves from it, but I go farther, and ask that this matter be placed in the hands of our solicitor with a view to the prosecution of the parties who have so acted. There is no doubt that by offering a reward and searching the printing offices in Dublin—for I believe it was printed in Dublin—they could be found out. I therefore propose that the matter be placed in the hands of our solicitor.—The PRESIDENT: I think that should come through the Council.—Mr. BERNARD: Very well. I will make the motion at the Council.—Mr. ROBINSON: Surely you are not throwing obstacles in the way of gentlemen who are repudiating it.—The PRESIDENT: I am throwing no obstacles. Legal proceedings cannot be taken by this meeting.—Mr. MCKNIGHT: As one of the persons named in this circular, I was thoroughly astonished that the names attached to it should be associated with such a scurrilous document. That Mr. Montgomery should be associated with it or Mr. Kelly—whom I thoroughly appreciate—or Mr. Wells, or Mr. Tate I could hardly believe when I read it. Not one of those gentlemen repudiated it until a letter was sent to two or three of them from a solicitor's office. I believe Mr. Wells has not repudiated it through that channel yet.—Mr. WELLS: On a point of order, Mr. President, you objected to my going into this matter, and it is not fair to allow the other side to go into it. I may say that I have replied to it. I got it on Saturday morning, and my solicitor got it on Saturday night.—Mr. MCKNIGHT: The repudiation only comes when the election is practically over. These gentlemen kept silent until every man had marked his paper. Is that fair or honourable? I say it is not fair to the honest candidate who tries to do the best he can for the Society. The point is: Who is this Society? Who or what are they or their office-bearers? You, as President of this Society, ought to be compelled to find out who they are and whether they are using the rooms of your Society. Is it using your rooms, and are you paying rent for them? The Society in question must exist, or else this circular is a lie. I think you should direct the solicitor of this Society to find out who they are; and if you do not, I shall find out for myself.—Dr. WALSH: As President of the Dublin Chemists' Federation, which has been recently formed, I wish to say that that Society

has nothing whatever to do with it.—Mr. O'SULLIVAN: I also may be allowed to say a few words. I am strongly identified with the Assistants' Association, and have on their behalf to repudiate any knowledge of the circular in dispute.—The PRESIDENT: Mr. Robinson has complained of the officers not having repudiated the matter. As far as I am concerned I never received a copy of the circular, and was practically in ignorance of it; and I do not see how your President and your Registrar could be called on to repudiate documents of which they had practically no knowledge. The President then mentioned that he had received a card from Mr. Wootton, the editor of the official organ of the Society, who was anxious to be present at the meeting.—Mr. GIBSON said the general press ought to be admitted to the annual meetings. The Pharmaceutical Society of Ireland was a public body, having public duties to discharge, and it was scandalous that its annual meeting should be held in a hole-and-corner manner. They knew from report how the Council meetings were reported—how pieces that did not suit were cut out.—The PRESIDENT.—That is not the fact. I repudiate it.—Mr. GIBSON: It has been proved.—Mr. WELLS: It has not been proved.—Mr. GIBSON: Our next annual meeting should be open to the public press.—Mr. WELLS: We admit Mr. Wootton on different grounds. The other question is one that will have to be dealt with in a different way—by a notice of motion.—A motion for the admission of Mr. Wootton was then put and unanimously assented to.—Mr. GIBSON: I think the repudiation has come from these gentlemen too late.—The VICE-PRESIDENT: I rise to order. We have had this debate quite long enough. We have had the matter spoken to by several speakers, and I object to the subject being opened up again.—The PRESIDENT: I think quite enough has been said on the matter, and I ask the Scrutineers to retire now.—The Scrutineers having withdrawn to an adjoining room, the PRESIDENT then requested the Registrar (Mr. Ferrall) to read his address, it having been understood that that might take place in the absence of the Scrutineers.—Mr. FERRALL proceeded to do so, and had got some way through it, when Mr. MCKNIGHT said the address contained a reference to the company with which one of the Scrutineers was connected, and it was hardly fair that he should not be present.—Mr. ROBINSON said that in order to prevent gentlemen from being disfranchised the scrutiny should be completed either after the termination of the business of the meeting or before it began.—The PRESIDENT: I am perfectly willing that the reading of the address shall remain over until the Scrutineers come in.—Mr. MCKNIGHT: Will you allow me to send a note to Mr. Gibson?—The PRESIDENT: I will not allow the Scrutineers to be interfered with. The matter is one at which Mr. Gibson should be present. I recognise the point.

Result of the Election.

At half-past nine o'clock the Scrutineers handed their report to the President. The PRESIDENT: The number of votes recorded for each candidate are as follows:—For Mr. Grindley, 121; Mr. Wells, 119; Mr. Kelly, 116; Mr. Montgomery, 116; Mr. Tate, 106; Mr. Brittain, 99; Mr. Michie, 99; Mr. Hayes, 30; Mr. Conyngham, 23; Dr. McWalter, 16; and Mr. McKnight 16. I declare the first seven gentlemen to be duly elected.—The reading of the presidential address was then proceeded with.

The President's Address.

Mr. DOWNES commenced by expressing his gratitude for personal health and the general advancement of the interests of the Society, and then detailed the history of the Society's recent action with regard to the question of company pharmacy. That action was based on the belief that limited companies have no legal right to carry on the business of a pharmacist or chemist and druggist, as in no sense could it be construed that seven unqualified persons combined for doing so were combined for a "lawful purpose," which is the primary condition required by the Companies Act. The Pharmaceutical Society of Great Britain was at one with the Irish Society in its action, but unfortunately it is not on the same legal level, and in England it is looked upon as only a question of "selling poisons," and even legal minds do not apprehend how much more comprehensive and important is the Irish Act. It was this confusion, he believed, which led the Lord Chancellor to propose the amendment to the Pharmacy Acts Amendment Bill, 1898. He clearly did not apprehend that the British Pharmacy Act did not extend to Ireland. The two Societies were practically one on the matter of poisons, and it was for that reason he (Mr. Downes) had confined all argument to that level, though they had much stronger ground when they applied the same

arguments to the practice of pharmacy. If they won on the low ground they carried the higher position, though the converse might not be the case, and he hoped the ventilation of the question would ensure to the Pharmaceutical Society of Great Britain the pharmacy privileges the Irish Society possesses. He then touched upon the Duke of Devonshire's Bill to "Regulate the Sale of Poisonous Substances," and the attitude of the two societies towards that Bill. Whatever legislation is attempted in the future he believed would be more rational and, at all events, based on "competent knowledge of the subject with which it deals." The action of the Society in respect to the bye-election for the Stephens Green Parliamentary Division was referred to, and it was urged upon the licentiates and registered druggists in various districts to secure the privileges of the franchise and to combine for the purpose of pressing their local representatives to take an interest in and to understand their claims. The bi-monthly meetings during the winter months were next reviewed, and a regret expressed that the evening meetings at which scientific lectures were given had not a larger attendance. Personally, Mr. Downes was not willing to be a party to again inviting gentlemen who are busy men to a sacrifice of their time in preparation and delivery of lectures, unless he had a promise of a better attendance. He felt that doing so must injure the reputation of the Society. In response to the frequent reports of Sir George Duffy as "Visitor" on behalf of the Privy Council, calling attention to weak points and low pass results in various subjects of the Preliminary examinations, the Council has, on the recommendation of the School Committee, resolved to raise the standard of that examination, subject to the approval of the Privy Council. Slight changes have also been made in the Licence Examination. The issue of the new Pharmacopœia in the course of the year was then referred to and a protest raised that a work with the suitability and practicability of which as most intimately concerned they were most competent to express an opinion, should not be irrevocably issued until the retail pharmacist has had an opportunity of at least expressing an opinion upon it, and of criticising those parts which he sees to be objectionable. They had it authoritatively asserted that not only was the pharmacist's opinion ignored, but that the book was not even compiled for him but, "it was a book of reference—first to the medical man, and indirectly for the analyst. Processes and their *modus operandi* were ignored, but standards of purity and strength were minutely detailed. It was a book for the expert," and as such, must be judged on its merits. It was not given to them as a book for the counter, or for the busy pharmacist, which all previous pharmacopœias were. It was one which will compel pharmacists to rely not on their own ability and material but on the wholesale manufacturer and his guarantee, one of the consequences of which will be that they will become less familiar with the crude drug, which there will be no necessity of handling. It might seriously affect the examinations and school classes, as their chief care must be to see to the ability of candidates to check the ready-made goods they buy. After mentioning that last year was inaugurated what is hoped will be the annual dinner of the Society, Mr. Downes referred to his visit this year to the Annual Dinner of the Pharmaceutical Society of Great Britain at the Hotel Cecil, and said that he was welcomed and received with all the cordiality and honour which the Society, of which he had the honour to be President, could expect, and he had every reason to believe that a more reciprocal feeling of goodwill had been fostered between the Societies. What he saw and heard during that visit convinced him that in Ireland they enjoyed a position, with regard to the medical profession, which is not the case with pharmacists anywhere in Great Britain, in that the Irish practitioner prescribes, and leaves the dispensing to the pharmacist. In fact, he thought he should be safe in saying that the idea of a dispensing physician would be tabooed. That, he thought, is a relation which they should be careful that no act of theirs should endanger. In England the reverse has been the long-established practice, and is difficult to uproot, particularly where each party asserts that their position is one of self-defence. When they were informed that in the important cathedral city of Salisbury every practising doctor dispenses his own medicine except one "firm," which sends all its prescriptions to one firm of chemists, it was only natural to expect the chemists to retaliate by keeping their customers out of the doctor's hands as long as possible. On the other hand, he (Mr. Downes) was recently speaking to a Minor, who was in treaty with a doctor who was about to employ an assistant to dispense for him, because the local chemist refused to fill his prescription after 11 o'clock, and he decided that if he must do

night dispensing and employ someone for the purpose he would do all his dispensing. They in Dublin might think such a state of things impossible to come to pass in Ireland, but they were not sure that the practice had already begun in country towns, and if anything like poaching begins they could not tell the limits of the consequences. As they wished their legal privileges preserved, they should carefully regard the privileges of other bodies, and as regards those privileges [he would impress on all that no amount of talk within their own ranks, trade-press writing, or clapping on the back would be of any use, unless they supported their leaders and second their efforts by bringing their case prominently before the public, their legislators and the Government, taking care to satisfy them that their claims are not antagonistic to the public interests, and that the public are not opposed to their claims. As public opinion is made up of educated or uneducated units, it becomes an influence on one side or the other as the units are educated, and education alone breaks down prejudices. Speaking of the Society's schools, Mr. Downes said it is the desire of the Council that the classes should not either encourage or facilitate a system of "cram," but that what is taught should be thorough, so that the student may be able to use the knowledge in any difficulty which is presented to him in after practice, and not be simply the possessor of a skimming sufficient to fool the examiner, but of no further use to himself. The requirements of the new Pharmacopœia will have their effect on the examinations, which in time will require extended knowledge, particularly as to standardisation and recognition of impurities, and will call for special attention in the schools. Whether this may be met by another special class or by distributing the subjects in the present classes he could not say, but he was afraid it will in any case increase the cost of education. However, betterment in education is of more importance than the saving of a few pounds. The former will be a continual gain, the latter involve continual anxiety and loss. The quarterly examinations had been held in compliance with the regulations. For the Preliminary, 95 candidates presented themselves for examination, of whom 51 passed, while 20 were entered on other certificates, making a total of 71, an increase of 6 registered over the preceding year. For the Licence, 60 candidates presented (the same number as last year) of whom 27 passed, being one more than the preceding year. Of those that presented themselves, 33 were re-examined, 21 more than twice. For the Registered Druggists Examination, 27 presented themselves for examination, 21 at Belfast, of whom 14 passed, and 6 at Dublin, of whom 4 passed. The total number of passes was 8 less than the preceding year. For the Assistants Certificates 7 presented and 5 passed, being one more than in 1897. Mr. Downes expressed his surprise that more advantage is not taken of this certificate, as it gives those who have passed the Preliminary and have had the four years' service an opportunity of possessing a qualification "to transact the business of a licentiate in his temporary absence," a qualification which must carry its money value and be of considerable advantage while an assistant might be taking out his lectures. The number of failures, he thought, indicates that candidates underestimate the requirements of the examinations, and are not sufficiently prepared, while the number who fail in practical pharmacy is much in excess of what might be expected from those who have been engaged as apprentices or assistants for a period of four years. The present fashion of working on "manufacturer's stock of ready-made articles," such as pills, suppositories, plasters, liquors, and concentrations, must be largely at the root of the failures. The gold medal of the Society still waits for a claimant. The winner of the silver medal this year nearly attained to the gold one, but from nervousness or excitement, or some freak of the will, he fell short by one mark. Mr. Archibald Clark Ross passed with 90 per cent. in botany and materia medica, 77 per cent. in chemistry, and 72 per cent. in pharmacy, a total of 239, or 79.66 per cent. Mr. Downes then referred to the loss of the services of Mr. A. E. Doran, L.P.S.I., as examiner in chemistry, and the election of Mr. Alec Forbes Watson, B.Sc., whose appointment has been approved by the Privy Council. The vital statistics of the Society are represented by the following figures:—

	On Register, September 30, 1897.	September 30, 1898.
Licentiates	549	577
Chemists and Druggists	299	294
Registered Druggists ..	424	440
Assistants	17	22

Members	148	.....	161
Associate Druggists....	52	.....	50
	200		211

The Society had lost by death 5 chemists and druggists, and 2 registered druggists. Reference was also made to the sad death of Mr. E. P. Murray, a licentiate and member of the Council. In conclusion, Mr. Downes acknowledged the support he had received from each member of the Council during the past year, especially from members of the various committees, and from the Vice-President, also the efficient and willing services of the Registrar, Mr. A. T. Ferrall, who, owing to the evening meetings and heavy parliamentary correspondence, was severely taxed throughout the time when preparing the calendar. Mr. Downes also took the opportunity, on behalf of the Council and members, of expressing their sympathy with Mr. and Mrs. Ferrall in the sorrow which has fallen on them through the death of his father.

The Ulster Chemists, Limited.

Mr. McKnight said the President's address was very able and brilliant but there was one statement in it which he would like to rectify. He did not believe that the President was capable of uttering anything that he did not believe to be true; but he was not accurate when he said that the "Ulster Chemists, Limited, was an amalgamation of discontented druggists combined with a few chemists and druggists, and one or two pharmaceutical chemists thrown in to give colour to it." What was the state of affairs? The Ulster Chemists, Limited, contained seven pharmaceutical chemists, licentiates of the Irish Society, and four chemists and druggists in connection with its branches, the pharmaceutical chemists being Messrs. McKnight, Bell, McKinney (Cookstown), Anderson (Lisburn), Fyvie (Coleraine), Dr. Galbraith, apothecary (Derry), and Acheson (Ballymena); and the chemists and druggists Messrs. Gibson (Belfast), McCrea (Newry), Lawson (Limavady), and Marshall (Dungannon). In only one of these houses was compounding tolerated, all the others being conducted as they were before the amalgamation, the instructions to the managers being not to compound. These were the facts of the case, and he was sure that the President did not desire to mislead the licentiates.—The PRESIDENT: I certainly accept the correction, but my regret is the greater that there are so many pharmaceutical chemists in the company.

Vote of Thanks.

Mr. ROBINSON said that, as a member of the Pharmaceutical Society, he was not particularly grateful to the members, and they did not care very much about him; but he thought there should be no acrimonious discussion on the President's address. He thought the President had admirably avoided contentious matter, and that it would have been beyond the brains of all the men he knew connected with the Society pounded into one to have said less than he had done in the nature of unpleasant reference to limited company trading. The Society and the Council had been exceedingly fortunate in their President of the past year. When the President took up the post he was an untried man. He had not been a prominent member of the Council, or anything but a quiet hard-working member. He was not even—and he said it with all respect—a prominent pharmacist. In that way, compared with previous presidents like Charles Evans, W. F. Wells, who had built up a noble pharmacy, and William Allen, who had succeeded to an extensive and important pharmacy, Mr. Downes came forward as a quiet hard-working member to take up a post of danger at a very critical time; and of all the presidents that he (Mr. Robinson) had known during his short connection with the Society, he had been second to none. The President for the past year had maintained the high traditions of his office, and had certainly put the Pharmaceutical Society more prominently before the country—whether for good or evil—than any president before him had done; and those who thought with him and approved of his policy—and they were evidently a very large proportion of the members—were indebted to him for the way in which he had done his work. He (Mr. Robinson) should be personally very glad to-night, as one of a little band of outsiders, also who were believed to be acting illegally, but who believed themselves to be not acting illegally, that the President's address should pass over to-night without any further discussion. The gentleman who had already spoken had pointed out that the President

laboured under a grievous error in one statement that he made, and they hoped to be able to show that he laboured under other errors also. But that could not detract from the great advantage he had been to the Pharmaceutical Society, or from the glory that he had shed upon his office during the past year. Therefore he (Mr. Robinson) had great pleasure in proposing that the very best thanks of the Society were due to the President for his very able address and for his conduct in the chair and the Council chair during the past year.—Mr. KELLY said it gave him the greatest possible pleasure to second the vote of thanks to their worthy President. During his year of office he had scarcely been absent from one meeting of the Council; he had attended every Committee meeting; and the forbearance—he might say the tenderness—with which he sometimes acted in cases showed that he was a man of deep thought, and evidently anxious to do what was right. As regarded the interest that he took in the youth of the Society, he was the best man that ever sat in the chair. He seemed to take the deepest interest in every feature connected with the education of the rising pharmacist; and if there was a man in Dublin who desired that the pharmacist should be a fit companion for the medical man he would say it was Robert J. Downes. He got up meetings for the benefit of the Society in the most finished manner, bringing the Presidents of the Colleges of Physicians and Surgeons and other men there to address them, and thus raising the status of the Society. The two gentlemen who won the silver medals were both educated in the Society's schools, in which he took such a deep interest; and another licentiate of the Society who was also educated in their schools had won an exhibition in the College of Science which entitled him to £50 a year for two years and free education in the College. With regard to the able paper of the President, most of them realised that his desire was that the interests of both the pharmaceutical chemist and the associate druggist should be looked after—that the man who owned the land should reap what he had sown, and that no one should be permitted to trespass on that ground without a positive legal right. That was the desire of Mr. Downes. He (Mr. Kelly) had the pleasure of hearing the paper read by the President in the section of the Health Congress and of witnessing the prominence which the President of the section, Professor Moore, assigned to him, speaking of him as the *beau-ideal* of a president of the Society.—The motion was put by the Vice-President and unanimously carried.—The PRESIDENT said he really felt more than he could express the very flattering way in which his address had been received and his services spoken of. When he undertook the office he feared very much that he should fail before the year was out. He had, however, done his best, and all that he did he did heartily and with a thorough idea and wish that the Society itself should prosper as opposed to what he might call individual interests. He never allowed individual interests—either his own or those of others—to conflict with what he considered to be for the good of the Society itself. With regard to his position on the pharmacy question, it had been clear throughout. He took his stand on the Act of Parliament, which required that the proprietor or proprietors of a pharmacy or of a drug business should be qualified men. On that he had fought the "company" question. It was a matter of personal regret to him that they should in future miss Mr. Hayes and Mr. Conyngham from their Council Board, but that was inevitable under the circumstances. He recognised that they and Mr. Robinson were fighting for the same contention that he and those who concurred with him were, namely, qualified partnerships; but they had been unfortunately too previous. Until the general pharmacy question was settled and as long as there could be a mixed company of pharmaceutical chemists under the Acts, they could not distinguish between one limited company and another. If the mixed company question were settled he did not say that they might not have room for a limited company of pharmacists, such as those gentlemen had endeavoured to start. But they were before their time; for as long as mixed company pharmacy was recognised under the Acts, one company could not be distinguished from another. That was his standing on the "company" question, and he thought it would be the standing of the Council. With regard to his address, he desired to acknowledge the way in which it had been received.

Statement of Accounts.

Mr. GRINDLEY, as Hon. Treasurer, then submitted a statement of accounts for the year, which gave details of receipt and expenditure,

as to subscriptions, pupils' fees, school outlay, professors' fees, etc., and showed a balance to credit in the capital account of £1217.—On the motion of the VICE-PRESIDENT, seconded by Mr. T. O'Sullivan, the accounts were unanimously adopted.

Registered Druggists and the Council.

—Mr. GIBSON, associate druggist, submitted the following motion pursuant to notice:—

That immediate steps be taken to amend Regulations 5, 9, and 10 relating to election of Council.

—The PRESIDENT: I rule that out of order, and ask Mr. Gibson to pass on to his second notice of motion.—Mr. GIBSON then moved:—

That this meeting requests the Council that, in co-opting new members, attention be given to the claims of the registered druggists to seven seats.

He said that this was not the first time he had advocated the claims of the druggists of Ireland at that board, and he was sorry to say that those claims had received scanty justice from the Society. There were at present on the Register 734 members of the druggists' body, whilst there were only 577 pharmaceutical chemists. Those numbers entitled the druggists to representation on the Council, and yet they had no representation at all. Nominally they were given two men; but had these gentlemen attended during the past year? Besides, they did not represent the cause of the north of Ireland druggists. They were not in sympathy with them; and until they were given representation on the board so that their voice could be heard, they would not be in sympathy with the Society. There would be an opportunity now of giving them representation by co-opting gentlemen who would not be voting machines. The druggists wanted independent men on the Council who would say what they thought and not be afraid of anybody. In this connection he must say that the members had by their vote that night cast discredit on themselves when they cast out Mr. Hayes, a gentleman who was an honoured President of the Society, and who, when it was incorporated, was thought fit to be an original member. It was passing strange that the members should have cast him aside after his long and laborious work in their behalf. The Society did not command the support of the north of Ireland simply because the druggists there had no representation on it. It was getting to be simply a Dublin Society. Its outside influence was departing altogether. Last year the travelling expenses of the country members amounted to £22. This year the amount was only £8 14s. Two-thirds of the members of the Council were Dublin gentlemen. If they wanted to command the respect of the country at large they should give representation to the whole country. Therefore, he appealed to them to give the druggists of the north of Ireland the representation on the Council that they were entitled to.—Mr. MCKNIGHT seconded the proposition, and after a somewhat animated discussion, in which Messrs. Conyngham, Bernard, Wells, Downes, and Gibson took part, the motion was put to the meeting, and negatived.—Dr. McWALTER having withdrawn the notice of motion standing in his name, the business of the annual meeting was concluded.

THE ANNUAL DINNER.

On Tuesday evening the annual dinner of the Pharmaceutical Society of Ireland was held at the Shelborne Hotel, Stephens Green, Dublin, at seven o'clock.—The PRESIDENT (Mr. R. J. Downes) occupied the chair, the Vice-President (Mr. Beggs) the vice-chair; and there were also present the President of the College of Physicians (Ireland), Sir George Duffey; the President of the College of Surgeons, Mr. Swan; Mr. James Campbell, Q.C., M.P.; Mr. William Field, M.P.; Professor J. W. Moore, M.D.; Sir Charles Cameron; Mr. R. K. Clay; Professor Tichborne; Messrs. Wells, Phillips, Butler, Murchison, McKnight, Gibson, D. Merrin, Grindley, Kelly, Simpson, Professor Stoker, H. G. Grindley, Bernard, A. T. Ferrall (Registrar), J. T. Smallman, Dr. O'Donovan, T. W. Robinson, N. E. Conyngham, W. B. Conyngham, J. S. Ashe, J. E. Connor, W. Gilligan, etc.—The usual loyal toasts having been duly honoured, the CHAIRMAN gave the toast of

The Houses of Parliament.

He said they had a grievance against both houses of Parliament because they addressed them in the last session, and they had not deigned to reply.—Mr. J. H. CAMPBELL, M.P., in responding, said the Pharmaceutical Society showed what a small body of earnest men could do when they combined for the protection of their own interests, more especially when those interests were for the benefit of the public at large. The occupation of

mixing drugs had been raised from the ordinary ruck of life to the dignity of a skilled profession. So long as he had the honour of being a representative of the city he would oppose as best he could any legislation calculated to interfere with or lessen that dignity and the position to which the Society had attained. He considered that any attempt to go back by legislation on what had already been done would be not only disastrous to the Society, but to the best interests of the community at large. It was therefore with pleasure that he gave them a pledge to oppose any attempt to deprive them of the privileges they already enjoyed.—The CHAIRMAN next gave the toast of

The Royal College of Physicians and Surgeons.

Sir GEORGE DUFFEY, President of the College of Physicians, in responding, said the medical profession recognised the assistance which was given to it by a body of well-educated and well-trained responsible men, such as the licentiates of the Society. The public appreciated the advantage and security it derived from being served by such men. He believed that the sister Society of Great Britain entertained a very friendly and cordial feeling towards that Society, although it did not yet—as he thought it ought—recognise its Licence examination. Much of the success that pharmacy as a calling had had in that country was the result of the examinations held by the Society. There had been a steady improvement in the examinations; and although there was still much to be regretted from an educational point of view in the superficial character of the instruction acquired—as shown by many of the candidates who presented themselves at the Preliminary examination—the general pass-result would, he thought, be found to have advanced satisfactorily and proportionately with the increased stringency of the examination. It had always appeared to him that improvements in the examinations, with which as their visitor he had to deal, should consist not in adding subjects to the curricula, or in making the pass standards in the different subjects too high, but in the examinations being made more thorough, practical, and searching. Last year, on the initiative of the Society, and after a conference between members of its Council and a committee of the College of Physicians, they were successful in getting carbolic acid and some other poisons scheduled. In all similar movements, whether for the safety of the public, or for the advancement of pharmacy and pharmaceutical science, the College of Physicians would, he was sure, always willingly co-operate with and assist the Society.—The President of the College of Surgeons, Mr. SWAN, also responded.

Other Toasts.

The toast of "The Pharmaceutical Society of Great Britain" was next given, and responded to by Mr. ROBERT SIMPSON.—Sir GEORGE DUFFEY proposed "The Health of the President," whom he styled the "Grand Old Man" of pharmacy in Ireland.—The PRESIDENT, in responding, said that the Society from its beginning had striven to secure for the public competent men to do the work given to them by Parliament to do, and so long as the Society should be permitted to exist that striving would not cease.—Sir CHARLES CAMERON, responding to the toast of "Science," adverted to the fact that some of the most distinguished contributors in the domain of pure science had been pharmaceutical chemists.—Professor MOORE also responded to the toast.—Mr. WILLIAM FIELD, M.P., replying to the toast of "The Guests," said that the licentiates of the Society had to discharge a dangerous function in carrying out the orders of medical men, because a mistake might lead to fatal results. He entirely agreed with the contention of the Society that none but qualified persons should be allowed to handle drugs that might be pernicious or fatal in their effects. He had endeavoured in the House of Commons to do some service to the Society, and he hoped to be of use to it in the future, because he felt that something yet required to be done. He would advise them to try to get a pharmaceutical chemist into the House of Commons as a member, and if they could swap an odd lawyer for a doctor it might be of advantage. He tried hard to swap his friend Mr. Campbell before he got in; but since he came to know him he found him to be a really good fellow. He strongly recommended the Society to try to get all its licentiates into an organised body.—Messrs. CLAY, Dr. O'DONOVAN, and BUTLER also responded.—The toast of "The Press" was responded to by Mr. A. C. WOOTTON.—Sir CHARLES CAMERON proposed in complimentary terms the health of the Registrar, Mr. FERRALL, and that gentleman having responded, the proceedings terminated.

LETTERS TO THE EDITOR.

OF CLINICAL THERMOMETERS.

Sir,—My recent note on the above subject has brought me a response from Messrs. Maw, Son and Thompson, stating that they keep in stock clinicals graduated down to 90° F. I feel that it is due to them, and perhaps to other makers, to acknowledge that the common neglect of low temperature observations lies with the users of the instruments; that was really my own conclusion, and the absence of low graduations was evidence that low temperatures were not commonly looked for. Since receiving one of Maw's clinicals graduated down to 90° 0, I have made a number of observations, but no new point of interest, beyond confirming my previous note of low temperatures before breakfast, of which I now have records so low as 92° 0 and 93° 0. My medical adviser in Newcastle told me one of his patients, a young lady, got so low as 91° 0, a point which he considered so serious that he sent for her father, but she recovered.

Bradford-on-Avon, September 30, 1898. BARNARD S. PROCTOR.

THE PREPARATION OF LIQUID EXTRACTS.

Sir,—For "not less than 2 or more than 2.25 per cent." in my letter (*ante*, p. 387) read "0.75 per cent."; my mind was dwelling on liquid extract of ipecacuanha at the time I wrote.

London, October 1, 1898.

W. MARTINDALE.

Sir,—Having elicited from Mr. Martindale (p. 387) an admission that distilled water exhausts cascara better than a 20 per cent. alcohol menstruum, it seems ungracious to press him further; but why does he say that liquid extract of cascara as a laxative is "more active, if anything, if made" with the above alcohol menstruum? The statement is put forward very doubtfully, and means, if anything, that the preparation is more laxative the less completely the drug is exhausted. If Mr. Martindale has evidence that concentration of the liquor by evaporation prejudices the properties of the liquid extract, ought he not produce it and not leave us with his opinion only? All the evidence tends to the conclusion that cascara is little affected by the heat necessary for concentration. Whether the concentration can be obviated is another question. The remainder of Mr. Martindale's letter not being pertinent to anything in my remarks on p. 316, I do not refer to it, except to say (1) that "belladonna" is obviously a slip for "ipecacuanha," and (2) that it is not worthy of Mr. Martindale's position that he should fling a cheap sneer at manufacturers (who are as much pharmacists as he is himself) after he has been worsted in discussion.

London, October 3, 1898.

JOHN MOSS.

A NOVEL ADULTERANT OF POWDERED RHUBARB.

Sir,—During the past few months I have examined several samples of powdered rhubarb microscopically, and in two instances a large proportion of maize starch was present. As I believe this is a novel adulterant it is well that a note should be made of it, that pharmacists may generally examine their stocks. For some time past maize flour has been largely sold in this country, and enters into the composition of many self-raising flours; objection by analysts has been made to it in these dietetic articles, and they and every pharmacist will certainly object to its presence in any of their powdered drugs.

Birmingham, October 4, 1898.

F. H. ALCOCK.

AN EXPLANATION.

Sir,—In your report at page 368c respecting my camphorated oil case, it is stated that defendant said cottonseed oil looked best. In so short a paragraph it was not possible to get in the whole defence, but just sufficient to be misleading. What I did say was that cottonseed oil made a better emulsion with solution of ammonia than the official preparation, also that I made this for some horsekeepers specially to meet their requirements, and that my assistant thought the boy came from some adjoining stables and sold what he thought the purchaser required. Many chemists know how frequently these gentlemen have their pet formula and "how carefully they guard their secret"; moreover, judge their white oils by its appearance only. There was no fraudulent intention on the part of the seller, it was an omission of a descriptive label. This is most important at the present time, since the inspector takes the B.P. 1898 into Court.

Stoke Newington, September 28, 1898.

J. EMSLEY.

TINCT. QUININÆ AMMON.

Sir,—It is not, I think, generally known that if this favourite preparation is taken in a little soda water, the carbon dioxide redissolves the precipitated quinine and makes a far more palatable and more presentable dose than if taken in water.

London, September 30, 1898.

J. H. (145/12).

ANSWERS TO QUERIES.

EMERALD GREEN POWDER.—The legal restrictions would not appear to apply in such a case. [*Reply to FEMINA.*—16/33.]

BOTANICAL.—It is the common lucerne, *Medicago sativa*, a scarcely naturalised plant. [*Reply to A. W. H.*—17/5.]

COURSE OF STUDY.—Full information on the subject was given in the "Students' Number" of the Journal, published so recently as September 10 last. [*Reply to APPRENTICUS.*—16/32.]

ORGANIC CHEMISTRY.—Both the books you mention are of exceptional merit, but the one recommended possesses certain advantages from a student's point of view. Either will serve your purpose well. [*Reply to NERO.*—17/4.]

PARRISH'S SYRUP.—You will find a formula in Martindale and Westcott's 'Extra Pharmacopœia,' or in Squire's 'Companion,' either or both of which works you can doubtless refer to readily. [*Reply to S. H. H.*—17/3.]

KNOWLEDGE OF FRENCH.—You should possess a fair knowledge of French accidence and elementary syntax, read one or two novels by Dumas or Daudet, and practise a little French composition, translating short paragraphs out of newspapers into French and having the translations checked by a competent person. No special books are necessary. [*Reply to EPISCOPUS.*—17/7.]

MUCILAGE CELLS.—There is no certain micro-chemical reaction for gums, but cell-walls containing gum assume a red colour when treated with Hanstein's aniline violet (equal parts of fuchsin and methyl violet dissolved in alcohol). Many gelatinous cell-walls and gums are also deeply stained by corallin freshly dissolved in a saturated aqueous solution of sodium carbonate. [*Reply to FEMINA.*—16/34.]

HYDROGEN PEROXIDE.—It may be produced (1) by decomposing various peroxides by dilute acids; (2) by shaking zinc or iron powder with water in the presence of air; (3) by the action of hydrogenised palladium on water in presence of oxygen; (4) during the electrolysis of fairly concentrated sulphuric acid; (5) by shaking ozone with ether, and then adding water; (6) by the oxidation of very dilute ammonia solution by ozonised oxygen; (7) by placing a solution of pyrogallol under a bell jar; (8) by burning hydrogen in air; (9) by shaking various essential oils containing terpenes with water, in presence of air; (10) during many processes of oxidation in presence of water. See Watts' 'Dictionary of Chemistry' for details. [*Reply to FEMINA.*—17/1.]

DECOMPOSITION OF PHOSPHORUS.—The crystals you have noticed cannot be phosphoric acid. In the first place, crystals of phosphoric acid can only be obtained under special conditions from aqueous solutions (compare the chapter on phosphoric acid in your text-book), and even when obtained they deliquesce very rapidly on exposure to air. As you say, "phosphoric acid is not volatile at common temperatures." You may extend this statement, because ortho-phosphoric acid is not volatile without decomposition. When ortho-phosphoric acid is heated it loses water and yields successively pyro- and meta-phosphoric acids. The meta-phosphoric acid melts at a low red heat, and forms a glassy residue, which may, however, be volatilised at very high temperatures. You do not say what tests you applied for the identification of the crystals, but presumably your method was at fault. In the absence of fuller details it is impossible to say what they really consisted of. [*Reply to J. E. J.*—16/22.]

INFORMATION WANTED.

EFFERVESCING SULPHUR LOZENGES.—Can any reader oblige with the name and address of makers (a London firm) of the effervescing sulphur lozenges, patent 10294.—LOZENGE (17/2).

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

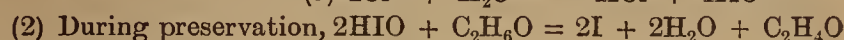
C. H. Thompson gives figures of *A. lewini* and *A. williamsi*, the two species which are stated to yield the drug pellote or mescale, and distinguishes between them by *L. williamsi* usually having eight regular ribs or obtuse ridges, and *A. lewini* having commonly thirteen, which are irregular or much broken. Strictly speaking, the divisions are not ribs. The convex fleshy upper surface is divided into convex segments by somewhat shallow and narrow furrows. In *L. lewini* these are again divided transversely, more or less obliquely, by other furrows, so as to give the upper surface a more areolate appearance in *L. lewini* than in *L. williamsi*. But Mr. Thompson does not give any account of the flowers, nor state if any difference between them exists in the two plants. He follows Coulter's revision of the group in placing these two species in the genus *Lophophora*, in which the epidermis is flexible, and the tubercles or segments do not assume the form of projecting or leaf-like organs. The species of *Anhalonium* which possesses this character he places, following Schumann, in a separate genus *Ariocarpus*. Both genera are very distinct from *Echinocactus* and *Mamillaria* in being quite free from spines. Illustrations are also given of *Ariocarpus* (*Anhalonium*) *fissuratus*, *kotschubeyanus* and *furfuraceus*, so that the paper will be very useful for reference by students of the allied genera.—*Report Missouri Botanic Garden*, 1898, 127.

H. C. Irish has published a revision of the genus *Capsicum*, in which all the species (fifty-four according to the 'Index Kewensis') are reduced—with the exception of fourteen, which he has not seen—to two species, viz., *C. annuum* and *C. frutescens*. The former he divides into the varieties *conoides*, *fasciculatum*, *acuminatum*, *longum*, *grossum*, *abbreviatum*, and *cerasiforme*, and the latter into the type and the variety *baccatum*. Each of these are again subdivided into several forms. Judging from the figures and descriptions, the Japanese chillies seem to correspond with the orange-red form of the variety *conoides* of *C. annuum*, the Nepaul pepper, to the variety *acuminatum* of *C. annuum*. The sweet Spanish pepper and the Paprika of Hungary is the variety *grossum*, and the Cayenne pepper, or chillies of English commerce, are incorrectly so referred to *C. frutescens* (see 'Kew Bulletin,' July, 171). None of the illustrations resemble exactly the large capsicums of English commerce, apparently coming under *C. annuum*, variety *longum*, although no fruit so broad is figured under that name. Works on medicinal plants seem to have been ignored by the author, so that it is not possible to identify the species used in medicine exactly according to Mr. Irish's revision of the genus.—*Missouri Botanic Garden*, 1898, 53.

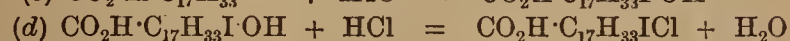
J. B. S. Norton points out that the following American plants contain enough of this colouring matter to stain the herbarium paper on which they are preserved, viz., *Echium vulgare*, *Eri-trichium glomeratum*, *Krynitzkia barbiger* (abundant in the leaves), *K. californica* (slight), *K. maritima*, *K. micrantha*, *K. pterocarpa*, *Lithospermum multiflorum*, *L. strictum*, *L. spathulatum*, *L. hirtum*, *L. canescens*, *L. angustifolium* (not abundant), *Plagiobothrys canescens* (in leaves), *P. nothofulvus* (in leaves), *P. tenellus*, *P. arizonicus* (abundant in stem and leaves as well as root), *P. torreyi* (very abundant in some specimens, hardly a trace in others). The

distribution of the colouring matter in this family is very unequal, even in species of the same genus, and of the use of it in the economy of the plant very little appears to be known.—*Report Missouri Botanic Garden*, 1898, 150.

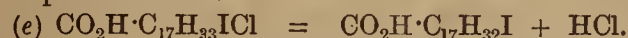
The complicated reactions that Hübl's solution undergoes during preparation, preservation, of Iodine and absorption have received the careful attention of J. J. A. Wijs. His conclusions may be briefly summarised in the following equations:—



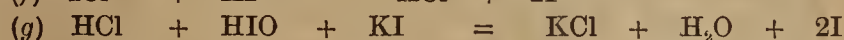
(3) In the absorption (by oleic acid)



and in a part of the fat



The hypiodous acid formed in (b) is being continually decomposed into iodic acid and free iodine, which substances, in presence of hydrochloric acid, again produce iodine monochloride. (4) On adding the potassium iodide and water to the solution before titration reactions ensue according to the equations:—



Theoretically the whole of the iodine should be found on titration in conducting a blank experiment; in practice, however, the older the solution the less is the iodine titre and the greater the acidity, the deficiency in iodine being equivalent to the acid formed. Equation (2) accounts for the alteration that occurs in the solution on keeping, through oxidation of the alcohol to aldehyde by means of hypiodous acid. Ordinarily each molecule of hypiodous acid gives on titration (equation (g)) two atoms of iodine, but when there is aldehyde formation only one atom is liberated and the titre is correspondingly smaller. On the other hand, for each molecule of hypiodous acid reduced a molecule of hydrochloric acid is set free, which is not neutralised as in equation (g), and is known as "excess acid." The stability of Hübl may therefore be increased by keeping the concentration of hypiodous acid as low as possible, as in Welman's method, in which alcohol is entirely or for the most part replaced by ether, ethyl acetate or anhydrous acetic acid. The author regards hypiodous acid as the principal agent in the addition.—*Zeit. angew. Chem.*, 1898, 291, through *Analyst*, xxiii., 238.

Iodine Absorption of Oils.

The same author, following up the conclusions arrived at in the study of Hübl's solution that hypiodous acid is the substance chiefly concerned with the addition, suggests a process by which hypiodous acid is more directly applied. It is too readily decomposed to be employed first hand according to the equation: $5\text{HIO} = \text{HIO}_3 + 2\text{H}_2\text{O} + 4\text{I}$. Good results were obtained by using a solution of iodide monochloride in 95 per cent. acetic acid. This was obtained by dissolving 13 grammes of iodine in a litre of the acid. The halogen content of the solution was then determined, and chlorine, free from hydrochloric acid, passed in until the halogen content was doubled. The mode of procedure was exactly the same as for Hübl's solution, except that the length of time was greatly modified. Thus in the case of oils of high iodine values the absorption was complete under ten minutes, whereas oils of low iodine values required no longer than from three to four minutes.—*Berichte*, xxi., 750, through *Analyst*, xxiii., 240.

At the Colonial and Indian Exhibition, a few years ago, specimens of a whitish resin, bearing some resemblance to Manilla elemi in appearance, were shown from the West Indies, and labelled "Gommier or Incense." These products are now referred to several trees of the natural order Burseraceæ. The Gommier or mountain Gommier, or Gommier rouge of Dominica and the Gommier à Canots of St. Lucia, appear to be *Dacryodes hexandra*, Griseb. Another species yielding a similar resin is *Bursera gummifera*, the birch tree of Jamaica, the Gommier of the Windward and Leeward Islands, and the Turpentine tree of St. Vincent. The resin of *Protium guineense* affords the Gommier à l'encens of St. Lucia, the Tacamahaque huilense inicolore, the encens of Cayenne, and the Tacamahacca of Venezuela.—*Kew Bulletin*, Sept., 239.

Lottermoser has obtained mercury in a soluble condition. Colloidal silver is made by mixing solutions of silver ammonio-nitrate with ferrous sulphate. Colloidal gold is produced by mixing diluted gold chloride solution with formaldehyde. Colloidal mercury cannot be prepared by either method; stannous nitrate is used as the reducing agent. A very dilute solution of mercurous nitrate is prepared and a similarly dilute solution of stannous nitrate is poured into it with constant stirring. A brown fluid is thus obtained, which is mixed with a concentrated solution of ammonium citrate, to precipitate the colloidal mercury. The solution is then exactly neutralised with ammonia, care being taken to avoid rise of temperature, and the precipitate collected and dried *in vacuo* over sulphuric acid.—*Pharm. Centr.*, xxxix., 553.

Kain has further examined the new body isolated by him from senega root, and finds it to be a glucoside. It is distinguished from saponin by its mild taste, solubility in absolute alcohol, in not giving a precipitate with barium hydrate, by its optical rotation, and by its reducing action on Fehling's solution. It is to the presence of this glucoside that the reducing action of aqueous extract of senega root on Fehling's solution is due, since the dextro-rotatory sugar present is saccharose. The crystals which Proctor named virginic acid, are nothing but saccharose. The three chief constituents of the aqueous extract of senega root may be fractionally precipitated from weak alcoholic solution by means of ether. Senega-saponin is first precipitated, then the new laevo-rotatory glucoside, and lastly the saccharose.—*Pharm. Zeit.*, xliii., 562.

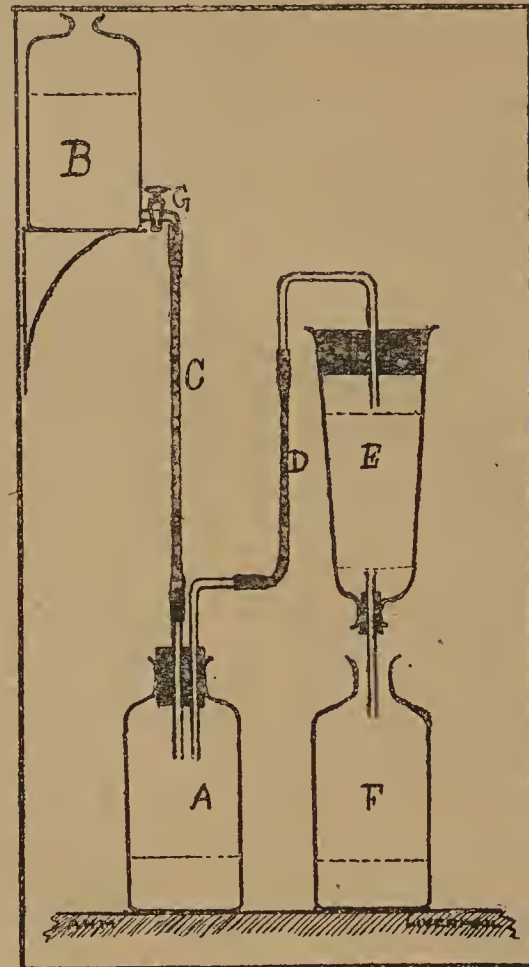
The Department of Agriculture of the United States has published a bulletin on the distinctions between edible and poisonous fungi, written by Dr. W. G. Farlow, which is designed to be a sort of primer for the beginner who does not know fungi, but wants to eat them. The following rules cannot fail to be useful:—(1) Avoid fungi when in the button stage, also those in which the flesh has begun to decay, even if slightly; (2) avoid fungi which have stalks with a swollen base surrounded by a sac-like envelope, especially if the gills are white; (3) fungi with a milky juice are dangerous, unless the milk is reddish; also those which have a sort of spider-web or flocculent ring around the upper part of the stalk; (4) avoid those in which the pileus is thin in proportion to the gills, and in which the gills are nearly all of equal length, particularly if the pileus is brightly coloured; (5) all tube-bearing fungi should be avoided in which the flesh changes colour when cut or where the mouths are reddish; and in the case of other tube-bearing forms caution is necessary.—*Bot. Gazette*, xxvi., 221.

PERCOLATION AND FILTRATION UNDER PRESSURE.

BY R. C. COWLEY.

It is obvious to the most casual observer that the use of intermittent pressure, as described by Mr. A. W. Nunn (see *ante*, p. 371), has serious disadvantages. While not advocating the use of pressure in percolation, it has frequently occurred to me, when exhausting mucilaginous or finely powdered drugs, that the use of constant gentle pressure would be an advantage in hastening percolation.

For some time past I have made use of a simple contrivance to produce this effect, and doubtless the same plan is sometimes adopted by others. It consists in displacing air from the bottle A by allowing water to run into it from the reservoir B; the displaced air is conducted along the tube D into the space above the menstruum in the percolator E. Any cylindrical or slightly conical percolator is suitable, provided it can be accurately fitted with a perforated rubber bung. The connection C is fitted with a tap or an ordinary feeding bottle regulator, to open or shut off the supply of water.



It will be evident, that by raising or lowering the reservoir B, the pressure will be proportionately increased or diminished. When the stop-tap G is opened, the flow is at first rapid, but it gradually falls off until the internal air pressure is equivalent to the hydrostatic pressure. The percolate will then drop into the receiver at the same rate that the water drops from the reservoir. Maceration in the percolator is provided for in three ways, viz:—(a) By connecting the tube at the bottom of the percolator with the glass tube which passes through the rubber bung at the top. (b) By shutting off the flow of water. (c) By lowering the water reservoir to the level of the percolator.

It is advisable to stop percolation during the night, which may be done by the second or third process, otherwise, when the menstruum is forced out, air will pass through the marc and unduly dry it. It will be seen that pressure will be relieved only when a further supply of menstruum has to be added, and when the water in the bottle A requires to be removed. Some time ago I had occasion to filter a highly mucilaginous liquid that would not pass through filtering paper in the ordinary way, and was not amenable to any of the common methods of clarification. I tried filtering it through paper pulp by the above process, but found the pressure insufficient. The difficulty was got over by running the water direct from one of the laboratory taps, and using a one-gallon stone jar instead of the bottle A in the drawing. After seeing that the connections were secure, the water was carefully turned on and filtration proceeded at a rapid rate.

THE DIGNITY OF PHARMACY.*

BY J. RYMER YOUNG.

For some years it has been the custom to preface the studies upon which you—who are assembled here this evening—are about to enter—with an introductory welcome. The pleasant duty of extending this welcome has—this year—been entrusted to my hands, an honour which I greatly appreciate. Whilst I do not aspire to approach the eloquence—or to rival the fascination of many of the addresses delivered here, yet I am fully conscious that these occasions afford opportunities which might by many be made of the utmost service. I hope therefore that the time-honoured custom of commencing each new session with an inaugural address will survive for many years to come.

Causes of Non-Success.

And what shall I say to you? Your selection of a calling is a settled affair, that question is not now before us, otherwise I might have startled you—as Abernethy did his audience of embryo doctors—with “good heavens, gentlemen, what is to become of you all!” Undismayed by the all too abundant evidence of overcrowding, undeterred by the lamentations of the pessimists, you have “for weal or woe” elected for pharmacy, not, I presume, because it leads to any considerable pecuniary emolument, but because you think that with good and honest work it opens up a prospect of a sufficiency to live upon. Well, gentlemen, there are differences of opinion on that point. We hear different accounts of the joys of pharmacy as a whole, and it is related that a “pharmaceutical” magistrate not long ago, in sentencing a prisoner to a month’s retirement with hard labour—regretted that it was not in his power to give the rascal three months behind a chemist’s counter as a warning to all evildoers. This amounts, of course, to burlesque, but really, when one thinks of the terribly long hours, the utter absence of almost everything worth living for, and the miserable starvation pittance that seems to fall to the lot of some in our craft, one can understand and excuse the fervid and highly-flavoured (though often undeserved) anathemas occasionally hurled at the drug trade in general. And yet, is it not true, is it not “plainly writ” that much of this wretched experience is distinctly self-inflicted, or at any rate the direct and natural result of imperfect judgment, faulty education, and even gross ignorance? Is it reasonable to expect success where there is less culture than that possessed by the schoolboard pupil, less capital than that required by a costermonger—less tact than the errand boy can command? The uneducated pharmacist is handicapped out of the race, now-a-days; he has no chance, even for himself, and to the extent that he exists he is a positive burden on Society and a danger to his craft. If from any cause “you are unable to acquire the education and training necessary to the intelligent performance of work which an accomplished pharmacist is rightly expected to do, then you ought not to become a pharmacist at all. It is far better to be a good farmer, or a good anything, than an incompetent dispenser of medicines.” (Dr. Oscar Oldberg.)

Pharmacy an Honourable Calling.

Assuming, therefore, that you are all fairly equipped in the direction indicated, there is no reason why your choice should in any way turn out a mistake. It is an

honourable calling, there is a living to be got out of it, and it occasionally leads to fortune. Pharmacy abounds in interest (though capital be scarce), it offers material for the exercise of the higher faculties of mind, and it affords ample field for scientific research; but with these attractions it also makes great demands on those who desire to enter it. I trust that in making your choice you have kept in view those qualities of mind and body essential to success in it. In any walk of life ignorance and carelessness engender grievous trouble and annoyance; in pharmacy either ignorance or carelessness may involve ruin and loss of life. I trust you thoroughly realise and understand the responsibilities you propose to assume. We, all of us, of course, adopt our calling as a means of earning our “bread and cheese”; that goes without saying, but at the same time forget not, that in doing so, it is clearly our duty to acquire all the skill we can, that we may fairly merit the confidence reposed in us. I have placed duty first, but I do not hesitate to place interest and expediency before you, too. If you do not make the most of present opportunities of preparation for your life’s work, you will find yourselves lagging in the race, or, should you succeed in winning the confidence of a credulous public, yours will be the humiliation of knowing that you are not what you profess to be—that you are, in fact, a humbug and the dread of misadventure will haunt you like a perennial nightmare. Strive to like the business for its own sake, for without that, and without an intelligent knowledge of the sciences upon which it is founded, you will degenerate into mere hucksters, and your work can only be a round of toil, wearisome, monotonous, and uninteresting.

Intermediate Education.

I take it that you have all passed a preliminary scholastic examination. If this did not include mathematics (algebra and Euclid) and French or German, let me urge you to look up those subjects as soon as possible. Believe me, they are essential to complete success in the future. No scientific subject can now be fully treated without an acquaintance with mathematics, and I have, in my experience, found the want of French and German a serious drawback and inconvenience. To a pharmacist a fair knowledge of both languages is of extreme importance, if only to enable him to keep properly abreast of all that is going on in the various subjects allied to his art. You are greatly privileged in having available in your own city a complete and well-organised scheme of education, and I congratulate you on the new arrangements whereby courses in chemistry and botany may be taken at Sheffield University College. Let me suggest that these sciences should be studied on general lines, identical with other students, of whatever faculty, special application to pharmacy following in due and proper sequence. Materia medica and pharmacy should, in my opinion, be taught by competent pharmacists, for the pharmacist is distinctly a specialist in these departments, and I have still to learn that Sheffield lacks men willing and able to undertake this work.

Systematic and Enthusiastic Work Desirable.

Let your work be systematic, each fresh subject being taken up only after a fair grasp has been taken of the former one; the entire syllabus should thus be covered before entering upon a final revision course at some recognised institution, preferably, perhaps, but by no means necessarily, the Pharmaceutical Society’s School. There are some who consider that courses of lectures are no longer required, the excellent text-books of to-day giving all the information a student can possibly need. I look upon this view as a

* Inaugural Sessional Address to the students of the Sheffield School of Pharmacy, delivered on Thursday, October 13, 1898.

mistaken one; I believe in lectures. Old facts may strike you in a new light when clothed in the speaker's own words, and perhaps amplified and illustrated by his own experience. Discoveries which have not yet found a place in textbooks may be brought to your notice, and besides, there is a realism about the human voice; it can often drive home facts which letterpress cannot. But, better still, you will feel the stimulus of the lecturer's personality, and perhaps imbibe some of his enthusiasm. For goodness' sake, gentlemen, try to be enthusiastic over your work; it is "good" for you and "refreshing" for your lecturer. Professor Banks, of Liverpool, addressing some students, says he has "no liking for the modern superior person, with whom it is the height of good breeding to utter short sentences in a monotone, to preserve a frigid calmness, and to gaze with an equally stolid and bovine eye upon a drunken cabby, or a transcendent genius; only do his pulses quicken when he comes to the consideration of a shirt collar or the nice conduct of a clouded cane." I dislike a man who stifles his natural emotions, like a man sitting on the safety-valve of a boiler. Try to like your work for your own sake, and let other people see that you like it for their sake, for enthusiasm is contagious. Above all, let your instructors feel that you appreciate their endeavours in your interest, and remember that there is no more irksome or thankless task in the world than that of teaching a lot of students who either think they know everything or do not want to know anything.

The Highest Qualification Best.

Do not rest content with anything short of the Major qualification. If for no better than the very poor reason that it confers exemption from jury service, it is, commercially speaking, good value, as any chemist will tell you who has had ten or twenty days' assize work at nothing per week, and pay your own expenses including railway fare, but there are loftier and better reasons than that, obviously. If pharmacy is worth touching at all it is surely worth your best energies and capabilities. You have elected for pharmacy, then be satisfied with no dubious mediocre kind of half-way position, but push on till you stand firmly on the higher level. There is always a satisfaction which cannot be over-estimated in the consciousness that you are as well qualified as any of your competitors, and there is positive advantage if it happens that you are their superior in qualification. To the testimonial writer and mere vendor of other peoples' quack nostrums, the Major qualification will be a useless appendage, and for the matter of that one wonders why such a person qualified at all, since a so-called "patent medicine licence" is about all he needs, plus, perhaps, a good deal of cheek and a little caution. But those who are going in for pharmacy proper will find the qualification of pharmaceutical chemist a powerful factor in his favour. Most of the medical men with whom I have come in contact do recognise and understand the relative value of the Minor and Major, just as we understand the difference between M.B. and M.D., or between M.R.C.S. and F.R.C.S. My experience is, that the public, slowly, it may be, but surely, is beginning to exercise an intelligent discrimination in this matter, which, after all, is of importance to themselves. Lastly, on this point, is it not a fact that the best literature and best work in connection with pharmacy—just the literature and work which has given to the trade whatever of tone it has, or whatever of the professional it possesses, which has secured for us an honourable position in the estimation of the community—we owe mainly to the comparatively small body of men who have thought it worth while to become pharmaceutical chemists?

The Evils of Mere Cram.

Whether you remain content with the Minor or proceed to the Major, as I hope you will, take care that your qualification is the outcome and result of good sound systematic honest work, and not the monstrous product of what is known as cram, by which I mean the process of forcing mental pabulum into a subject at a greater rate than assimilation is possible. The person who neglects, or lacks (as many do lack) the opportunities which should be afforded by apprenticeship, and then suddenly realises that the Minor must be passed, endeavours in a frantic sort of way to acquire in a few months the knowledge that should have been gradually absorbed, as it were, in as many years. That is the man who needs the aid of the "grinder" or "crammer," and commences, as Professor Mitchell Banks puts it, "the edifying operation of shovelling down the victim's throat all sorts of eminently condensed and highly nutritious foods, Brand's botanical jelly, Valentine's chemical juice, and Liebig's extract of materia medica, and lastly (for there is nothing homœopathic in this system) a good heroic dose of peptonised pharmacy. Then advances the gentleman (who has quietly been watching the proceedings) armed with a stomach pump, 'pray open your mouth, young sir, and let me put this tube down your throat for a minute or two?' Inarticulate sounds are heard, and before you can say 'Jack Robinson' (which I understand is the correct expression indicating phenomenal celerity) all the juices and extracts are in the examiner's basin. Has the student had a good meal? Not a bit of it, he has not had time to digest anything. Is this good for the stomach? Of course it is not. Then neither is a similar proceeding good for his brain."

Work Versus Play.

Do not lose interest in current affairs and things mundane—national and local. Pharmacy is not the only thing in the universe worth knowing. It has been said that chemists deal in pennyworths and think in pennyworths, and I fear there is too much truth in the sneer, for they are, as you know, somewhat given to isolate themselves from the rest of the world. It must indeed be a poor sort of game when the shop is the only sphere in which to "live and move and have our being." Cultivate, I pray you, the goodwill and friendship of your colleagues in business, and be cheerful; you will find it much pleasanter to travel down the steep gradient of life laughing rather than crying. Make yourselves liked as well as respected; do not be jealous of the chemist over the way, "who must live," as the saying goes, though Talleyrand declined to admit the necessity implied in those words. Read the daily papers, as well as good books (not goody books), develop the artistic faculties, and continue to educate the mind in every possible way, keeping in view the ideal that the pharmacist must be fully abreast of the times, and if possible, should be a little ahead of anyone else. Take a reasonable amount of exercise, there is plenty of choice—tennis, cricket, golf, or cycling, or anything else that will help to keep the blood circulating and the muscles in strong and healthy condition. I was going to say do not overdo this, a needless piece of advice addressed to chemists, perhaps, whose hours of relaxation are few and far between, but there is now-a-days danger of overdoing this kind of thing, and to forget that after all the *corpus sanum* is merely the fleshly tabernacle of the *mens sana*. I strongly object to the too prevalent idea that the life of a mere athlete is the highest to which a human being can aspire. Brains are getting out of fashion; it is all cricket and football and golf in this country of ours. Well might the German schoolmaster say that "the English youth plays at his work and works at his play." Why, in some of our great public schools the very masters have to

be athletes. You have seen, I daresay, the usual style of advertisement for a "Junior master wanted, must be Church of England and a good cricketer," which reminds one of the emigrant ship of former days, which was advertised to carry a "cow and a doctor"—the cow first, you will notice (Professor Banks). The worship of bone and muscle has, in my opinion, gone a shade too far in this country. I trust the pendulum has taken its longest swing.

Loyalty to the Craft.

Having secured your qualification, try to remember the duty you owe to your craft. Do not be shortsighted and selfish, remember that it is in your power to scotch the gigantic injustice of unqualified joint-stock companies trading as chemists and druggists, for without your aid they could not possibly carry on business. I presume it is your ambition some day to possess pharmacies of your own? Are you likely to bring about such a proper and laudable object by selling your services to, and so covering, the otherwise illegal practices of a set of unregistered and unqualified men who are setting up branches innumerable on sites that ought in due season to have been occupied by yourselves? Avoid these unholy alliances. Shun the stores as you would Satan. Keep up the dignity of your craft. Decline to work for registered chemists who are guilty of unprofessional conduct, or for unqualified persons who would degrade pharmacy to the lowest depths of mere commercialism. Shun both classes, and especially the last mentioned, as you would the plague. I am quite aware of the fact that strong temptations may be offered to induce you to prostitute your qualification when obtained, such as increased salaries, shorter hours, and freedom from Sunday duty. But, seriously, are those advantages in themselves sufficient to induce you to trail your professional status in the dust; do those who are weak-minded enough to fall into the company-pharmacy snare fully realise how much mischief they do at the time and how they are ruining their own future prospects? For the evil does not end when any one of you who may be inveigled into a joint-stock drug store leaves the accursed spot to return to the cleaner path of legitimate pharmacy. Just as you may prove lacking in firmness of principle—even if only for a few weeks or months, and under the specious plea of learning how company pharmacy is carried on and so gaining useful experience—so may others be expected to follow your example. The fact that you have forgotten all sense of professional decency, if only for a single moment, may unfortunately serve as a fatal incentive to others who come after you, and the same baseless arguments will be urged in their case as in yours. No! the only safe, loyal and honest plan is to make up your minds to starve or break stones on the high-road rather than do anything, be it ever so little, to enable unqualified persons to make a profit out of your services as a registered chemist. The evils of legitimate pharmacy—small salaries and long hours—can only be redressed in that way, and the sooner in proportion to the number of qualified assistants who decline to sink their self-respect by throwing themselves with their professional qualification beneath the destroying wheels of the Juggernaut of unqualified company pharmacy and so imperilling the future of their craft. In fact, the matter is and will continue to be entirely in the hands of qualified assistants. Let them but be firm in declining all offers, however magnificent, made to them by the proprietors of unqualified joint-stock drug stores, and every registered chemist in business on his own account will at once be placed in a better position with regard to his ability to increase salaries and curtail hours. That step taken, there would obviously be no difficulty in applying suitable treatment to the black sheep of

pharmacy, for it would be open to anyone to decline to be sweated or unfairly treated by fellow-craftsmen in business on their own account, and with a much better prospect of successfully combating evils we are all conscious of than at present. As registered chemists and druggists the ball will be at your feet so long as you continue to act as assistants; if you do not kick it fairly and squarely and thus secure a goal, so much the worse for yourselves, and such pusillanimous conduct will have proved unfitness for the craft you are expected to adorn.

Education Always Proceeding.

But to return to my theme, let us suppose that after diligent study you have qualified in the most approved and orthodox style, and have loyally joined—as in duty bound—the Pharmaceutical Society, with a pious determination to take your share in moulding the future of that representative body. Well, you do not imagine that your education is ended, do you? Why! "heart alive," it is only just commencing. You will find it infinitely more difficult to satisfy and please a captious, erratic, often unreasonable public than ever you did the Board of Examiners, for it is possible to delude the latter occasionally. There is still the broader education of experience to attain, and that is attainable only behind the counter. No lecturer can teach you common sense and tact; this is something altogether beyond his control, and is entirely within your own. By "tact" I mean, of course, that instinctive-innate faculty, which enables you to see, mentally, at a glance, in the twinkling of an eye what sort of a person you have to deal with, how to manage him, and how to please him, to say the correct thing at the right time, and to do the right thing at the correct moment. Often a customer is banished by a silly meaningless phrase, an ill-timed or impertinent remark, by manifest incapacity to understand, or by defective judgment if not by downright stupidity. The assistant who brings out Turkey cups at half-a-guinea each for the inspection of some palpably poor woman obviously unpossessed of any such sum, or calmly exhibits a card of penny slate cleaners to the lady who drives up in her "coach and four," and desires to purchase a sponge; you know the kind of young man I mean, there are plenty of them, and they do not all come from Sheffield. Cultivate tact, gentlemen, it is a powerful lever in business.

The Study of Pharmacy Law.

There is just another point on which I should like to say a few words, and that is, the necessity of keeping yourselves thoroughly conversant with the laws which affect and govern pharmacy. You may some day be so unfortunate as to fall foul of some obtuse coroner who will vehemently lecture and threaten you for not having done something or other which the law does not require you to do at all. Occasionally coroners get terribly mixed in their ideas concerning the two parts of the Poison Schedule. Not long ago a chemist was smartly reprimanded for not registering the sale of a small quantity of laudanum, and the chemist, who was evidently as rusty in the law as the coroner, promised "never to do it any more." One of the trade papers some time ago indicated very plainly what should be done when such instances occur. There is really no occasion to take your undeserved flogging like the man in George Augustus Sala's story, "lying down." Be sure of your position, and civilly, but firmly, protest against these glaring misconceptions of pharmacy law, and be prepared, if need be, to give a correct version. The coroner's court is an antiquated institution that seems to have escaped the influence of this reforming age. The coroner himself possesses remarkable powers and privileges, which are dangerously liable to abuse, but you are perfectly safe so long

as you are polite and accurate. I do not for one moment think that coroners have any desire to get chemists into trouble. Witness, for instance, the handsome way in which one of them a few days ago withdrew some severe strictures he had made affecting one of our body, and which on reflection proved to be unwarranted; but they are sometimes quite at sea concerning ourselves and our laws, and unless chemists can defend themselves they are likely to have a bad time of it. Stand up for yourselves on all occasions; I do not suggest that you are to take offence when none is meant, nor do I mean that you should be unduly touchy or sensitive, but at any cost resent impertinence or intended slight, from whatever source it emanates.

The Dignity of Honest Labour.

And now, gentlemen, a few final words to those who are just commencing their career. You have probably mystified yourselves with endless details of what will be required of you; at any rate, you will have grasped the one appalling fact that examinations have to be passed before you can enter the privileged circle of pharmacy. The terrors of those examinations have doubtless been enhanced by your friends—by those who have failed—in order to impress you with the reasons of their failure; and by those who have passed, that you may properly realise the value of their achievements. To each one of you, I say: Heed them not, “they are fooling thee.” Remember from the very beginning of your work that the aim and object of study is not in any important degree to enable you to pass certain examinations, but to teach and train you in your work. A man who knows his work will certainly pass his examinations, some indeed scramble through, only to find later on to their own misery that they did not know their work. Do not let examinations occupy too much of your mind; do the work that your teachers direct you to do and do it well, and when the time comes for the final effort, then strain every nerve to collect all your knowledge in a concrete form, and go in and win—as you will. It is customary, and in accordance with tradition, I believe, to conclude an address of this kind with a panegyric on the high and noble aims of one’s calling, interspersed with complaints of inadequate recognition of its merits. It is not my intention to essay anything so unprofitable. It may be that our art—if art it is—has something of intrinsic nobility about it. Is not that true of all honest, useful work? But, after all, surely it is not the profession or calling which elevates the man; rather is it the man who ennobles his occupation. Some men work to make a living, and some, not many, perhaps, but certainly some, for the pure love of doing good to their fellow-creatures, and these men are “the salt of the earth.” But I may presume that the vast majority of us take up pharmacy with the object of making a living—in itself a very good object. I am not going to outrage your intelligence by pretending that the public good is our only stimulus. You wish to make your way in the world—that is your primary object. Then do it well, do it fairly, do it worthily, look to your own bearing. “Set not your sails to every passing breeze,” but earn and keep a character for independence and integrity. Thus shall you command respect, thus shall you deserve esteem, and so shall you secure for yourselves that position among men which is your right as members of an honourable profession, trade, or guild, call it what you will.

“A King can mak’ a belted Knight,
A Marquis, Duke, and a’ that,
But an honest man’s aboon his might,
Guid faith he maunna fa’ that!
The pith o’ sense and pride o’ worth
Are higher ranks than a’ that.”

REVIEWS AND NOTICES OF BOOKS.

GESCHICHTE DER PHARMAZIE, herausgegeben von Dr. J. BERENDES.
Erste Lieferung. Pp. 80. Price 2 M. Leipzig: Ernst Günthrs,
Verlag, 1898.

The first part of Dr. Berendes’ History of Pharmacy deals with its practice in the most ancient centres of civilisation—Egypt, Palestine, and Phœnicia, Arabia, Babylonia—clustering round the junction of Asia with Africa, and extending from the valley of the Nile to that of the Euphrates. No attempt is here made to illustrate the beginnings of medicine from modern, barbarous, or savage sources, nor its more advanced stages in ancient times from the far-off civilisations of China and India. Probably the scope of the whole work is limited to the documentary history of European pharmacy and of its dawn in the nearer East. Other aspects are, however, briefly referred to in the introduction.

Fifty pages out of a total of eighty are devoted to Egypt, and the proportion is just. It seems more than probable that the word “chemistry” is derived from the native name for Egypt, *Kemi(t)*, becoming in Greek *χημια*, and properly meaning the art of transmuting metals. Still more significant, the Greek, *φαρμακός*, “a poisoner” in the sense of a user of drugs *φάρμακα*, from which we have “pharmacy,” etc., is by some derived from Egyptian words meaning “the maker of protection,” the Egyptian word for protection, *mak*, being a general term for healing and preservative power used in the medical papyri and inscriptions. The derivation is etymologically attractive. At any rate from Egypt we have a considerable number of very ancient documents containing prescriptions for all kinds of diseases. One of these, called the “Papyrus Ebers” after its quondam owner the celebrated novelist and professor of Leipzig, is perhaps the finest and most perfect document on papyrus that has come down to us. Consequently its text has been ransacked by Egyptologists in search of rare words, although its literal sense is still far from being understood. The combination of several special branches of knowledge that is required for its interpretation cannot yet be attained, for neither is the Egyptian language nor is primitive medicine thoroughly understood, even by the few students concerned with them. The former branch of knowledge, however, is growing rapidly, and the present book is an indication of an increasing interest in the latter which cannot fail to bring about a fuller appreciation of these early medical documents.

Dr. Berendes takes the trouble to describe briefly the land and people of Egypt, also its religion and mythology, which enter so largely into the spells; for naturally the application of drugs without the employment of spells to ensure their proper effects would have been deemed very insufficient anciently. He touches on embalment by means of knife, drug, and bandage, on the language and the writing, the priestly caste, the priest-doctors and apothecaries male and female. He describes the medical papyri, and discourses on the methods of compounding and applying the doses and on the materials used, noticing especially the sacred or secret names given to them—chiefly in very late times it should be noted. He gives lists of animal, vegetable, and mineral products used in the Pharmacopœia, of the technical processes, with examples of elaborate recipes, and of the “weights and measures.” He also considers the position of Egypt in regard to the natural sciences as evinced by the Egyptian knowledge of metal-working, glazing, etc.

All this is very interesting and instructive up to a certain point, and particularly so to anyone unfamiliar with the ideas of a primitive age; for such this book must open up entirely new

views. Here and there, too, it will prove suggestive to the specialist; but one is impressed by the enormous disadvantages under which a writer labours in compiling information upon any subject involved in so progressive a science as Egyptology. Although Dr. Berendes has certainly done his work well, he has unfortunately confined his Egyptological reading to German books. Hence it is that the whole of the section on weights and measures (pp. 46-50) is founded on wrong ideas, and scarcely a word of it is correct. Practically it is an abstract of an article by Professor Ebers.

In the middle of it Dr. Berendes announces that according to a communication from the learned professor, the latter has entirely altered his opinion on the subject in conformity to an essay in our English *Proceedings of the Society of Biblical Archaeology* (xiii., 526-538; cf. also xiv., 431), in which his article was reviewed. Two facts abolish the whole of Berendes' five pages—more especially the “*Denat*,” the “*Ro*,” and the weights disappear. First, no weights were used at all in the early Egyptian pharmacy; secondly, the symbols of measurement belong to systems well understood from other documents. The rough balances which served sufficiently for weighing the precious metals in ancient Egypt were no better checks than were measures on the correctness of small amounts of lighter materials, and so it happened that measures alone were used for drugs (we hope they were not very powerful) when it was necessary to fix the proportions. After the Macedonian Conquest, however, in B.C. 330, weights were largely used, but it cannot yet be decided when they were first introduced into Egyptian pharmacy.

The “*Petrie Medical Papyrus*” from Kahun dates from about 2500 B.C.; the “*Ebers Papyrus*” from about 1650 B.C.; the “*Berlin Medical Papyri*” date from about 1250 B.C., and still show no sign of weights. As to the measures in these old papyri, besides vague terms such as “a little” and so forth, we have (1) the *hen*, $\frac{7}{8}$ th of a pint, with its divisions by halving down to $\frac{1}{64}$ th *hen*; (2) fractions of the *hekat*—which contained 10 *hen*, or over a gallon—similarly halved down to $\frac{1}{64}$ th. Naturally the *hekat* itself never occurs in a prescription, but the fraction of $\frac{1}{64}$ th is exceedingly common; $\frac{1}{8}$ th is frequent, and there is a single instance of $\frac{5}{8}$ th (written $\frac{1}{2}$, $\frac{1}{8}$) of a *hekat*. The larger quantities are generally of some liquid—water, wine, or beer.

The understanding of the measures makes Egyptian prescriptions vastly more intelligible, whether these be for the cure of diseases, wounds, etc., or for the manufacture of sweet scents and unguents, or for abolishing vermin, evil smells, etc. Take the following: “Instances of purging the belly, milk $\frac{1}{16}$ th, $\frac{1}{64}$ th ($\frac{5}{64}$ ths) *hekat*, *nekaut* $\frac{1}{4}$ th *hen*, honey $\frac{1}{4}$ th *hen*. Cook, strain, eat for four days.”—“*Pap. Ebers*,” i. “Another of emptying the belly, cow's milk 1 *hen*, *nekaut* 1 *hen*, honey 1 *hen*.”—“*Pap. Ebers*,” iii.

“For preventing flies from stinging.—Fat of bee-eaters, anoint with it.”—“*Pap. Ebers*,” xvii. (The reason for choosing this bird is obvious.)

Many of the prescriptions are far more elaborately compounded, but as it is often uncertain what were the substances intended to be used, not much would be gained by translating the recipes here.

When Homer speaks of Egypt as a land where grew all kinds of potent herbs, this probably indicates not only that Egyptian physicians were highly reputed, but also that the drugs of Arabia were carried by trade through their country. Perhaps many medicinal plants were cultivated in the gardens there, but the native flora was undoubtedly very poor. Highly cultivated alluvial soil and almost barren deserts afford little hold for wild plants, and

probably the conditions were much the same from remotest antiquity.

In the book before us there are many errors of detail and many doubtful assertions, *e.g.*, in the lists of materials and in the translations of words expressing technical processes; and generalisations often fail along with the details.

Note, by the way, that the medical papyri discovered some years ago by Flinders Petrië are just published in ‘*Hieratic Papyri of Kahun and Gurob*,’ Griffith, pls. v.-vi. It seems, especially from the “*Kahun Veterinary Papyrus*,” that formulæ were to be recited during the treatment, though the spells to be used are not often written down. Spells were of enormous importance in the earliest times, especially for the funerary ritual, and certainly no “*medicine man*” could have done without them.

Leaving Egypt we pass to Phœnicia, with a few notices from Egyptian sources and from Dioscorides, and on to Babylonia and Assyria, which are more important. Nevertheless, few medical tablets have as yet been found there and fewer still deciphered, an Englishman, Professor Sayce, being hitherto the only one to break ground in the study of them; no affirmations on the subject can safely be made. These difficult texts are inscribed in cuneiform on tablets of burnt clay.

Next, the author proceeds to treat of the Arabs as traders in precious gums and drugs, many of them produced in their own country. It is a pity that apparently these people were not above practising adulteration. Thirteen pages are filled with information gathered from the Bible and Talmud (at the end of the second century A.D.), concerning the pharmacy of the Hebrews. Their precautions against infection and rules against uncleanness—real, not merely ceremonial—are very remarkable. In fact, they appear to be the only people of the ancient world with any clear idea of there being such things as infectious diseases, and of endeavouring to guard against them by isolating the persons attacked. The treatment was by simple herbs as medicine, and attention to hygiene and diet.

Altogether, one would say that for such a book as this under review, more help from specialists was required. The documents in general are exceedingly scanty and require to be very cautiously utilised; also, where it is possible, strict separation should be made between early and late sources of information. But it is to be hoped that the work will arouse in many a profitable interest in the history of their profession, which is, as Berendes points out, the parent stem from which has sprung on the one hand chemistry, and on the other medicine.

DIE HEILPFLANZEN DER VERSCHIEDENEN VÖLKER UND ZEITEN.

By DR. G. DRAGENDORFF. Part 5. Price 6 marks. Stuttgart: F. Enke. 1898.

The fifth and concluding part of this work contains the natural orders Caprifoliaceæ, Adoxaceæ, Valerianaceæ, Dipsaceæ, Cucurbitaceæ, Campanulaceæ, Goodeniaceæ, Styliaceæ and Compositæ, a brief appendix including a few additions to the natural orders Sapindaceæ and Acanthaceæ, and a voluminous index of nearly two hundred pages. It is worthy of note that *Adoxa moschatellina* receives a natural order to itself, although placed after the Caprifoliaceæ, and that Cucurbitaceæ is moved from its usual position near Passifloraceæ and is placed next to Campanulaceæ. In the index the botanical names and vernacular names are not given in separate indices, but together in alphabetical sequence. The copious index will render the work more useful than it could possibly be otherwise in countries where the same arrangement of the natural orders is not followed, and the bibliographical references make it much more valuable than Rosenthal's work.

PHARMACEUTICAL SOCIETY.

EXAMINATIONS IN LONDON.

October, 1898.

MINOR EXAMINATION.

Candidates examined	266
„ failed	200
„ passed ..	66

Bancroft, Albert John Thomas	Magan, Frances
Barker, Thomas Henry	May, Ernest Douglas
Benny, Wallace Frederick	Miller, Edwin Frederick
Bingham, William Arthur	Millidge, Philip Henry
Birkett, Geo. Noel Matthew	Morgan, Richard James
Bishop, John Henry	Morgan, Thomas Alcwyn
Clay, Wm. Joseph Ogle	Morris, William David
Cowley, Harry James	Nursaw, Edward
Crofts, Lionel Gordon	Owen, William Lloyd
Davis, Richard Llewellyn	Pashley, E. F. Cuthbert
Dunn, Percy	Pattison, George
Dunstan, Sydney	Perkins, Francis George
Durbin, Herbert Samuel	Pilcher, Franklin
Edgar, William Ernest	Redman, Stanley Charles
Falconer, Campbell	Rees, Arthur Howell
Fawn, Frank	Ridyard, Clement William
Ford, William	Rix, Henry Grey
Francis, James Bowen	Robertson, Wilfred George
Giles, Frederick	Robson, Harold
Greening, Ernest Harcourt	Simpson, Robert Thorburn
Hall, Walter Hutchinson	Sletcher, Henry George
Hardcastle, Edward	Sloman, Frank
Hart, Walter Richard	Smith, Eliza Mary
Hawkins, Henry George	Steele, Grave Irving
Hogley, Percy	Strachan, John
Hyde, Charles	Walsh, Ernest William
Jenkin, Charles	Wamsley, William Bunting
Jones, David	Watt, Robert John
Keall, John	White, Charles Edwin
Lamplugh, Robert Wright	Willeox, Harriett
Levin, Joseph Elkin	Williams, William John
Lownsborough, Robert E.	Wilman, Gertrude
McKinnell, Donald Forrest	Wilson, Thomas Herbert

FIRST EXAMINATION.

Certificates by approved examining bodies were received from the undermentioned in lieu of the Society's Examination:—

Allkins, Reginald Samson; Tamworth	Hawkey, Edgar; S. Molton
Aston, Spurgeon; Worthing	Ironmonger, Herbert Lovell; Spilsby
Barlow, Francis R.; Oxford	Keany, Thomas Timothy; London
Bell, Albert Edward; Sherborne	Knight, Frederick George; Winchester
Brackenbury, Frank Hayden; Bardney	Lane, Wilfred Charles; Bradford
Cofnan, Joseph; London	Nash, Ernest; Manchester
Cowburn, Joseph Robert; Boston	Nightingale, Herbert R.; Alnwick
Davies, Thomas Benjamin; Edinburgh	Palmer, Charles Ernest; Wingham
Eley, George William; Rugby	Postlethwaite, Richard Geo; Barrow
Evans, Albert David; Bath	Sloccock, Arthur Oliver; Slough
Gould, Christopher C.; S. Godstone	Spencer, Harry Herbert; Barnes
Hackney, Irene Mary; Middlesborough	Trythall, Thomas Arthur; Camborne
Hague, Ernest Harold; Widnes	Weall, Horace Graham; Maidenhead
Hatt, Harold Ernest; Kennington	Wilkins, Wm. Watson; Bournemouth

DONATIONS TO THE LIBRARY AND MUSEUM.

At a meeting of the Library, Museum, School and House Committee, on Wednesday, October 12, the Librarian and Curator presented the following reports of donations:—

To the Library (London).

- University of Edinburgh:—Calendar, 1898.
- University of Wales:—Calendar, 1897.
- University College, Bristol:—Calendar, 1898.
- University College, Liverpool:—Calendar, 1898.

- University of Durham College of Medicine, Newcastle-on-Tyne:—Calendar, 1898.
- Owens College, Manchester:—Calendar, 1898.
- Yorkshire College, Leeds:—Calendar, 1898.
- Dr. Attfield, London:—Chemistry, 17th ed., 1898.
- Mr. E. W. Lucas, London:—Practical Pharmacy, 1898.
- Dr. Jowett, London:—Characters and Methods of Assay of the Official Hypophosphites, etc., 1898.
- M. E. Collin, Paris:—Examen microscopique des farines de blé, 1898.
- Professor L. Planchon, Montpellier:—Indications générales sur la récolte et la conservation des drogues exotiques, 1898.
- Dr. A. Ernst, Caracas:—Farmacopea Venezolana, 1898.
- Mr. W. J. Patey, London:—Manuale del farmacista, del P. E. Alessandri, 2a ed., 1898.
- Mr. H. G. Smith, Sydney:—Notes on Myrticolorin, 1897; On the Saccharine and Astringent Exudations of the "Grey Gum," etc., 1897.
- Mr. J. H. Maiden, Sydney:—Report on the Botanic Gardens and Domains for 1897.
- Mr. F. M. Bailey, Brisbane:—Contributions to the Flora of Queensland; Edible Fruits Indigenous to Queensland; Contributions to the Flora of New Guinea.
- Royal Society of New South Wales:—Journal and Proceedings, vol. 31.
- Philosophical Society of Glasgow:—Proceedings, vol. 29.

To the Library (Edinburgh).

The Editor of the *Chemist and Druggist*, London:—Pharmaceutical formulas, by P. MacEwan, 1898.

Mr. W. Martindale, London:—The Extra Pharmacopoeia, 9th ed., 1898.

Pharmacy Board of Victoria:—Report for 1897.

Royal Societies Club, London:—Foundation and objects, Rules and Bye-laws, List of Members, 1897.

The Director, Central Sanitary Bureau, Home Department, Japan:—Pharmacopoea Japonica, ed. 2, 1891.

To the Museum (London).

Mr. H. E. Matthews:—Forty-eight micro slides illustrating the structure of plants.

Dr. Kerr Cross, British Central Africa:—A large case of specimens of native remedies and a series of specimens of the plants from which they are derived.

Mr. S. Acheson, Belfast:—Specimens of bauxite in three qualities, from the Antrim mine and of the pure alumina derived from it.

Mr. T. Wardleworth, Liverpool:—Specimens in fruit of false Maranham jaborandi.

Mr. M. Bateman:—Living specimen of *Luffa aegyptiaca* in fruit.

To the Herbarium (London).

Commendatore Thos. Hanbury, F.L.S.:—Nineteen specimens of medicinal plants cultivated at La Mortola.

Mr. J. Moss, F.I.C.:—Specimens in fruit of *Rhamnus purshiana* and seedling plants of the same species.

From the Curator:—Cultivated specimens of six medicinal plants.

"FIRST" EXAMINATION QUESTIONS.

October 11, 1898.

ARITHMETIC.

Time allowed—from 12.30 p.m. to 2 p.m.

[The working of these questions, as well as the answers, must be written out in full.]

1. Divide 1431 sq. yd. 2 sq. ft. 72 sq. in. by 72 (Factors).
2. If 25 men can do a piece of work in $13\frac{1}{2}$ days of 10 hours each, in how many days of 9 hours each will 30 men do four times as much?
3. A man devised $\frac{5}{7}$ of his estate to one of his sons, and $\frac{1}{7}$ of the remainder to another, and the rest to his widow. The difference between the sons' legacies was £784. How much did the widow receive?
4. Express $\frac{3}{4}$ of £9 6s. 10 $\frac{1}{2}$ d. + $\frac{1}{2}$ of £32 1s. 8d. as the decimal of £1 10s.
5. By selling 7 yards of linen for 5s. I gain 5 per cent. What shall I gain per cent. by selling the same linen at 9 yards for 7s.?
6. By investing £10,325 in the 2 $\frac{3}{4}$ per cents. I secure an income of £350 a year. At what price do I purchase this stock?

(The following question must be attempted by every candidate.)

7. If a loom produces 1.475 metres of cloth in an hour, find approximately how many yards of the same cloth it would produce in 5 weeks, working 10 hours a day, and 6 days a week?

ENGLISH.

Time allowed—from 3 p.m. to 4.30 p.m.

1. Analyse:—"Aristides, saying that the plan of Themistocles was useful, but not honourable, advised the Athenians not to adopt it."
2. Parse fully:—"I'll speak to it, though hell itself should gape."
3. What consonants are redundant in the English alphabet, and in what respects is our alphabet deficient in consonants?
4. In the following passage supply the necessary capital letters, and put in the stops and the inverted commas where necessary:—i knocked at the door

which was opened by a tall dark woman she was evidently a peasant woman but there was something striking about her appearance it might have been but the troubled hunted look in the great dark eyes can you tell me the way to the castle i asked i walked out into the forest this morning and have lost myself take that path you see there she replied and it will bring you on the high road.

The following question must be attempted by every candidate:—

5. Write a short Composition on *one* of the following subjects:—

- (i.) Recent legislation affecting Vaccination.
- (ii.) The Battle of Omdurman.
- (iii.) Naval Warfare in the time of Nelson and now.
- (iv.) "There's no place like home."

LATIN.

*Time allowed—*from 11 a.m. to 12.30 p.m.

I. For all candidates. Translate into Latin:—

1. The slaves will be seen by their master.
2. Will you give the book to me or to my brother?
3. He said he would come after six months.
4. He shuts the gate that no one may escape.
5. The soldiers, being conquered, sought for peace.

II. Translate into English *either* A (Caesar) *or* B (Virgil).

(Candidates must not attempt both authors).

A.—CAESAR.

1. *Cæsar, primum suo, deinde omnium ex conspectu remotis equis, ut aequato omnium periculo spem fugae tolleret, cohortatus suos, proelium commisit. Milites, e loco superiore pilis missis, facile hostium phalangem perforaverunt. Ea disjecta, gladiis destituti, in eos impetum fecerunt. Gallis magno ad pugnam erat impedimento, quod, pluribus, eorum scutis uno ictu pilorum transfixis et colligatis, quum ferum se inflexisset, neque evellere, neque sinistra impedita, satis commode pugnare poterant; multi ut, diu jactato brachio, praeoptarent scutum manu emittere, et nudo corpore pugnare.*

2. *Ita proelium restitutum est, atque omnes hostes terga verterunt, neque prius fugere destiterunt, quam ad flumen Rhenum milia passuum ex eo loco circiter quinquaginta pervenerunt. Ibi perpauca aut viribus confisi, tranare contenderunt; aut lintribus inventis sibi salutem repererunt.*

Grammatical Questions.

(For those only who take Caesar.)

1. Decline, in the singular, *loco superiore*; and, in the plural, *nudo corpore*. (Passage 1.)
2. Give the third person singular of the indicative perfect and of the subjunctive present, and the infinitive future, of all the verbs in Passage 2.
3. Name *three* prepositions which govern the ablative, and write sentences in illustration.
4. Parse fully.—"*Ea disjecta, gladiis destituti, in eos impetum fecerunt.*" (Passage 1.)

B.—VIRGIL.

1. *Haec ait: et Maia genitum demittit ab alto;
Ut terrae, utque novae pateant Carthaginis arces
Hospitio Teucris; ne fati nescia Dido
Finibus arceret. Volat ille per aëra magnum
Remegio alarum; ac Libyae citus astitit oris.
Et jam jussa facit; ponuntque ferocia Poeni
Corda, volente Deo. In primis regina quietum
Accipit in Teucros animum mentemque benignam.*
2. *Namque, sub ingenti lustrat dum singula templo,
Reginam opperients, dum, quae fortuna sit urbi,
Artificumque manus inter se, operumque laborem,
Miratur, videt Iliacas ex ordine pugnas,
Bellaque jam fama totum vulgata per orbem,
Atridas, Priamumque, et saevum ambobus Achillem.
Constitit; et, lacrimans, Quis jam locus, inquit, A hate,
Quae regio in terris nostri non plena laboris?
En Priamus! Sunt hic etiam sua praemia laudi;
Sunt lacrimae rerum; et mentem mortalia tangunt.
Solve metus; feret haec aliquam tibi fama salutem.*

Grammatical Question.

(For those only who take Virgil.)

1. Decline, in the singular, *novae arces*; and, in the plural, *mentem benignum*. (Passage 1.)
2. Give the third person singular of the indicative perfect and of the subjunctive present, and the infinitive future, of all the verbs in Passage 2.
3. Name *three* prepositions which govern the ablative, and write sentences in illustration.
4. Parse fully:—"Solve metus; feret haec aliquam tibi fama salutem." (Passage 2.)

ANALYTICAL NOTES.

DETECTION OF GELATIN IN CHOCOLATE.—It is possible to add 10 per cent. of water to chocolate which contains 5 per cent. of gelatin without materially altering the consistence of the product. A simple test for the presence of gelatin is therefore valuable. P. Onfroy employs the following method to detect this sophistication:—When the gelatin is present in notable quantities, 5 grammes of the sample are powdered and treated with about 50 C.c. of boiling water, 5 C.c. of 10 per cent. lead acetate solution are added, and the mixture filtered; to the filtrate a few drops of saturated aqueous solution of picric acid are added. If gelatin be present, a distinct precipitate will be obtained. Pure chocolates give no precipitates. When only a small quantity of gelatin has been added, the above method is not available, since the tannin naturally present in the chocolate will prevent the liberation of the gelatin. In this case 10 grammes of the sample are taken and treated with 125 C.c. of hot water, then with 5 to 10 C.c. of 10 per cent. solution of potash and lastly with the lead acetate solution as before. The filtrate from this mixture when neutralised will give the ordinary reactions for gelatin.—*Journ. de Pharm.* [6], viii., 7.

IODINE IN THE THYROID GLAND.—Baumann has made some remarkable investigations showing that considerable difference exists in the weight and iodine contents of the thyroid of various inhabitants of Germany. The following table illustrates the proportion:—

	Weight of the dry Gland.	Iodine in 1 gramme.	Iodine of the whole Gland.
Freiburg	8.2 grammes	0.33 Mg.	2.5 Mg.
Hamburg	4.6 "	0.83 "	3.83 "
Berlin	7.4 "	0.9 "	6.6 "
Silesia	7.2 "	0.50 "	4.0 "
Switzerland	97.6 "	0.916 "	8.23 "

Baumann drew from this the conclusion that a low percentage of iodine is favourable to the formation of goitres, especially as there is an epidemic of goitre in Freiburg, while the north of Germany is practically free from it. The opinion of the author was further strengthened by the success of the iodine treatment on the disease and the observation that goitres are mostly poorer in iodine than ordinary thyroids. With the view of determining if this hypothesis be applicable to all countries, Oswald collected similar statistics in Switzerland, but obtained vastly different results, as will be seen by reference to the above table. It is noteworthy that in those districts in Switzerland where goitres are most prevalent, the amount of iodine was found to be considerably higher and not lower, as was to be expected from the theory advanced by Baumann; the goitres themselves were also found to contain more iodine than ordinary thyroids. Whatever relation may exist in Germany between iodine and epidemic goitre the same inference cannot with safety be drawn for other countries.—*Pharm. Centr.*, xxxviii., 624.

DETERMINATION OF NICOTINE IN TOBACCO.—Rudolf Heferman advocates the following method for determining the nicotine in tobacco:—20 grammes of tobacco in powder is dried at 50 C., then 20 C.c. 6 per cent. alcoholic soda solution added to it, and the mixture shaken violently until the tobacco is evenly moistened, then adding to it, by means of a pipette, 200 C.c. ether, shaking again and leaving it until the ether solution is clear. Fifty C.c. of the clear ethereal solution are decanted into a porcelain dish, and the ether allowed to evaporate. The residue is then treated with water, and the nicotine determined by titration with standard acid, using cochineal as the indicator. Nicotine may also be determined by the following modification of Kissing's method in the ethereal residue by adding to it first a few drops of soda solution and then 10 C.c. of water and distilling it with steam until 400 C.c. have come over and titrating the distillate. To guard against splashing over of the soda solution, it is well to use a splash trap. In tobacco, the author has found from 0.35 per cent. nicotine, in cigars from 0.30 to 1.53 per cent., and in cigarettes, stated to be free from nicotine, 0.8 per cent., and more in the ordinary cigarettes.—*Pharm. Centr.*, xxxix., 523.

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LOYALTY TO THE CRAFT.

No more useful message could be conveyed to those entering upon the path which leads to the practice of pharmacy than that embodied in the address delivered to the students of the Sheffield School of Pharmacy by Mr. J. RYMER YOUNG, on Thursday last, and of all he said on that occasion nothing singles itself out more for attention than his remarks about the duty each student—and, by inference, each registered chemist—owes to his craft. The severe strictures passed by Mr. YOUNG upon the conduct of registered chemists who, for a momentary advantage, help unqualified joint-stock companies to ruin the practice of pharmacy, were aimed at an evil that is exceptionally serious, and the remedy applied must be severe if it is to be efficacious. As Mr. YOUNG pointedly remarked, the matter is and will continue to be largely in the hands of qualified assistants, who can do much to remove one of the most serious difficulties that pharmacy, as a craft, has ever had to face. If they will only decide to be firm in declining all offers made to them by the unqualified proprietors of joint-stock drug stores, they and every registered chemist in business on his own account, will at once be placed in a better position, with regard to ability to increase salaries, curtail hours, and in other ways improve the position—now too often an unsatisfactory one—of assistants.

But this is only one way—though doubtless the most important and immediately useful—in which loyalty to the craft can be made to reveal itself in a generally advantageous manner. In the first place the registered chemist, in business on his own account, has power to show such loyalty in a variety of ways. If he will refuse to take any youth as pupil who has not passed a recognised preliminary examination, if he declines also to engage anyone, as assistant, who has not served, with a registered chemist in business on his own account, a regular apprenticeship or its equivalent, he will have done much to check the influx of the unfit into the ranks of pharmacy and to “scotch the gigantic injustice of unqualified joint-stock companies trading as chemists and druggists.” He may well go further,—by allowing sufficient time for study and insisting that

it shall be properly utilised for that purpose—thus ensuring that his pupils and junior assistants work steadily at the subjects in which they will subsequently be called upon to show themselves proficient. Moreover, every pupil at the expiration of the term for which he is engaged, should be at least in a fair way to become a safe and competent dispenser, with a sound knowledge of British pharmacy law and all the restrictions that affect a registered chemist in the conduct of his daily business. A sound business training, a fair basis of scientific and technical knowledge and a clear apprehension of the prospect before him, should be secured to every embryo pharmacist. Nothing could be better calculated to prevent him taking such false steps as are now only too frequently taken by those who see nothing but slight immediate benefits and take no heed for the future. The necessity of thorough organisation should also be inculcated, as the next best means of self-defence after securing individual qualification. The man who fits himself to deal with every possible eventuality in the exercise of his chosen life business is probably as well protected as—acting alone—it is possible for any individual to be; but by joining forces with others who are similarly situated he may improve his position enormously, the extent of the protection then enjoyed being only limited by the number who combine together.

Pupils and assistants should, therefore, be urged to join local associations from the very outset of their career, and it ought not to be difficult to convince them that it is also a duty they owe both to themselves and to their craft to join the chief organisation—the Pharmaceutical Society. In addition, loyalty to the craft requires that pupils and assistants should second the efforts of their employers to improve the status of pharmacists in every possible way. They should regard their education—both special and general—as ever incomplete, devote careful attention to the causes which tell against pharmaceutical progress, and hold themselves morally bound to do whatever lies in their power to root out the insidious evil which is steadily undermining the practice of pharmacy as established on the basis of individual qualification. Those assistants who are already registered as chemists and druggists can, as already stated, do more than anyone else to check that evil, and the manner in which Mr. YOUNG has so clearly put the matter before them should help them to arrive at a correct estimate of the present position. The company-pharmacy difficulty must be fairly faced, in the interest of the public as well as chemists and druggists, and it is a cause for congratulation that Mr. YOUNG should have spoken without any trace of uncertainty regarding the problem of the day. Nothing of greater moment on the subject has recently been uttered, and the fact that an active member of the Council of the Pharmaceutical Society has expressed himself so freely in the matter should induce registered chemists to take heart and not despair of the future of their craft. It has already weathered many storms, and if supported by the loyalty of all who may reasonably be expected to lend their support, it will outlast this and other existing difficulties, as well as many that may doubtless be expected to present themselves in the future. But everything in the shape of improvement will be dependent on loyal and united action, the advisability of which should be impressed upon pupils from their earliest years of service, whilst principals ought continually to enforce in practice what they inculcate by precept.

ANNOTATIONS.

SIR J. CRICHTON BROWNE'S ADDRESS has not only created a sensation in the lay press but his remarks about the possibility of criminal poisoning being effected by experts, without serious risk of detection, has distressed Mr. A. Braxton Hicks, who is well-known as one of the London coroners. Speaking at an inquest a few days ago, he said some people in authority in the criminal law had mentioned the matter to him, expressing their surprise, and he could not help calling attention publicly to the remarks made by Sir J. Crichton Browne in the course of his address to the Pharmaceutical Society. It was a public function at which the Press was admitted, and therefore the lecturer knew that a part at all events of his observations would be reported. Yet he alluded to the fact that there were organic poisons well known to medical men, which could be used with impunity without the slightest fear of detection, though they were rarely or never used illegitimately. A connoisseur in poisoning could, it was suggested, by keeping his own microbes, slaughter hundreds of persons without the slightest fear of his crime coming to light. Mr. Braxton Hicks thought Dr. Crichton Browne had gone out of his way to point out what people should do if they wished to poison others, adding that while coroners throughout England were endeavouring as much as possible to prevent poisons being used without detection, the address referred to was not likely to further the ends of justice. But in these days of enlightenment the more reasonable assumption is that the ostrich policy of concealment entails greater risk than intelligent appreciation of existing danger and that, no doubt, was the view taken by Sir James Crichton Browne in his address.

THE AUTHORITIES OF UNIVERSITY COLLEGE, LIVERPOOL, are to be congratulated on the opening of the Thompson-Yates Laboratories of Physiology and Pathology last Saturday. Those laboratories are the gift of the Rev. S. A. Thompson-Yates, and are estimated to have cost, with their equipment, £28,000. They include a class-room for practical morbid histology, a pathological museum, a room for bacteriology, a constant temperature room, and rooms for pathological chemistry and photography. On the first floor is a large theatre, which will be used in winter for physiology and in summer for pathology. There is also a large room for physiological chemistry, a balance room, preparation, research, and electrical rooms. On the second floor is a practical histology room, fitted to accommodate eighty students. Each worker has his own electric light and gas and water supplies. There is a small aquarium in this room, and on the same floor are an animal room, a preparation room, and combustion and photographic rooms. The basement contains a cold storage room, kept at a constant low temperature by the ammonia process, a laboratory for carrying on the work of the Clinical Investigation Society, and rooms for other experimental work. The students' common room is fitted up so that it can be used for the meetings of the Students' Debating Society. There is also a room for electric meters, electricity being provided throughout the building both for lighting and for motor purposes. Ample facilities are provided for photography in all the departments, that being a notable feature of the new laboratories, and provision is made in all the principal class-rooms for lantern demonstrations. The building is heated throughout with hot air, and appears to be completely fitted in every possible way.

LORD LISTER, who formally opened the new laboratories, after the degree of Doctor of Science of the Victoria University had been conferred upon him, referred to the opposition that exists to the practice of vivisection. He assured his hearers that the sacrifice

of animal life by science is absolutely nothing compared with that required by us for our daily sustenance, and that, owing to the use of anaesthetics, the amount of pain inflicted is insignificant. If those persons, he said, for whose humane feelings he had every respect, knew the truth, they would commend and not condemn. The *Standard*, in quoting those words approvingly, remarks that the opposition to what is called "vivisection" is largely based on a misconception, and most of those who are inclined to join in the outcry against it would entirely alter their views if they knew the truth. Some there are, no doubt, who do not want to know the truth, and prefer to cling to prejudice. But they are the fanatics, a class of persons afflicted by a sentimental extravagance which renders them almost incapable of reason and unwilling to examine facts. To their ears argument is addressed in vain, and they will only abuse Lord Lister for telling them the truth. Others, less prejudiced, but still uneasy on the subject, will listen with respect to a man whose humanity none can doubt, when he tells them that vivisection is not the awful thing they had supposed. "That utterly indefensible cruelties have been perpetrated in the name of science cannot be denied, and possibly they are still carried on in some countries. But that is not the case here, where a sound middle course has been taken and vivisection permitted under due control. Of the great benefits that have been conferred on man and beast by its instrumentality during recent years there is no need to speak."

AN EXPERIMENT IN EDUCATION, which is being conducted under the patronage of the Countess of Warwick, at Bigod's Hall, near Dunmow, Essex, has for its object the endeavour to stop, as far as Essex is concerned, the woeful depopulation of the country-side that is going on in so many districts throughout England. Boys and girls are taught together in this school, and the backbone of the curriculum is science, for science, it is contended, will make pupils experimenters, is liberal and democratic, presents new points of view, and by bringing people into touch with the spirit of the age, which is essentially material, gives them something to think about, something to sharpen their wits upon, and makes a cornfield more full of mysteries than a cotton factory. Science comes first in the course of instruction, a little later in the educational career, practice—that is to say, applied science—will follow. Systematic courses in chemistry, physics, botany, mathematics, and drawing have been arranged, and no pupils under the Sixth Standard are admitted. After a two years' course in these subjects, special attention will be given to agriculture and allied subjects. Practical instruction in farming, bee-keeping, poultry rearing, horticulture, fruit-growing, hot-house work, and cooking will be provided, and sports of all kinds will be arranged.

THE NEW LONDON UNIVERSITY SCHEME was the subject of an address delivered by Professor W. A. S. Hewins, at the London School of Economics and Political Science, on October 7. He explained that although the Act dealing with the matter had become law, it did not create a teaching university, but merely provided the opportunity for so doing. The Act placed powers in the hands of a number of Commissioners, such as had never been entrusted to any combination of persons before in relation to the education of the country. The new University, when established, would affect every educational institution throughout Great Britain, including the existing Universities, and would call into operation a system of sound secondary education, revolutionising almost everyone's ideas with regard to technical instruction. By its own momentum, he thought, the London University would become the greatest institution of its kind in the world. Other cities, both Continental and provincial, possessed excellent libraries, etc., in

which a large number of students gathered, but there was no city of such vast extent, or which contained a combination of all those advantages in such a degree, as London. The new University would become both an imperial and an international institution, and if all persons interested would only sink their petty differences and make some sacrifice, the scheme would be important, not only in relation to the educational system of the country, but with regard to the whole political and social future. The English people, it was remarked, suffer from a want of imagination, one reason for that being the lack of a system of university education which touched the greater part of the life of the people. Both at Cambridge and Oxford an ancient system of education was adhered to, but it was not an ideal one, such as that of the proposed teaching university of London might well become.

THE FOOD ADULTERATION LAWS were under consideration at a conference of representative retail grocers from all parts of the country, held at the Agricultural Hall, Islington, this week. The solicitor to the Federation introduced the subject, dealing specially with the proposals of the Government as embodied in the Bill introduced last Session by Mr. Chaplin. That Bill, he said, while it contained some useful proposals, would, if passed, have prejudiced the chances of getting the whole subject of food adulteration effectively dealt with. It was only too evident, he thought, that the Bill was introduced for the purpose of shelving the matter. The question of amending the Sale of Food and Drugs Acts was in no sense a party one, and, possibly, it was for that very reason that it was difficult to induce any Government to deal with it comprehensively. The fact which should be most strongly impressed upon the Legislature was that amendments of the present law were required by all sections of the community interested in the operation of the Acts. The retail trade was not seeking to minimise or check the operation of admittedly useful and necessary legislation, but they desired to strengthen the existing law and to ensure its prompt and effective operation against frauds. Mr. Kearley, M.P., who also spoke, moved:—"That this conference is of opinion that legislation on the subject of the adulteration of food products is urgently required, but that no legislation will be satisfactory unless it is comprehensive in character and includes the main recommendations of the Select Committee on this subject, and that a copy of this resolution be sent to the President of the Local Government Board." Mr. Jarvis, of Birmingham, seconded the motion, and complained that, in spite of the repeated assurances which Mr. Chaplin had given the trade that their representations would have proper consideration, they had been absolutely ignored. After a speech by Mr. R. Bannister, in which he pointed out that it was impossible to fix one standard of purity for food products which should be equally applicable to all parts of the country, the resolution was unanimously adopted.

THE TRIALS OF A PARLIAMENTARY CANDIDATE are great, as Mr. Gwilym Evans, J.P., a former member of the Council of the Pharmaceutical Society has found out. He was the selected candidate in the Liberal interest for the Carmarthen and Llanelly Boroughs, but has been so pestered by exacting electors that he has decided to resign his candidature, preferring a private and unfettered position in the Liberal party. In formally announcing his resignation, he dwelt at length on the undue impositions of an impoverished electorate, and said though he was not blind to the fact that there were certain obligations attached to and sacrifices to be made by Parliamentary candidates, he for one was not prepared to submit to the various demands made upon him. Men had called at his house practically demanding work, and if he was unable to

find some employment for them he was told "the election would some day come round, and then they would remember him." Others came, asking for subscriptions for every imaginary thing, and persons in temporary difficulties, in the small as well as the large way, sought assistance from the little he had been fortunate enough to make for himself. No candidate could satisfy all those applications, and he was not going to be such a fool as to part with what little private means he had for the benefit of anybody. Mr. Evans said he had also been attacked in an unreasonable manner by a local Radical paper, and though he had not taken action in the matter, he was not disposed to refrain from protecting himself in future.

THE ROYAL PHOTOGRAPHIC SOCIETY held its annual meeting this week, and the Earl of Crawford, who, as President, occupied the chair, delivered a short address, in the course of which he said that for some years past he had been very anxious that Her Majesty's Government should set up an establishment for the service of the public museums, which should be primarily devoted to photography. Faithful reproductions of what was rare and beautiful could thus, he thought, be spread widely over the country, and what was now inaccessible save to a few could then be found in all parts of the land. Lord Crawford's connection with the British Museum has rendered him familiar with this want, for requests are continually being sent in there for permission to photograph objects. The suggested establishment should, he urged, be attached to the British Museum, and he is convinced that a year's experience would lead the Government to extend its scope so that it would serve the wants of other and equally important collections. The South Kensington Museum has already recognised the importance of such work, and dealt with the want in a limited way, and if the Government were to set up the required establishment it would, within a very short time, be self-supporting. As proof of this it is only necessary to note what has been done at Berlin and Munich; if similar action were to be taken by the British Government, in due course, the cause of education would be greatly advanced.

THE BANQUET OF THE CHEMICAL SOCIETY to those of its past presidents who have completed fifty years' fellowship of the Society, which was postponed last June owing to the lamented death of the senior past president, Lord Playfair, has now been arranged to take place on Friday, November 11, at the Hôtel Métropole. The past presidents who will then be entertained are:—Sir J. H. Gilbert, F.R.S.; Sir Edward Frankland, F.R.S.; Professor Odling, F.R.S.; Sir F. A. Abel, F.R.S.; Dr. A. W. Williamson, F.R.S.; and Dr. J. H. Gladstone, F.R.S.

A STUDENTSHIP IN CHEMISTRY of the value of thirty pounds per annum has been offered by the directors of Nobel's Explosives Company, Limited. It will be awarded annually to a student in the chemical laboratory of the Glasgow and West of Scotland Technical College, who has passed through the usual course of training in that laboratory and, in the opinion of the professor of chemistry for the time being, is qualified to prosecute research. The holder of the studentship must engage in research work in the chemical laboratory of the Technical College, under the direction of the professor of chemistry for the period of one academical year, and the prize may be withheld in any year if there is at that time no student in the chemical laboratory with the necessary qualifications. In accepting the gift on the above terms, the governors of the College have resolved to grant a free studentship in their laboratory for one year to the Nobel Company's prizeman, thus raising the money value of the prize to about fifty pounds.

PHARMACEUTICAL SOCIETY OF IRELAND.

MEETING OF THE COUNCIL.

The monthly meeting of the Council, being the first after the recent elections, was held on Wednesday, October 5, at the Society's House, 67, Lower Mount Street, Dublin, at three o'clock. There were present: Messrs. R. J. Downes (in the chair), Beggs, W. F. Wells, jun., Porter, Bernard, Kelly, Thomas, O'Sullivan (Waterford), Simpson, Connor (Newry), Brittain, Michie, Dr. Walsh and Professor Tichborne.—The CHAIRMAN welcomed the new members of Council, Messrs. Brittain and Michie, who returned thanks.—Mr. WELLS, at the request of the Chairman, reported the results of the recent prosecutions in Belfast. On the first day there were not witnesses enough in attendance to secure convictions, and the magistrate first decided a case against them, and after a couple of hours sent word to their solicitor that he had withdrawn that decision and would give his decision on a subsequent day. On that day their solicitor had gone on his holidays and left another gentleman in charge, who asked for an adjournment for three weeks, but the Court would not grant it, and dismissed the case with costs against the Society. On a subsequent day they had the services of a new solicitor (Mr. Donnelly) and of a splendid counsel (Mr. McGrath), both of whom did their work well. The first case was against the Ulster Chemists, Limited, and the Society's inspector swore that when he went into the shop there was no one in it but a young man, and that he left a prescription with him, went away, and called again in three-quarters of an hour and got the prescription. The young man said he was the manager, and that he could personally fill the prescription. No witnesses were put up on the other side, and in that case a penalty of £5 was imposed for selling the prescription. It was understood that a contention to have been raised for the defence was, that the prescription was sent away to another establishment to be compounded. The next case was against a Mr. Hogg, a registered chemist and druggist, for unlawfully keeping open shop. It was sought to show that there was a shop within a shop. Young Mr. Hogg gave his evidence very fairly, saying that the shop belonged to his father who paid the rent and received half the profits. The Bench convicted with reluctance and imposed a fine of £5. The next case was against an unqualified assistant for making up a prescription and in it also they obtained a conviction. So that he thought they might be very well satisfied with the work that had been done. He thought the thanks of the Council were due to Mr. Montgomery, who took an immense amount of trouble in connection with those prosecutions.—The CHAIRMAN: I think we should pass votes of thanks not only to Mr. Montgomery but also to Mr. Wells, who left his business and went to Belfast at considerable inconvenience. Mr. Montgomery deserves our thanks for the able way in which he looks after our interests in Belfast. We know that his duty in that respect is not an enviable one to have to perform, and we are exceedingly indebted to him for exerting himself as he does in the matter. I move that our thanks be given to both Mr. Montgomery and Mr. Wells.—Mr. BEGGS said he had great pleasure in seconding the motion, and it was put and unanimously assented to.

Election of Officers.

Mr. WELLS said he would take upon himself the privilege of proposing that their friend Mr. Downes should be re-elected President. He was sure it was not necessary to say a word in order to ensure that this motion should be carried unanimously. It would be admitted that the work of the Society had been well done during the past year, and they were also aware that there had been a tremendous amount of unusual work during that period. Mr. Downes had done his work in a manner that they were all proud of. He had done what he could to further their interests in every way, and if they should not get what they were looking for it would not be through any want of energy or effort on his part.—Mr. BEGGS said he had great pleasure in seconding this nomination, and was sure he need add nothing to what Mr. Wells had said. The President's work had been so ably done that nothing had been left for the Vice President to do.—No other gentleman being proposed, Mr. Wells's motion was carried unanimously.—The PRESIDENT said he deemed it a great honour to have been permitted to fill the office, and a still higher one to be re-elected to it. He could hardly admit that the praise which had been given to him during the last three days was deserved. He had, however, done his best, and he would continue

to do so whilst he filled the chair.—The PRESIDENT then moved that Mr. Beggs be re-elected Vice-President. Mr. Beggs had modestly told them that he had been left nothing to do during the past year, but that was not so. He (Mr. Downes) was the first President of the Society who had said that the Vice-President should work; and he accordingly allocated to Mr. Beggs a share of the committees to take charge of, and he undertook the work of those committees and did it satisfactorily. He had also assisted the Society in other ways.—Mr. PORTER said he had very much pleasure in seconding this motion. He had worked on a great many occasions with Mr. Beggs and could testify as to his anxiety for the welfare of the Society.—The motion having passed unanimously, the VICE-PRESIDENT said he appreciated the honour of re-election very sincerely. He had no doubt that he should be able to discharge the duties as well as he did last year, because the President gave him very little to do. What he did, however, was done as a labour of love and with the desire to relieve the President from too constant attendance at the rooms of the Society. He need hardly add that anything that he should be able to do during the forthcoming year to advance the Society would be a pleasure to him.—The VICE-PRESIDENT then moved that Mr. George H. Grindley be re-elected Honorary Treasurer. His reports had been satisfactory in every respect, and from the amount of trouble he took with them he (Mr. Beggs) was certain that they would be wise in re-appointing him.—Mr. CONNOR seconded, and Professor TICHBORNE supported the motion, which was unanimously agreed to.—On the motion of the VICE-PRESIDENT, seconded by Mr. O'SULLIVAN, Mr. Robert Simpson and Dr. Walsh were re-appointed Honorary Auditors.—Dr. WALSH, in returning thanks, said he had had very little trouble in consequence of the excellent way in which the Registrar, Mr. Ferrall, had everything ready for the Auditors.

Committees.

The Committees were then constituted as follows:—The Law Committee of last year was re-elected with the addition of Messrs. Tate and Brittain.—The Committee to Inspect Candidates' Certificates was re-elected.—House and General Purposes Committee: Messrs. Bernard, Grindley, Porter, Ryan, Professor Tichborne, Connor and Michie.—School Committee: Messrs. Porter, Professor Tichborne, Turkington, Dr. Walsh, Michie and Connor.—Declaration Committee: Messrs. Grindley, Wells, Montgomery, Turkington, and T. O'Sullivan.—A letter from Dr. Ninian Falkiner, asking for certain drugs, chemicals and apparatus in connection with the new Pharmacopœia for the use of the School, was referred to the School Committee, with a request that they would confer with Dr. Falkiner on the subject, and afterwards report to the Council.—A letter was read from Mr. R. Watson, associate druggist, intimating that it was not his intention to renew his subscription to the Society.—Mr. WELLS: I am sorry for this. Mr. Watson is one of the good old chemists and druggists who has always taken an interest in the Society, and we should ask him to reconsider his decision. I move that that be done.—Mr. SIMPSON seconded the motion.—Mr. WELLS: I asked him at one time to allow me to nominate him for a seat on the Council, and he said he would if we could not get any other druggist, but that he would rather not.—The motion was unanimously agreed to.

Gold and Silver Medals.

A report of the School Committee related to the above subject. At the Licence examination the best answering for the year was that of Mr. Archibald Clarke Ross, whose total marks amounted to 239 out of a possible 300, his separate marks in each of the three divisional subjects being respectively 90, 77, and 72. This was one mark short of the standard for gold medal, and the Committee awarded him the silver medal. They at the same time recommended that a second silver medal should be awarded to the next best answerer, Mr. Mathew Campbell, whose total marks amounted to 237, his separate marks being 80, 91, and 66 respectively.—After a short discussion, in the course of which stress was laid on the fact that Mr. Ross's total was only a single mark short of the gold medal standard, it was resolved, on the motion of Mr. O'SULLIVAN, seconded by Mr. BERNARD, that Mr. Ross be presented with a gold medal and Mr. Campbell with a silver medal, the gold medal to be engraved, "For highest answering," and the silver one "For high answering."—Mr. BERNARD moved that a complete index of the various towns and cities in Ireland, and the names and addresses of the pharmaceutical chemists, licentiates of the Apothecaries' Hall, chemists and druggists, and registered druggists, who keep open shop for the sale of

poisons therein, be prepared and kept written up to date for reference. The Council were supposed to superintend the sale of poisons and the compounding of prescriptions, and no establishment should be open without its knowledge. If the Council agreed to the principle of this proposal, he desired that it should be referred to a committee to work out details.—Mr. O'SULLIVAN seconded the motion, which, after a short discussion, was agreed to.—On the motion of the HON. TREASURER, seconded by Mr. WELLS, the following gentlemen were elected members of the Society: Messrs. James B. Bolger (Maryborough), John Copithorne (Skibbereen), John C. C. Payne (Belfast), Hamilton Rutherford (Ballybag), and William J. Savage (Newry).—On the motion of Mr. WELLS, seconded by Mr. KELLY, Messrs. D. Bennett (Cork), and J. Allen, of Lisburn, were nominated for membership.—The Council then adjourned.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY.

INAUGURAL MEETING.

The fourteenth session of the Sheffield School of Pharmacy was inaugurated on Thursday, October 13, at the Masonic Hall. There was a good attendance of pharmacists and friends of the students to witness the presentation of awards to the successful students and to hear the address of Mr. J. Rymer Young, of Warrington.—Mr. G. SQUIRE, the President, occupied the chair.—Mr. T. S. RHODEN, the School Secretary, presented the following report of the thirteenth session:—In presenting the report of the Sheffield School of Pharmacy for the thirteenth session, extending from October 4, 1897, to the end of April, 1898, it is very satisfactory to have the pleasure to announce that it was a most successful session. The number of students who attended it was well maintained. Classes were held in the following subjects:—Theoretical chemistry and physics, practical chemistry, botany, and materia medica. The lecturers report that the attendance, diligence and interest of the students have been well maintained, and that progress was made is evidenced by the excellent results of the examinations. It is satisfactory to note that the bronze medal offered by the Council of the Pharmaceutical Society of Great Britain for a herbarium competition, open to the United Kingdom, Channel Islands, and the Isle of Man, was awarded to a student at the Sheffield School. The prize winners are as follows:—

THEORETICAL CHEMISTRY AND PHYSICS.—1st, T. T. Cocking; 2nd, J. W. P. x.
PRACTICAL CHEMISTRY.—First, W. Coulshed; second, W. Stather.
BOTANY.—First, Tom Hardy; second, W. Coulshed.
MATERIA MEDICA.—First, W. Coulshed; second, Edwin Richards.
NEWSHOLME HERBARIUM PRIZE.—T. T. Cocking.

The PRESIDENT then congratulated the prize winners and welcomed the new students, at the same time giving them a few words of encouragement to work with a will, as so much depended upon early study. He regarded the prospects of the School as exceedingly bright, and was confident that the new arrangements for carrying it on would prove of benefit and advantage to the public. The scheme they had adopted was in the nature of a preliminary step. He acknowledged the encouragement which they had received from the authorities of Sheffield University College, and said the Committee hoped to arrange for a definite system of education to comprise a three years, curriculum. It was to the universities they must look for education in the future, and he personally looked forward to the time when the classes for pharmaceutical students at the Sheffield University College, would take the first position in the country.—The PRESIDENT then distributed the prizes, after which he called upon Mr. Rymer Young to give the

Inaugural Sessional Address.

At the conclusion of the address, which is printed in full on page 419, *et. seq.* Mr. Rymer Young was heartily thanked for his address, on the motion of Mr. S. T. RHODEN, seconded by Mr. J. AUSTEN.

ANNUAL DINNER.

In the evening the annual dinner of the Sheffield Pharmaceutical and Chemical Society was held in the same hall.—Mr. SQUIRE

again presided, and the public life of Sheffield was well represented among the numerous guests. The toast-list was as follows:—

Proposed by		Responded to by
The President.	"The Queen."	
Mr. A. R. Fox.	{ "The Houses of Parli- ment."	Ald. Langley, M.P.
Mr. A. Eberlin (Hon. Sec. Nottingham and Notts. Chemists' Association).	{ "Sheffield Pharmaceutical and Chemical Society."	The President.
Mr. J. M. Furness.	{ "Pharmaceut'cal Society of Great Britain."	Mr. G. T. W. Newsholme. Mr. Rymer Young.
Mr. J. F. Eardley.	{ "The Medical Profession."	Dr. Robertson, B.Sc. Dr. Geo. Wilkinson, B.A., F.R.C.S.
Mr. A. H. Allen.	{ "Sheffield University Col- lege and Learned Societies."	Dr. Hicks (Principal, Sheffield University Col- lege).
Mr. W. Ward, F.C.S.	"The Visitors."	Mr. J. Humphrey.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

PRESENTATION OF PRIZES.

The presentation of Medals, Prizes, etc., and the Inaugural Address by Deputy Inspector-General F. Browne, took place on Tuesday, October 11.—The President, Mr. Jas. Cocks, presided, and there was a large attendance.—Dr. BROWNE, in presenting the prizes, congratulated the students of the Association on the success which they had obtained; he thought that a large amount of the success was due to the energy which had been displayed by the teachers. Whilst congratulating those students who had obtained prizes, he would say a word of encouragement to those who had been unsuccessful. He regretted that the medical profession of the present day were accustoming themselves to rely upon patent medicines, etc., thus ignoring the chemist. He thought that the two professions (medical and pharmaceutical) should run together in harmony working mutually together for each other's good. The prizes were then presented to the following successful candidates:—

Prizes from the Pharmaceutical Society.

ADVANCED PRACTICAL CHEMISTRY.—Mr. H. M. Morgan (Silver Medal and Books).

HERBARIUM PRIZES (Pharmaceutical Society).—Mr. W. Hellyer (Silver Medal); Mr. H. J. Reynolds (Certificate).

Prizes Presented by the Association.

Mr. W. Hellyer and Mr. H. J. Reynolds (books, value 80s., in recognition of winning the Medal and Certificate of the Pharmaceutical Society).

BOTANY.—1. Mr. H. J. Reynolds; 2. Mr. H. Vibert. Juniors: 1. Mr. W. Pickard; 2. Mr. J. E. Poad.

LOCAL HERBARIUM COMPETITION.—Mr. W. Pickard.

Mr. C. J. PARK remarked that there had been a severe competition for the Pharmaceutical Society's herbaria prizes this year, and it had afforded him the greatest pleasure to see Plymouth students so well represented on the prize list of the Society.—Mr. C. BREEZE proposed and Mr. MORGAN seconded, a hearty vote of thanks to Dr. Browne.—Mr. J. R. JOHNSON announced that classes in pharmacy, materia medica, and pharmaceutical chemistry would be started on the following week. The Committee had not yet been able to come to a suitable agreement with the technical schools, but he hoped a large number would avail themselves of the special classes to be held at the rooms. Votes of thanks to the Chairman and Mr. C. A. Reade concluded the meeting.

ANNUAL MEETING.

The annual business meeting of the above Association was held at the rooms on Wednesday last, the 12th inst., at 2.30 p.m. The PRESIDENT, Mr. Jas. Cocks, occupied the chair, there being a good attendance.—The SECRETARY, Mr. C. T. Weary, read the annual report of the Committee, which was considered highly satisfactory. The social part of the year included the annual ball, smoking concert, and outing, from each of which functions a substantial balance had been handed over to the funds of the Association. Lectures had been delivered to the Junior Section by Dr. Cheyne Wilson, Messrs. J. D. Turney, O. A. Reade, and H. P. Hearder. The following gifts have been presented to the Association: Valuable books for the Library from Mr. Lambie, lantern slides by an Honorary Member, an excellent optical lantern by Mr. Jas. Maurice. The invitation from the chemists of this Association to the British Pharmaceutical Conference to hold its

session in Plymouth in 1899 was heartily accepted. The President, Mr. Jas. Cocks, has already obtained promises of £45 towards a guarantee fund. The following officers have been appointed on the executive of the Conference:—

CHAIRMAN.—Mr. C. J. Park.
LOCAL SECRETARY.—Mr. J. D. Turney.
LOCAL MEMBER OF THE EXECUTIVE.—Mr. G. Breeze, J.P.
AUDITOR.—Mr. F. Maitland.

Three of the £1 shares in furnishing the rooms have been paid off during the past year.

The TREASURER (Mr. Condy U'Ren), reported the highly satisfactory balance in hand of £7 13s. 9d.

Election of Officers.

The Report having been unanimously adopted, the following officers were elected for the ensuing year:—

President: C. J. Park.
Vice-President: Plymouth, James Maurice; Devonport, C. T. Weary; Stonehouse and District, O. A. Reade.
Committee: Plymouth, W. Condy U'Ren, R. F. Roper, J. Harvey Bailey; Devonport, H. D. Davey, Martin Johnson; Stonehouse, F. Maitland. Junior Section: H. M. Morgan, W. Reynolds (Secretary).
Hon. Treasurer: W. H. Woods.
Hon. Secretary: George Breeze.
Auditors: H. P. Header, W. H. Austin.
Past Chairman: James Cocks.

The Report of the Educational Committee

was read by Mr. J. R. Johnson (Hon. Sec.).

From an educational point of view the two past years may claim to have been most successful. Two junior members (Messrs. Hellyer and Reynolds) have been successful in gaining the Silver Medal and Certificate with Honour, awarded for the best herbaria collected in Great Britain by the Pharmaceutical Society. In appreciation of this most satisfactory result Messrs. J. Cocks, J. Maurice, H. Woods, and P. A. Kelly are presenting further prizes to the two young gentlemen, for the honour they themselves have gained, and, through them, the Association. The usual botany course had been again conducted by Mr. Reade during the summer, and comprised weekly evening classes and monthly rambles. The number of students who attended was 12, and the average attendance 11. Mr. Reade reported that among the rarer plants of the district found by members of the class during the summer were *Borago officinalis*, L., *Spiranthus autumnalis*, Rich., *Verbascum nigrum*, L., *Verbascum thapso-nigrum*, *Gymnadenia conopsea*, Br., *Gnaphalium sylvaticum*, *Nasturtium sylvestris*, Br., and the white-flowered *Digitalis purpurea*. An examination in botany was held on September 28, Messrs. J. Turney and O. A. Reade being examiners.

RESULTS.

SENIORS.—H. J. Reynolds, first; H. Vibert, second.
JUNIORS.—W. Pickard, first; J. E. Poad, second.

Herbarium Competition.

In the herbarium competition Mr. Pickard's was the only collection sent in. The plants were examined by Mr. E. M. Holmes, F.L.S., who writes as follows:—

The collection submitted to me shows evidence of very careful and painstaking work, very unusual with a young beginner, and gives promise of even better work in future when experience has shown possibilities of improvement in detail. If the gentleman bears in mind that all work should be of use to others, and that work into which forethought enters is worth a great deal more than work mechanically done, he will, I think, be proud of and take pleasure in his work in the future, even more than he may do in the work now before me.

(Signed) E. M. HOLMES.

Trade Section.

The HON. SECRETARY (Mr. F. Roper), reported that the trade has been largely used during the past year as a means of supplying members with goods in small quantities on best wholesale terms. A few proprietary articles have been added since the last report. Negotiations are now pending with regard to Kay's essence, Scott's emulsion, Mellin's food, etc., with a view to their being included in the scheme.

The Weekly Classes.

It was explained by Mr. JOHNSON that among other difficulties it had been found impossible to secure a sufficient number of students for the classes at the fees required by the Technical Schools, and therefore the project had to be reluctantly abandoned. It was therefore decided to continue weekly classes in pharmacy and materia medica, conducted by Messrs. O. A. Reade and J. R. Johnson respectively. B. P. chemistry conducted by Mr. H. M. Morgan at a fee of 10s. per student per class, the teachers to

retain two-thirds of the fees and one-third to be handed to the Treasurer of the Association. A vote of thanks was proposed by Mr. J. COCKS, seconded by Mr. KELLY, to Messrs. Reade and Johnson for their kindness in conducting the classes during the past year, from which such excellent results had been obtained. A hearty vote of thanks was accorded to the retiring officers for their services during their year of office. Several other questions were discussed, including the election of Local Secretaries of the Pharmaceutical Society.

THE ANNUAL DINNER.

The annual dinner of the Association was held at Routly's Farley Hotel, Plymouth, on Wednesday, October 12. Mr. C. J. PARK (President), occupied the chair. Those present including J. C. C. Payne, J.P. (President, British Pharmaceutical Conference), J. Cocks, W. H. Woods, O. A. Reade, C. T. Weary, G. Breeze, J. Maurice, J. R. Johnson, R.N., J. B. Swainson, H. D. Davey, A. D. Breeze, J. A. Lambie, H. J. Bailey, R. D. Doble (Tavistock), J. D. Turney, P. A. Kelly, S. A. Perkins, M. Johnson, H. P. Header, R. F. Roper, Dr. Cheyne Wilson, Dr. Burns Browne, F. Maitland, F. W. Hunt, T. Ginn, J. Barge, F. Luxon (Townsend and Co.), Dalgleish (Ford, Shapland and Co.), W. H. Pote (Silverlock and Co.), etc.—Letters of apology were received from Messrs. Kinton, Bond, Downing (Launceston), Matthew, Netting, Gadd (Exeter), Green, Richard Bembridge (Registrar of the Pharmaceutical Society), Walter Hills (President of the Pharmaceutical Society), and E. M. Holmes.—Mr. BREEZE, in proposing

The Pharmaceutical Society of Great Britain,

said it had passed through many vicissitudes. In 1868 great opposition by many chemists and druggists had limited the power of the Society at the present time. Latterly the Council had shown anxiety to identify itself with the trade interests of the country. During the past year it had succeeded in successfully opposing the Poisons Bill, also successfully introducing the Pharmacy Acts Amendment Bill, which ought to be a great means of strengthening the Society. The Benevolent Fund was most beneficial, and is conducted in a most satisfactory manner. The Society bearing all expenses, so that all amounts subscribed went direct to the recipients. He was sure all members were grateful for the great work which the Society had done in the past, and hoped for still greater in the future, but if great reforms are to be carried out, the Society must have the assistance of practically the whole of the chemists of the country.—Mr. PARK, in responding, regretted the absence of their very worthy President (Mr. Walter Hills), and referred to the unfairness of company trading, but he hoped by means of the Pharmacy Acts Amendment Bill there would be a great influx of new members, by means of which they would be able to approach Parliament and obtain the protection to which they were entitled in return for the very stiff qualifying examination which the Minor had now become. He was glad to say there were very few chemists in the Three Towns who did not support the Society. The majority also support the Benevolent Fund, which was doing a truly great work. He urged upon all present to persuade fellow-chemists who were non-members to join the Society, and regretted that only a little over one fifth of the qualified chemists in the country belonged to the Society. What they required was not so much the money as the moral support of chemists. Subscribers had their full value by receiving the *Pharmaceutical Journal* weekly, which had improved to such a large extent of late years.—Mr. PAYNE, in proposing

The Local Association,

said it reflected great credit on everyone connected with it. He commented upon the great advantages which Plymouth possessed as an educational centre. In this Association the seniors appeared to take a great interest in the junior section. One of the greatest difficulties in forming associations that used to exist was the mutual distrust of each other. Among chemists a large amount of the success was due to one or two members who worked indefatigably from the start, culminating now in such a large percentage of local chemists belonging to the Association, which had made itself felt such a great force in the country. He was pleased to see such a satisfactory balance, which proved that they had a good treasurer (Mr. Condy U'Ren). In proposing the toast he wished to couple the names of Messrs. Cocks, Park, Reade, and Johnson.—Mr. JAS. COCKS, in responding for the Local Association, wished to offer Mr. Payne a hearty welcome to the district, which the

members of the Association would have the pleasure of renewing in the ensuing year. The past year had been one of great success as seen on reading the Annual Report, and it was hoped the coming one would be a brilliant one. The Association had again been fortunate with the choice of Secretaries in the Local Section, with the usual result that each had been distinct successes. The Trade Section has further illustrated its financial advantages, while members are reaping daily benefits from the P.A.T.A. The Educational Section has outdistanced all former years owing to the thoughtful labours of Messrs. Reade and Johnson, culminating in two of the pupils distinguishing themselves in the Herbaria competition. In November last theirs was the first Association to discuss the proposed Pharmacy Acts Amendment Bill, and as it has become law he (the speaker) would suggest endorsing their action then by forming deputations, urging those in the district who are not members to become so. They had actively opposed the Government Poisons Bill, which was ultimately dropped; also a guarantee fund had been obtained locally for the coming Conference. They had also a substantial increase in membership and a favourable balance sheet, thanks to the Hon. Treasurer, who, he regretted to say, was not present owing to family bereavement.—Messrs. O. A. READE and J. R. JOHNSON also responded, both remarking what great pleasure it had been to them to have been of any service in furthering the education of the students of Plymouth.

The Visitors.

—Mr. J. D. TURNEY said he was sure they all felt complimented by the presence of Mr. Payne that night, it showed how anxious he was that the Conference of the ensuing year should be a successful one, as he had journeyed from Belfast to be present. His presence recalled to him the hearty welcome which he (the speaker) and Mr. Park had received at the hands of the Irish pharmacists when present at the Conference. He wished to couple with the toast of the visitors the names of Messrs. Payne, Dr. Burns Browne, Dr. Wilson, and T. W. GINN.—Dr. BROWNE, in responding, said although arrangements between the Association and the Technical Schools had fallen through for the present with regard to special classes, he hoped that at no very distant date a school of pharmacy would be established in Plymouth.—Dr. CHEYNE WILSON, in responding, wished that there were a better understanding between members of the pharmaceutical and medical professions. He would like to see doctors giving up dispensing their prescriptions and chemists abandoning prescribing. If this could be brought about, he felt that chemists would be in a much better position.—Songs, recitations, etc., were rendered by Messrs. P. A. KELLY, J. D. TURNEY, H. J. REYNOLDS, J. REYNOLDS, C. T. WEARY, J. R. JOHNSON.—The final toast of the Secretary of the dinner, Mr. A. D. BREEZE, was proposed by Mr. PARK, this concluding the business of the evening.

MANCHESTER PHARMACEUTICAL ASSOCIATION.

The annual general meeting of this Association was held on Wednesday, October 12, at the Victoria Hotel, Manchester. Mr. G. S. WOOLLEY, President of the Society, occupied the chair. Owing to the fact that only twelve gentlemen had been nominated to serve upon the Council for the ensuing year no ballot took place. An address was given by Mr. J. HARRISON, member of the Council of the Pharmaceutical Society, on—

Pharmacy and Parliament.

He said it was with great pleasure he had learnt since he came into that room that fifty-six years ago they had an Association in Manchester which laid down very broad principles, which they could not too strongly hold in their midst to-day. That resolution approved of the general principles of the Pharmaceutical Society of Great Britain. It was equally so now, for what were those principles? They were mainly three—the promotion of sound education amongst those who practised pharmacy and the protection of their interests and the provision of a benevolent fund for those who, through misfortune, were shipwrecked in the course of their career. They were carrying out those principles as energetically now as then, but their forefathers went further. They expressed an opinion that the Pharmaceutical Society was entitled to the support of the trade. It had not always been so since, but he was there to say that if they did not possess the entire confidence of the trade it was the trade which was at fault, rather than the Council of the Pharmaceutical Society. The past session of

Parliament so far as that Society's went was of unique interest to all engaged in the practice of pharmacy. It was unique that they should in one year promote and carry a Bill in Parliament, and also in one year oppose successfully a Bill which was inimical to their interests, and he thought the very great care and attention which the President of the Society had devoted to the promotion of that Bill entitled Mr. Walter Hills to the warmest thanks of the whole trade. It had been said in Manchester, What necessity was there for a Bill of that kind? He was sure they had all felt for many years that the constitution of the Society was not what it ought to be. The expression had been used in that room that evening, a little out of date. When they had a Society which purported to represent and should represent the entire body of pharmacists, it was a sorry spectacle when they went to Parliament and showed that not more than one-fourth were numbered in their Society. Out of 15,166 persons on the Register only 3800 of them belonged to their Society. Was it possible to estimate the loss of political power which followed from the fact that so few of their members were members of the Pharmaceutical Society? Now all those 3800 members were entitled to take office as members of the Council if elected. In 1897, at the election of the Council, 3677 voting papers were issued, and out of these only 2035 persons were sufficiently interested in the work of the Society to record their votes either for or against the candidates whose names were placed before them. This showed there was something absolutely wrong in their Society, and it was their duty as practical men to look for a remedy for such a state of things.

He believed the remedy was this: a large number of the fifteen thousand conceived themselves under some political disability in reference to the constitution of the Society that had gone on increasing from year to year, and it became their bounden duty to put an end to this anomaly. What they had done was to make every man on the Register in future entitled to the highest position in that Society if elected. He therefore trusted they would find that a large number of those who had not hitherto joined the Pharmaceutical Society would now deem it their duty to become members and increase the political power and influence of that Society, because there were still many problems to solve which could only be solved by a Council representing a large amount of public opinion behind it. So far at the sale of poisons was concerned he could place more reliance on the high conscientious discharge of his duty by a properly qualified chemist than on the regulations of any department of the State. He had great respect for governing bodies but he did not regard them as omnipotent, and he thought the pharmacist was more able to take steps for the protection of the public and the protection of himself than anything likely to come from a State department. The circumstances of the last few years did not show, he contended, that their trade should be interfered with as it had been. Could it be shown that the mistakes of chemists called for interference? He thought not. They all deplored mistakes, but there was no other calling of so responsible a character in which mistakes were so few, nor men more alive to the conscientious discharge of their duties. Instead of promoting the sale of poisons it was rather the desire of pharmacists to restrict their sales. The Government, he held, had not clean hands in the matter of the sale of poisons. Chemists knew that for a long time past one poison which was used for an unlawful purpose ought to have been scheduled among the list of poisons; he alluded to carbolic acid. Time after time they had pointed out to the Privy Council that carbolic acid ought to be scheduled, but the Privy Council persistently refused to recognise it as such. What were the reasons of the Privy Council for its action? The reply was that it had consulted the Local Government Board on the subject, and the Board was so impressed with the importance of carbolic acid as a disinfectant, and its use in infectious diseases, that it could not see its way to restrict the sale. The Board was convinced that no difficulties should be placed in the way of poor people obtaining this disinfectant. Considered in that light, what could be said of the poor people of Ireland, for in the sister isle carbolic acid could only be got from a qualified chemist?

The poor people in Ireland were protected, but in England the poor were not protected. He thought he could explain the matter and show how it had all been brought about. We in England prided ourselves on our powers of self-government and on our democratic institutions, but he could tell the meeting that we were governed to a much larger extent than they thought by Government officials. He had spent a great deal of his time with the officials of the Local Government Board, and he knew

a good deal of them. Parliament was not so strong as it was thought to be. A great deal of power rested in the hands of officials, and he thought they would have to look in vain to them in order to have carbolic acid scheduled in the list of poisons. He considered the Government remiss in its duties with regard to this acid. The Government was more strict in other departments. It was strict enough with regard to revenue, very keen indeed was it in that respect. Those who dealt in intoxicating liquors had to pay for their licences. There was no remissness with them, but on questions affecting the lives of women and children the Government took no notice. Chemists had been told that they had tried to get a monopoly in the sale of poisons. Well, he would reply, Did they want free trade in poisons? He believed the people would say that they did not, but that rather they wanted protection. If, then, they did not want free trade in poisons the best way was to place the sale of them in the hands of educated men who knew how to deal with them. Another question he wished to touch upon was that of company trading. That question had been before the country for a great many years. Some years ago an action was brought against a co-operative society for dealing in poisons. The case was taken from court to court until it finally reached the House of Lords, where it was decided that as a company could not be examined, it was outside the law and could not be touched by the Pharmacy Act. Altogether that seemed to his mind to be an extraordinary thing—that a company was outside this Act of Parliament. That seemed to be an anomalous position, yet it was the positive law of the country, for there was no appeal from the House of Lords, and only an Act of Parliament could deal with it. Unregistered men were not to be trusted with the business of a chemist and druggist. Justice demanded that before a limited company could use the title of pharmacists they should have qualified people on the directorate. There ought to be some qualification for the general conduct of the business, and that was a matter he should like to see local pharmaceutical associations taking up. He thought a solution could be found for the evil which existed. The widows' clause of the Act of 1868 ought also to be dropped, and must be repealed before they could expect to deal with the companies. He hoped they would be strong enough to suppress these one-man concerns.

It was necessary they should profit by the experience of the past. Their chief duty should be to find out their weak points, and, if possible, remove that weakness entirely. They had learnt something of the power of organisation. It was something that they had been able to influence Members of Parliament from Bloomsbury Square, and they had now grounds for asking the Legislature to extend the Act of 1868 so that a larger number of articles might be placed in the Poisons Schedule. He urged that they should demand their rights, so long withheld, and that, if possible, they should have a member of their body in the House of Commons. In support of this he had to remind them that they had to elect the late Mr. Jacob Bell before they could get the Pharmacy Act. Mr. Harrison expressed the pleasure it had afforded him to visit Manchester once more, and thanked those present for the attentive hearing they had given him.—At the close of the address Mr. HARRY KEMP moved a vote of thanks to Mr. Harrison, which was carried with acclamation and duly acknowledged.—In the course of formal business, the CHAIRMAN moved the adoption of the annual report read by Mr. BLACKBURN, which was seconded by Mr. JOHN BLYTON.—Mr. G. S. Woolley was re-elected President, Messrs. W. Kirkby and Harry Kemp as Vice-Presidents, and Mr. A. W. Pidd as Treasurer. Mr. W. J. Walton, Higher Broughton, was elected Secretary in the room of Mr. Blackburn, who was heartily thanked for his five years' services.

LEGAL INTELLIGENCE.

PHARMACEUTICAL SOCIETY *v.* KAHLE.

At the Whitechapel County Court, on Oct. 12, before his Honour Judge Bacon, the Council of the Pharmaceutical Society of Great Britain sued Martin A. G. Kahle, of 127, Leman Street, E., for two penalties of £5 each, one for keeping open shop for the retailing of poison, and the other for taking, using, or exhibiting the title of "Chemist," contrary to the Sections 1 and 15 of the Pharmacy Act, 1868.

Mr. T. R. Grey, instructed by Messrs. Flux, Thompson, and Flux, appeared for the Society; Mr. Arthur May, instructed by Mr. Peters, appeared for the defendant.

In opening the case Mr. Grey said that the penalties claimed were in respect of keeping open shop for the retailing of poison and for taking, using, or exhibiting the title of "Chemist," both being offences under the Sections of the Pharmacy Act, 1868, unless the person was a duly registered pharmaceutical chemist or chemist and druggist. The defendant carried on business at 127, Leman Street as a chemist and druggist, and he should prove that a poison included in the Schedule, namely, laudanum—a preparation of opium—had been purchased at his shop, and that labels used in the business bore upon them the title of "Chemist." The defendant's name was not upon the Register of Chemists and Druggists, and he should submit that he had incurred the penalties sued for.

J. Partridge, examined: Upon instructions received from the Registrar of the plaintiff Society, I went to 127, Leman Street, on July 23 last. The name over the shop was H. W. Langbeck. I purchased twopennyworth of laudanum and twopennyworth of soap liniment. The shopman referred to defendant before serving me as to the quantity of laudanum he was to give me. The bottle produced, when handed to me, had upon it the labels as they now appear.

Cross-examined: I recognise both the man who served me and the defendant.

H. Moon, examined: Partridge handed to me the bottle which has been produced, and I subsequently handed it over to the analyst. I produce certificate of death of Mr. H. W. Langbeck. He died on March 6 last in the German Hospital.

Alfred John Chater, examined: I saw defendant in the Society's office. At the interview he volunteered the statement that the business had been left to him and he wanted to pass his examination. He had been up for examination three times and failed.

Cross-examined: The last time was this month.

E. J. Eastes, F.I.C., proved making an analysis of the purchase, and he found it to contain laudanum, which was a preparation of opium.

T. R. Struthers (examined): I am Poor Rate collector for the South Ward. I produce the rate-book. The tenant of 127, Leman Street is Martin Kahle. Mr. Kahle is the occupier, and he has paid the rates for some time.

Mr. Grey: I put in the Register for this year, in which the defendant's name does not appear, and that is my case.

Mr. May, on behalf of the defendant, said that his case was that the business was being carried on by the executor of Mr. Langbeck, and that under Section 16 of the Act the executor of a qualified chemist was entitled to carry on the business so long as he employed a duly qualified assistant, and in this business a duly qualified assistant was employed.

J. G. Horsey, examined: I am the executor of Mr. H. W. Langbeck. I produce the probate of his will.

Cross-examined: The business belonged to Mr. Langbeck. There is no mention of the business in the will.

By the Judge: Have you been receiving the profits?

Witness: No. There was a peculiar arrangement between Langbeck and Kahle. Kahle conducted the business, paid all accounts, and paid Langbeck £40 a year out of the profits.

Examination continued.—I have not been carrying on the business. The business was sold to Kahle on July 26 last. It was transferred to him by myself. I was advised that the agreement ended with the death of Langbeck.

His Honour: Who paid the qualified man?

Witness: Kahle paid the qualified man.

His Honour: Then you were not conducting the business?

J. Vine, examined: I am a registered chemist, I was engaged by Kahle in May last as assistant. I sold the laudanum to plaintiff's witness.

Mr. May: I submit to your Honour that the executor was in possession of the business when the purchase was made, and that the sale was conducted by a duly qualified man. Section 16 says, "It shall be lawful for any executor of a pharmaceutical chemist or chemist and druggist to continue such business, if, and so long as it shall be *bonâ fide* conducted by a duly qualified assistant.

His Honour: Call the defendant.

To the Defendant: Who is carrying on the business now?

Defendant: I am.

Cross-examined by Mr. Grey: I had some envelopes printed with my name on like the one produced before I went up for my examination. I never used them. On August 9 I wrote the Society's solicitors, saying, "The shop is kept by Mr. William S. Hunter, a duly registered member of the Pharmaceutical Society."

His Honour : In this case the plaintiffs, who are very properly looking after the safety of the public, sue for penalties under the provisions of the Pharmacy Act. I am satisfied that defendant was carrying on the business for his own profit, and that he has incurred the penalty for keeping open shop. I entertained a little doubt as to the other penalty, but, although the title is used in conjunction with the name of Langbeck, I think it comes within the Statute, and in my opinion he has committed the breaches of the law complained of, and I must give judgment for the plaintiffs for the two penalties with costs.

NEW REMEDIES.

EUPHORBIVM RESIN IN THE TREATMENT OF SURGICAL TUBERCULOSIS.—A fine emulsion of euphorbium resin, containing a quarter of a milligramme in each C.c., has been found by Pénierès to be an excellent remedy in tuberculosis. In most cases one cubic centimetre will be found to be sufficient and gives rise to no undesirable secondary symptoms. The action of the resin is slow and persistent, one injection in eight days being sufficient; its bactericidal action is not attended by any induration of the tissue after the cure has been effected.—*Bullet. Comm.*, cxv., 519.

METHYLENE BLUE IN SPERMATIC NEURALGIA.—Three cases of severe neuralgia of the spermatic plexus have been cured by J. Domingo by the internal administration of methylene blue in doses of 10 centigrammes every other hour. Pain disappeared in one case after taking 120 centigrammes and did not recur.—*Amer. Med. Surg. Bull.*, through *Int. Med. Mag.*, xii., 67.

CALOMEL IN DIPHTHERIA.—Leonard Judd gives calomel in large doses, 10 grains for an initial dose followed by 5 grains every hour until eight doses have been given for a child aged 18 months, and 20 grains to commence for an adult for a first dose, followed by 10 grains every hour until 360 grains had been given. In two such cases excellent recoveries resulted, without any ill effects from the treatment.—*Annals of Hygiene and Medic.*, through *Intern. Med. Mag.*, vii., 43.

POTASSIUM BROMIDE IN WHOOPING COUGH.—Dr. T. M. Doolan has found the frequent administration of potassium bromide to be an excellent remedy in the treatment of pertussis; he prescribes it as follows: Potass. bromid., 2 drachms; water to 10 fluid ounces. For an infant, 3 fluid drachms; for children from two to three years, 6 fluid drachms; for children from five to ten years, 3 fluid ounces daily.—*Pediatrics*, v., 4.

LARGINE is the name given by Pezzoli to a new silver albumin compound which is recommended as a disinfectant. A 1:4000 dilution of largine has been found to destroy gonococci in about five minutes, and all bacteria in 10 minutes. Its action is more powerful than any silver albumin compound previously known.—*Weiner Klin. Rundsch.*, xii., 374, after *Pharm. Zeit.*, 29.

DECOCTION OF SCOPARIUS FOR ERYSIPELAS.—Testevin recommends a decoction of *Sarothamnus scoparius* for local application in cases of erysipelas. 100 parts boiling water are poured on 10 to 15 parts of the tops of *Sarothamnus scoparius* and boiled for ten minutes. When cold the decoction is strained, and 5 per cent. of salicylic acid is added to preserve the fluid. Two applications are made in twenty-four hours, and compresses saturated with the fluid are applied afterwards.—*Pharm. Post*, xxxi., 307, after *La Med. Mod.*

SODIUM SALICYLATE IN PLEURITIC EFFUSION.—In five grave cases out of six of pleuritic effusion Poliakov has achieved a cure with daily doses of 2 to 4 grammes of sodium salicylate. He finds it is well tolerated if a little alkaline mineral water, or, where there is a weak heart, caffeine is given as well.—*Semaine Med.*, through *Therapist*, viii., 22.

IODOFORM IN PHTHISIS.—E. de Renzi, in *Semaine Medicale*, recommends the following combination of iodoform in those cases in which diarrhoea is present:—Iodoform, 2 grammes; tannin, 4 grammes; for forty powders, two to four powders being the daily dose. Where constipation is present naphthalin, in the proportion of 2 to 4 grammes, should be substituted for the tannin.—*Therapist*, viii., 24.

LETTERS TO THE EDITOR.

DIVISION OF THE MINOR AND MAJOR EXAMINATIONS.

Sir,—I have read with considerable pleasure and interest the admirable address of Sir James Crichton Browne delivered to the students of the School of Pharmacy last week. It is very gratifying to find such an eminent member of the medical profession so well versed in the politics of the "Society" and the conditions under which the members of our craft are compelled to pursue their calling. I am particularly delighted that both Sir James and our esteemed President, Mr. Walter Hills, have given public expression to their opinions on the division of the Minor, because this has been a long-cherished idea of mine, and in my humble opinion would be a wise policy to adopt. I believe that not only would it cause less strain on the mental and physical powers of the student, but would ensure a more thorough and satisfactory study of the subjects of examination, and hence more capable pharmacists. All students of pharmacy are not in a position to spend long periods of time for study at the "Square" or other school of pharmacy, nor are all placed where hours of business are short or time is allowed for classes or study; but many worthy and industrious young men have to pursue their studies under very onerous and discouraging conditions, calculated to interfere with their health. It is on account of the latter class of students especially that I desire to see examinations divided, and I believe it would be a most welcome innovation. We have the example of the medical examining bodies for adopting such a course, as Sir James stated. Further, I would like to see the Major divided, as I believe many Minor men whose time is almost wholly occupied in business would proceed to the more honourable Major if it were divided, say, into two parts, one to include physics, theoretical and practical chemistry, and the other materia medica, botany, and microscopy. May I suggest to the various local associations that this subject is worthy of discussion at some of their meetings?

Hanley, October 11, 1898.

EDMUND JONES,
Hon. Sec. North Staff. Chemists' Association.

THE PROSECUTIONS AT BELFAST.

Sir,—As an Irish pharmacist and a subscriber to the *Pharmaceutical Journal* for some years past, I wish to draw your attention to a report of a pharmacy prosecution in Belfast, in which I figured as the unfortunate scapegoat. Towards the close of your article headed "Irish News" (*vide p. 402d*, last week's issue), you say: "Subsequently the Society summoned defendant's assistants, because, though unqualified, they had compounded and sold medical prescriptions." Now the word "unqualified" is what I take exception to. It is quite true as regards the proceedings against the limited companies, but absolutely false in my case, as the prescription was compounded by myself, *ab initio et in toto*. In the interests of truth, straightforwardness, honour, and fair-play, I ask you to spare me a few lines further, in which I shall briefly endeavour to throw light on some of the dark features in connection with this despicable persecution. Just imagine the Pharmaceutical Society of Ireland dragging one of its own licentiates into the police court for doing the very thing they license him for. Would it not have been more courteous for the Society to have informed me that it was the Council's opinion that I was acting illegally? Had they done so I would at once have had the matter set right. All the time I was under the impression that I was within my legal rights as a pharmaceutical chemist in compounding medical prescriptions in my father's place of business. The rider which Mr. Hodder, the resident magistrate, added when giving his decision no doubt exerted a mollifying influence, but no thanks to the Irish Society. Mr. Hodder's words were: "This case was at any rate straightforward and above board, and there had been no danger to the public health through the action of the defendant. An arrangement between the father and son would have obviated all trouble. . . ." In conclusion, I would briefly touch on the worst feature of the whole case—the onus of this prosecution was laid on Mr. Johnston Montgomery, who is one of my nearest rivals in business. Readers of the Journal by reading between these lines can now see the *fons et origo* of this dastardly attack on me, which I characterise as nothing more or less than personal animus and pure pique. *Verb. sat sap.*

Belfast, October 10, 1898.

SAMUEL HOGG, L.P.S.I.

QUININE WINE, B.P. (1898).

Sir,—The alteration in the formula of the above, by the substitution of hydrochloride of quinine for sulphate of quinine and citric acid, although from the theorist's point of view an improvement, does not appear satisfactory in practice. I have made several quantities of quinine wine with various samples of orange wines answering the characters and test of the Pharmacopœia, but have not been able to obtain it in a bright condition, and although it may be filtered, the product rapidly becomes turbid again; a slight change of temperature apparently being able to bring this about. Possibly one of your readers can suggest a means of overcoming the difficulty.

October 6, 1898.

AGNOSTIC (146/15).

TINCT. QUININÆ AMMON.

Sir,—I find the most elegant form for making a draught of the above is:—

Tinct. Quininæ Ammon.	ʒi.
Syrup. Limonis.....	ʒi.
Aquæ.	ad ʒiii.
Ft. haust.	

My customers prefer it to any other. It makes a beautifully clear and palatable draught.

Exeter, October 8, 1898.

T. H. NORTH.

Sir,—The idea recommended by "J. H." of taking this preparation with aerated water is a good one. It was published some time ago, and now appears in 'Martindale.' Many other medicines are made more palatable when taken with aerated, instead of plain, water.

October 8, 1898.

W. C. (146/28).

DISPENSING QUERY.

Sir,—I wish to ask your readers whether they would have dispensed the following prescription as written:—

R. Glycerini Hydrarg. Perchlorid	ʒi.
Glycerini Aluminis et Acid Tannici	ʒi.
Glycerin et Aq. Rosæ	ʒi.

M. Sig.: The lotion for gargle; ʒi. to a breakfast cup of water to be used as a gargle.

The preparation would contain about 13 grains of mercuric chloride in ʒi., and as formulæ for the other two articles are in the 'Extra Pharmacopœia' I presumed the first was also meant to be compounded from the formula in the same book.

October 7, 1898.

E. G. H. (146/26).

WHAT THE GROCER SUPPLIED.

Sir,—A list of wants dropped by a customer was found on the shop floor the other day. It is interesting as showing how many chemists' lines are now supplied to the public by grocers.

Chemist.—Powders on prescription.

Grocer.—Pain killer, Calvert's oint. 9½d., Bishop's caffeine 1s. 10d., camphorated oil, cotton wool, lint 3½d., oiled silk, glycerin, eucalyptus oil 4½d., indiarubber hot-water bottle, menthol cone, medicine spoon, cold cream, seidlitz powders.

October 8, 1898.

CHEMIST (146/27).

MEDICAGO SATIVA.

Sir,—I noticed in your notes to correspondents lately, you said lucerne, *Medicago sativa*, was "scarcely naturalised." I have known its habitat on Plymouth Hoe, a rocky portion of ground protruding through the original turf, over forty years; it is perfectly naturalised there. *Medicago maculata* and *M. denticulata* grow near by, and *Trifolium scabrum*, I think; whilst on the top and west side, now turfed, we used to get the rare *Trifolium subterraneum*. Mr. Holmes will, I expect, remember these. Some ten years since at the east end of the Hoe there were some large alterations and earth mounds raised. Carried there on one of these I found three seedlings of *Datura stramonium*, which I watched flower and fruit, each plant only small with a few flowers. Next year on an adjoining bank, near a new house with garden, were three or four plants which grew almost to bushes, with a large number of fruit, and in the turf adjoining was a solitary biennial *Hyoscyamus*. I do not know whence the earth came, probably the datura seeds came from Statten Heights where I have heard they have been found. Next year and the year after there were scores of datura plants

growing as a weed in a new cultivated bank facing the road in Freedom Park, Plymouth.

Nottingham, October 8, 1898.

F. P. BALKWILL.

** The term "scarcely naturalised" was quoted from Babington's 'Manual of British Botany' and as used by that botanist is quite appropriate. [Ed. P.J.]

RECTIFIED SPIRIT, B.P.

Sir,—Rectified spirit, B.P. 1898, is required to have a sp. gr. of 0.834, and is stated to contain 90 per cent. by volume, or 85.65 per cent. by weight of ethyl hydroxide. Rectified spirit, B.P. 1885, sp. gr. 0.838, contained 84.08 per cent. by weight of ethyl hydroxide, equivalent to 88.76 per cent. by volume. The difference in percentage strength is therefore (90 - 88.76 =) 1.24 per cent. by volume or (85.65 - 84.08 =) 1.57 per cent. by weight. On page 311 of the new Pharmacopœia the difference in strength is given as 1.35 per cent. by volume, or 1.65 per cent. by weight. Which is correct?

Holloway, N., October 12, 1898.

F. W. FLETCHER.

THE IRISH COUNCIL ELECTION.

Sir,—I am glad to see from the report of the annual meeting of the Irish Pharmaceutical Society that the gentlemen have repudiated the objectionable circular bearing their names. It was by error my name remained on the list of those seeking re-election. It was not my intention that it should be. I therefore did not reply to the several circulars issued. I cannot blame the electors for voting as directed by the several documents placed before them, in which I was represented as one unworthy of their confidence, being a supporter of store pharmacy and all that that term implies. I have now to say the statement is utterly false. No man in Ireland has worked harder against store pharmacy than I have, and had my advice been taken company pharmacy would have been now dead, but my advice was not taken, so we have what we have to-day. I consider store pharmacy most unfair. Under the present state of the law I have done what I consider my duty to do, that is, for chemists to combine amongst themselves to oppose store pharmacy. I have associated myself with gentlemen, all of whom are qualified pharmaceutical chemists; there is not a man in our firm but is legally qualified to keep open shop and compound prescriptions. More than this I could not do to uphold the prestige of our calling. I will at all times seek the welfare of our profession, and will be pleased to further any movement for our mutual benefit. There is one thing I deeply regret, that is, that the gentlemen whose names appear on the objectionable circular refrained from informing the electors that it was a forgery until the election was over, when their statement was of no practical use. I believe every fair-minded man would a thousand times rather be defeated than gain a victory by such unworthy weapons.

Dublin, October 11, 1898.

HENRY CONYNGHAM.

ANSWERS TO QUERIES.

DIPLOMAS.—Yes, every new member will receive one upon election. [Reply to ASSOCIATE.—17/6.]

CANDIDATE'S NAME.—He should give his legal name, i.e., the name he is generally known by. [Reply to MEMO.—17/13.]

LINNEAN SOCIETY.—Write to the Secretary, Burlington House, W., for particulars. [Reply to VERAX.—17/10.]

TEXT-BOOKS FOR MINOR.—See the article in the Journal for September 10 last, page 307, where full particulars are given. [Reply to BOWLING.]

BOOK ON ELECTRICITY.—The latest edition of Sprague's 'Electricity,' published by E. and F. N. Spon, at 15s., ought to meet your requirements. [Reply to W. W.—17/14.]

EUROPHEN.—It is di-isobutyl-ortho-cresol iodide, the formula attributed to it being (C₄H₉·CH₃·C₆H₃·O)₂HI. The method of preparing it is to treat isobutyl-*o*-cresol (methyl isobutyl-phenol—C₆H₃(CH₃)(C₄H₉)·OH), in alcoholic solution, with iodine (see P.J. [3], xxii., 81). The compound is non-poisonous, and may safely be used in ointments, etc. [Reply to A. W. S.—17/9.]

Pharmacy and the Allied Sciences.

21 OCT 98
A REVIEW OF CURRENT WORK.

Nitrogen from Urea. As recorded in *Phil. Trans.*, A., 1895, p. 188, it has already been shown by Rayleigh and Ramsay that nitrogen gas prepared from urea by the action of sodium hypobromite or hypochlorite is contaminated with an impurity heavier than nitrogen. Lord Rayleigh has returned to the research this summer, and still inclines to the view that the gas is nitrous oxide. Unfortunately, there is no direct test for nitrous oxide, but, so far as the examination has been carried, the behaviour of the gas is consistent with the view that this is the principal impurity. The gas has no smell; moreover, the proportion of nitrous oxide indicated by the refractometer is nearly the same as that deduced from the weight.—*Roy. Soc. Proc.* lxiv., 95, et seq.

Hevea Brasiliensis. Much valuable information is given in an article on this plant, which produces Para rubber and is now official in the Pharmacopœia. The most convenient means of propagating Para rubber trees is by seeds. They are, however, difficult to collect in their original habitat, the dense growth of the Amazonian forests, and further, there is no certainty that they are sound. On the other hand, seeds are readily obtained from trees now under cultivation in India, Ceylon, Straits Settlements, Zanzibar, Gold Coast, and other tropical parts. If quite fresh, they bear transport for a period of three or four weeks. The most suitable soil and situation for the tree is fairly flat land, at about sea level, with good alluvial soil, preferably jungle land, and not sandy. The land should not be subject to frequent floods or strong winds. *Hevea* forms a moderately tall tree, not very much branched. It begins to flower at about six years old, but for planting purposes the seed of more mature trees (about twelve years old) is preferable. About February, in Ceylon, the leaves mostly turn brown and drop off, and the flowers soon afterwards appear. They are followed by large woody fruits, each containing three seeds, which ripen in July and August. The fruits open explosively, usually in the hot part of the day, and scatter the seeds to some distance. The seed is very large, weighing about half-an-ounce; it has a hard seed coat, and the interior substance is very oily. Propagation with cuttings has hitherto been attended with only moderate success.—*Kew Bulletin*, cxlii., 241.

Bacteria in Hailstones. F. C. Harrison, of Guelph, Ontario, has examined hailstones bacteriologically on two separate occasions. The stones were washed in mercuric chloride solution (1 in 500), rinsed several times in sterilised cold water, and each stone thus treated was dropped into a tube of melted nutrient gelatin, the mixture thoroughly shaken, and plates were made in the usual way. Four days after the plates were counted, all the bacteria and a number of moulds were isolated, and their cultural characteristics determined. Among those present were *Penicillium glaucum*, *Mucor* sp., *Aspergillus* sp., *B. fluorescens liquefaciens*, *B. fluorescens non-liquefaciens*, a protean form of *Proteus vulgaris*, and two micro-organisms, a bacillus and a coccus, which do not agree with any published descriptions, and for which the author suggests the names *B. flavus grandinis* and *M. melleus grandinis*. Detailed descriptions of the two latter are given in the monograph. The repeated presence of the fluorescing germs lends support to Bujwid's surmise that surface water is

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carried up by storms and frozen, producing hailstones. Bujwid, who probably was the first bacteriologist to investigate hailstones, arrived at this conclusion in the first place from consideration of the large number of germs found in the hail.—*Bot. Gaz.*, xxvi., 211.

Oil of Eucalyptus Punctata. R. T. Baker, and H. G. Smith, of the Technological Museum, Sydney, have entered upon an investigation of the eucalyptus oils on a scientific basis. Hitherto the oils distributed in commerce have not often been the product of one species. In their report for April, 1896, Messrs. Schimmelfrankly state: "No reliable information of any kind can be given concerning the botanical origin of the Australian oil which we supply, as it is notorious that the leaves of the different species of *Eucalyptus* are no longer kept separate during the distilling process in Australia." The first species investigated by the authors is *Eucalyptus punctata*, D.C., locally known as the grey gum tree, which grows plentifully in the colony of New South Wales, and gives an oil comparable to that of *Eucalyptus globulus*, a tree that does not occur in the colony to any extent. In the case of each species investigated, leaves, buds, fruits, bark, and timber of the trees from which the leaves are collected for distillation will be placed in the Museum, so that there may be no doubt as to the authenticity of the oils investigated. The leaves of *E. punctata* were distilled during May and June, and nine samples of oil obtained from trees of different sizes, from young and mature leaves, and from the leaves of suckers. A mixture of equal volumes of the nine oils yielded 55.11 per cent. of eucalyptol in the first fraction, and 62.6 per cent. in the second fraction. The oil does not contain phellandrene, but with the nitrite test it becomes of an emerald green colour, in which respect it differs from that of *E. globulus*. The crude oil contains aldehydes, amongst which cuminic aldehyde is present in small quantity. The amount of eucalyptol varies unless the leaves are taken from the same tree, averaging in the crude oils from 46 to 64.5 per cent.—*Journ. Roy. Soc. N.S. Wales*, xxxi., 260-280.

Urethral Bougies. Although much employed for the purpose, cacao butter alone is too fusible for use in urethral medication. A basis having a certain suppleness and softening at the body temperature is preferable to one which undergoes complete liquefaction in this special instance, since the medication is retained in contact with the urethral mucus membrane for a sufficient length of time to allow it to produce its full effect, and is not discharged until micturition is attempted. Such a basis has been devised by Soulard, and has been used with success in the Hôpital Saint André. It is composed of cacao butter, 2; lanolin, 1; white wax, 1; melted together and preserved for use. When required, the basis is medicated in the same manner as suppositories with the desired drug, and moulded into crayons of about 3 Mm. diameter, varying in length according to the requirements of the prescriptions. For moulding these the following simple method is employed:—An iron rod 3 Mm. in diameter and about 20 Mm. long, is fitted with a transverse piece at one end to serve as a handle, so that it resembles the letter T. A number of glass tubes of such diameter that the rod fits in them as a piston are then cut into suitable lengths; a small mouth-piece, one end of which has had the edges rounded off, is attached by means of a piece of rubber tubing. The medicated basis is melted on the water bath, and then aspirated up into one of these tubes by sucking, as in filling a pipette, and at the end of two minutes, before the mass has had time to set hard, the iron rod is introduced at one end, and the bougie forced out. In this way, with eight or ten tubes, any number of bougies may be rapidly made.—*Bull. de la Soc. de Pharm. de Bord.*, xxxviii., 136.

VISUAL OPTICS IN THEORY AND PRACTICE.

BY LIONEL LAURANCE,

Instructor in Visual Optics at the Official Classes of the Worshipful Company of Spectacle Makers.

The three essentials for the conduct of an optical business on proper lines are:—1, knowledge; 2, appliances; and 3, stock.

Any person may be a seller of spectacles, but only those who have the requisite knowledge of optics can become opticians, and no amount of stock or appliances can compensate for a lack of comprehension of the subjects the optician has to deal with. In fact, the possession of optical instruments without the knowledge of how properly to use them is often worse than allowing a customer to select glasses for himself. That part of the science of optics of absolute necessity to the retail optician is sufficiently limited to render its acquirement easily possible within a reasonable time to all earnest and fairly educated students. There is, therefore, no excuse for any member of the retail optical trade failing to make himself proficient, and genuine success as a practising optician can only be assured to those who, intending to take up the line, first obtain the necessary knowledge. It is indeed lamentable that the vast majority of spectacle dealers are, to use a mild term, extremely backward in the essential principles of visual optics, and it is truly astonishing, considering how general is the need for glasses, and how this need, and consequently the demand, is increasing, that many men of education and good business training should be content to conduct what, with the requisite knowledge, can be made so profitable a source of income, in almost greater ignorance than that permitted or even possible in any other industry. It is true that investigations into the science of visual optics are of comparatively recent date, although Donders, who is the father of refraction, published his celebrated work in England in the year 1864, and it is only of very late years that any attempt towards some real and practical advance has been made by those connected with optics as a trade. How inconsiderable this advance has been is shown by the condition of the industry at the present time, when, perhaps, 90 per cent. of the glasses in use have been sold by allowing customers to try on different pairs of varying strength, until they have found something presumedly suitable. How wrong this method is can hardly be appreciated by those optically uneducated; did they know, it is impossible to conceive that, for the sake of profit, they would lend themselves to a business likely to do infinite harm, be the means of preventing a cure, or, at the very least, be the cause of a fellow creature not deriving all the benefit possible from the use of his eyes. Reasons may, however, be found for the present system of optical trading in that—

(a) There is an extensive demand for glasses, whether fitted properly or improperly.

(b) The profits are large.

(c) The acquirement of a knowledge of practical optics has been, until recently, difficult, if not impossible, to obtain. The undirected reading, or study, in spare moments, of books on the subject not materially assisting men otherwise occupied with daily business affairs.

Considering these reasons in their order: The demand for visual aids is great, and it is only human nature which prompts a man, who lives by the purchase and sale of goods to handle those which he is constantly asked for. The primary causes of the ever increasing demand for glasses is civilisation and education, and the consequent application of the eyes to near pursuits. Except in near vision, the astigmat is not usually appreciably conscious of his defect, nor does the hypermetrope particularly feel the strain thrown on his accommodative muscles.

Presbyopia is of little material consequence unless one wishes to

read, write, sew or engage in other close occupations. Also a certain proportion of eyes must become myopic when, persistently and from an early age they are used in study and close work. All strains on the external muscular system are augmented and consequently noted when the eyes are engaged in near vision; optical defects, in general, are usually ignored for distance. Only in myopia, where a comparison can be made with the relatively good sight for near objects, is there a realisation of the defective distant vision, otherwise it is extremely rare that complaints are made in this respect, no matter how bad the distant sight may be. The hypermetrope or astigmat is usually not conscious of his defective sight for remote, because that for near objects is so much worse, consequently he considers that the former is quite good, while, in fact, it is frequently only somewhat less bad than the latter.

Those who seldom indulge in close work do not, therefore, feel the need for visual aids to the same extent as those who continually use their eyes for short distances, where strain is so much greater, and where difficulty in seeing, or actual inability to see, objects of a certain size, such as type, is so much more easily and decidedly noted. Thus it is with the extension of general education among the masses, with the augmentation of the quantity of literature daily read, with the increase of occupations involving constant adjustment of the eyes for close work, and generally with the great growth of city as compared with rural life and pursuits, that the demand for visual aids has gone up by leaps and bounds. And the city life, the education, and the improvement in the intelligence of the masses tend to this increase, because under these conditions people are more nervous, and feel effects more easily, and at the same time are prone to search for the cause of these effects, and so seek glasses when nature indicates their need. I do not think that children now-a-days are whipped at school because they cannot see the blackboard or the print; instead of this ancient method of improving the sight capacity they are taken to the oculist and optician to obtain that which is required to render the vision normal and therefore equal to all calls made upon it.

And if the increase in the demand for optical aids has been great up to the present, how much greater it can become by legitimate cultivation should not escape the mental grasp of those connected with the industry or of those who think of becoming so. A portion of the public has already learnt that optical aids are requisite and beneficial. Still, it is only a small proportion, and it is for the opticians themselves to inculcate among the people the appreciation of the existence of their visual errors, the means of correcting them, and the benefits derived from correction. It is difficult to compute what proportion of the British public might be wearing spectacles with benefit to health and working capacity, with increased comfort and greater enjoyment of life. But it is certainly by far the greater part of the population, whilst it is possible that not more than 10 per cent. of those under forty years of age are, as yet, spectacle wearers. Only a very small percentage have normal eyes, and, as is well known, so soon as the age of forty or forty-five is passed everyone, as a natural sequence, must become a wearer of glasses if he wishes to be able to continue the use of his eyes for close work with any sense approaching comfort.

Thus it will be seen that the field of operations is, for the optician, of practically illimitable extent. How best to induce the public to become a spectacle instead of a non-spectacle one, to the mutual benefit of the buyers and sellers of glasses, should be one of the principal aims of the educated and advanced optician.

It is doubtful whether any articles in equal demand bear proportionate to their cost so substantial a rate of profit as do glasses.

One reason for this is, that the buyer does not, as a rule, want cheap, or, rather, low-priced spectacles or eye-glasses. He knows instinctively that the best attention is demanded in the selection of aids for the sight, and combined knowledge of buyer and seller results in the purchase and sale of a very good grade or very high-priced article, as the case may be. The spectacle wearer, in his sublime innocence, is rather proud of pointing to the fact that he always did all that was possible to preserve his sight by buying real pebbles or periscopic lenses! He thinks because the retailer so thinks, and communicates unconsciously his convictions to his customers, that these special lenses with perhaps, fancy high-flown names, have peculiar virtues absent in other goods, and can preserve or restore the sight, no matter what the power of the glasses or what the nature of the defect. The retail optical trade is profitable, without any doubt, but when the optician is optically educated it can be made infinitely more so. The thorough optician knows what is required of him, and his very knowledge inspires confidence in his customer. Glasses selected are of real benefit to the wearer, and in consequence honestly worth a fair figure. Customers are more numerous, and there should be absolutely no dead stock.

What knowledge is requisite by the retail optician might almost be summed up in the following words: he requires to know what the public needs. Now, in order to know this, he must have some knowledge, elementary, it is true, of the anatomy and physiology of the eye, for without such knowledge he can neither advise as to the glasses required, nor can he, as is so very frequently necessary, counsel that the oculist be consulted. An elementary knowledge of the eye is as necessary for the optician as a complete knowledge is for the oculist. He requires to understand light, what it is, and how it travels, the laws of refraction and reflection, lenses, their formation, properties, how to analyse and neutralise, and transpose them. He has to understand the errors of refraction and accommodation and how to determine and measure them. For the latter he must comprehend the trial case and its use, test types and charts, and their principles, also the use of all the various instruments that are applicable for testing and examining the eye.

Further, the optician has to understand how to conduct an optical business, the stock that he should carry, both as regards quantity and variety, and under what conditions the various kinds of frames serve. He must know how properly to read and write optical prescriptions, and how to fit and manipulate frames so that the best effects be obtained from lenses prescribed, and how to take facial measurements for frames when needed.

In catering for trade in optics the great guiding principle of the optician should and must be, to do his best to serve the public; this principle must stand out pre-eminent and every other must be secondary. When a customer places himself unreservedly in the hands of the optician, there can be no doubt in the mind of any honest man, that he must receive the very best of care and attention, and that no advantage be taken of his confidence. No trouble should be too great to get at what is required, and when there is any doubt of it, when the case is not understood, no glasses should be sold; it cannot be right to trade on the ignorance of the buyer and so cause his confidence to be misplaced. And if this be true, and the proper course for every optical dealer to follow, it stands to reason that those who are not versed in visual optics should not sell glasses at all, because they can understand no case that presents itself to them.

It pays well to serve the public properly; when glasses are bought they are not wanted cheap; the cheap spectacle or eye-glass, in the opinion of the public, is the same as the article of

little or no value. The optician who understands his business and inspires, as he should, confidence in his customer, can always obtain for the article supplied a price commensurate with, not only the actual cost of the article, but also with the time and trouble required in finding the proper thing. In plain words, the customer pays not only for the spectacle or eye-glass which he buys, but also for the knowledge and time of the optician.

And in this connection of considering first and foremost, of doing one's duty to the public, it is of the very highest necessity that the optician should be able to discriminate between cases of defective sight which are due to error of refraction and those which, are due to pathological conditions. The optician must be capable of at once discriminating between the cases of refractive error and cases that indicate disease; between simple and purely optical cases for which he may supply glasses, and those which being complicated, require rather medical attention, or the latter in addition to optical corrections, and which, therefore, must not be treated by the optician, who has had no medical training.

THE DUTIES OF A LOCAL SECRETARY.*

BY J. SMITH.

Local Secretary of the Pharmaceutical Society of Great Britain.

It was my intention in the first instance to confer with the Liverpool chemists present at this meeting respecting the nomination of a local secretary to the Pharmaceutical Society for the coming year, but seeing that at the present time the question of organisation is more than usually pressing, I have chosen a title for the subject of my remarks which will enable me to take a wider field.

First with regard to the system of appointing honorary local secretaries. It is not by any means an ideal one, but on the whole it works fairly well. The only alternative scheme that has presented itself to my mind is the employment of paid officers in various parts of the country, but it is obvious that for this to be effective a large number of men would be required, otherwise, and perhaps even then, chemists in some districts would consider others were favoured and themselves neglected. Indifference if not ill-will to the Society would remain in many quarters. It is clear that the income of the Society would not bear the expense of salaried representatives. When the Society shall have its income increased by the larger number of members, the employment of paid representatives will be a suitable and proper subject to discuss; until then we must do what we can with voluntary workers.

I think it would be an advantage if the circulars requesting nominations of local secretaries were sent out a few weeks earlier than they are. In towns where there are local pharmaceutical associations, chemists in those districts would then be able more frequently to consult each other respecting the name to be submitted; that subject might be part of the business at a meeting of the Society early in the winter session. An opportunity would thus be provided for the local secretary to meet his brother chemists and consult them as to his duties. Every person occupying a semi-public office, honorary or otherwise, must expect criticism, and I am convinced that local secretaries would welcome criticism and advice, because they would be the means of sustaining interest in the duties of the office, and through that interest they would be able to fulfil the duties more efficiently. The principal duties of a local secretary are: To promote the interests of the Pharmaceutical Society in every possible way—and here I would say that no person would undertake the duties and would

* Read at a meeting of the Liverpool Chemists' Association, on Thursday October 13, 1898.

urge the claims of the Society upon non-supporters unless he himself were convinced of the advisability of such support. He is also expected to report changes of address of pharmaceutical chemists and chemists and druggists, and to assist the Registrar to keep a correct Register; to report infringements of the Pharmacy Acts; to collect subscriptions to the Society and to the Benevolent Fund, and to furnish such information as he is able, when required.

Now I would like to say a word on behalf of local secretaries. They are all, as you know, men in business, many having other claims upon their time and thoughts besides their business, and though they are willing to give some portion of their time in the interest of all following the profession of pharmacy, few can afford to neglect their own private business to any very large extent. It follows, therefore, that they must rely upon no small assistance from their fellow chemists in their districts. It is too often the custom to nominate the same person year after year until he expresses a wish to retire. I have been fortunate in meeting the local secretaries from some of the large towns and cities, whose assistance is of the highest value to the Society, and whose retirement would be a positive loss; to these my remarks do not apply, but as a general rule I think there should be a change in the office say once in three years. The first year a man enters upon the duties with some enthusiasm but finds he has something to learn, the second he is still enthusiastic and probably has some ideas respecting his duties which he is able to put into effect; before the end of the third year he begins to think that he has given as much of his time as he can properly spare and that somebody else should be appointed. I say again that this is not invariably the case, but it is what might be expected.

To accomplish the work that it might, the Pharmaceutical Society should have the support of every chemist and druggist on the Register, and no well-wisher of the Society, that is, no well-wisher of the vocation he follows, will consider that he has fulfilled his obligation to the Society when he has paid his annual subscription. A local secretary cannot be in close touch with every part of his district, and if registered chemists would more frequently inform the Society, either by direct communication or through the local secretary, of facts they have become acquainted with which would be useful in enforcing compliance with the Pharmacy Acts or in keeping a correct Register, and would urge the claims of the Society upon friends who are non-supporters, we would be better organised than we are. It would not heavily tax the funds of the Society if a member of the staff at Bloomsbury Square, qualified for the duty, was placed at the service of the local secretaries to call upon non-supporters of the Society in their company. There are many men in business whose acquaintance with the legal powers of the Society, and with the devotion of the Council to the interests of all registered persons is very meagre, such acquaintance as they have being in many cases derived from a source which may be described as critical rather than impartial. It is only fair that the case for the Society should be placed before these gentlemen by one familiar with its inner working. I am sure that many local secretaries would gladly give the necessary time, and would welcome such co-operation, and I am sure also that where such assistance is desired, the Council would most willingly do what they could to comply with the request. The difficulty, if not impossibility, of keeping a correct Register of addresses as well as names of registered persons is well known. It is a very serious hindrance to the proper administration of the Pharmacy Acts, and must give the Registrar many anxious moments.

The Register is taken as evidence of a person's qualification and of his legal authority to sell scheduled poisons. An important point

would be gained if the correct address of every registered person was known, but as it is hopeless to expect that a penalty could be imposed upon such a person who failed to notify the Registrar of his change of address, that part of the Register must always be more or less imperfect. The addresses of subscribers to the Society are known, and it might perhaps be of some use if reply post-cards or something of the kind were sent once a year to every non-supporter on the Register, requesting his correct address. Personally, I think the Registrar would be assisted very considerably if this were done. I have often thought that an annual meeting of local secretaries from all parts of Great Britain might be held with advantage. I am convinced that the comparing of notes and the exchange of opinions between men from places differing widely both in locality and in character would provide a stimulus and inspire increased energy which would undoubtedly be beneficial to the interests of the Pharmaceutical Society. It does not require much imagination to see that joint action on the part of a number of men, after a plan of campaign has been discussed and agreed upon, is likely to produce larger results than their isolated action. The meetings of the British Pharmaceutical Conference are attended by a good many of the local secretaries of the Pharmaceutical Society and they furnish excellent opportunities for such consultations. The business would probably not occupy more than one hour, and need not interfere in any way with the Conference meetings. The subject of better organisation is being hammered at continually, and perhaps I ought to offer an apology for occupying time by further reference to it, but it is probable that very soon, perhaps during the next session of Parliament, there will be more urgent need for better organisation than there has ever been.

The question of the selling of poisons is not settled. If, as is very likely, the Council of the Pharmaceutical Society should again approach the Privy Council with the object of getting carbolic acid and perhaps other dangerous substances scheduled as poisons, and should again be unsuccessful, we will be bound to assume that another attempt to regulate the sale of these substances will be made. In the light of what transpired during the discussion in both Houses of Parliament on the two Bills of last session it is quite possible that an important reform in the law relating to the sale of poisons is contemplated. It is conceivable that the Council of the Society may require from us the fullest and most active service, either to oppose an attack upon our position in the shape of a retrogressive Bill or to establish a claim to a forward move. It is, therefore, desirable that we should consider in good time how we may best organise ourselves to support our own interests. The appeal by the Council to local secretaries and others to communicate with their Parliamentary representatives with reference to the late Poisonous Substances Bill produced highly encouraging results. I am sure those communications, though they were not published or recorded, influenced members of Parliament very considerably. We have seen that we are not without influence even when the Society represents only a minority of those on the Register. How much greater would that influence be if the Society represented a large majority? The points I have dealt with appear to me to justify me in inviting a discussion upon local secretaries' duties and their bearing upon organisation.

VALERYDINE.—This compound of phenacetin and valerianic acid, which forms shining needles melting at 120° C., is introduced as a remedy in hysteria, neuralgias, and neurasthenia. It is given in doses of $\frac{1}{2}$ to 1 gramme.—*L'Union Pharm.*, xxxix., 291, after *Pharm. Rund.*

A TEXT-BOOK OF PRACTICAL PHARMACY.

PRACTICAL PHARMACY: AN ACCOUNT OF THE METHODS OF MANUFACTURING AND DISPENSING PHARMACEUTICAL PREPARATIONS, with a chapter on the analysis of urine. By E. W. LUCAS, F.C.S., Member of the Board of Examiners of the Pharmaceutical Society of Great Britain. Pp. 528, with 283 illustrations. Price 12s. 6d. London: J. and A. Churchill. 1898.

A work adapted to the modern requirements of British pharmacy has been a desideratum so long that the publication of Mr. Lucas's volume may be regarded as one of the important events of the year and calling for special notice. The work will certainly be welcomed by students preparing for their examinations; the fact that it comes from the pen of one of the Examiners of the Pharmaceutical Society gives confidence that it fairly covers the ground which the examination will take them over and this expectation will be strengthened by noting that the writer is connected with one of the most celebrated dispensing houses in London.

A general glance at the pages impresses one favourably with the scope of the work, and its capability of being a valuable magazine from which the student may draw information. The first three parts are devoted to the general operations of pharmacy, under the several heads of processes, preparations and dispensing. Part IV. treats of volumetric and gravimetric analysis, the assay of alkaloidal extracts, etc., so far as is necessary for testing materials and preparations as the Pharmacopœia directs, and as fully as most pharmacists will desire. Part V. gives useful tables of atomic and molecular weights, strengths and doses of preparations, synonyms, poisons, and antidotes, etc., all of which are useful. Part VI., on urine analysis, concludes the work.

The work contains, throughout, a great mass of useful information in tabular form compiled from various official sources, it also notes several legal points with which the student should be acquainted before he trusts himself with the management of a business. The illustrations are very numerous, and the author acknowledges the many friends from whom he has received useful blocks for the purpose. Readers will find many with which they are acquainted from the trade catalogues of Messrs. Fletcher, Maw, Toogood, York Glass Co., etc. That some of them are especially suggestive of operations on a large manufacturing scale was perhaps unavoidable, since the pharmaceutical laboratory is becoming more exclusively a feature of the wholesale druggist's establishment than a frequent adjunct of the chemist and druggist's shop. However, the consequent greater necessity for pharmaceutical testing has been wisely recognised by Mr. Lucas in the prominence he gives to that subject in his book.

The author has evidently aimed at assisting students to acquire a thorough knowledge of their art, at furnishing information useful to those engaged in business, and at maintaining for chemical pharmacy the credit to which it has some hereditary claim. Though pointing the way to manufacturing pharmacy much further than the average pharmacist can hope to follow him, the matter he supplies should be read with interest and profit by all engaged in the preparation of remedies. Everyone making his living by the drug trade may find matter in Mr. Lucas's pages, which should help him to meet the wants of his daily customers.

While the good intention he has thus given evidence of, claims this acknowledgment, the admission must be made that closer examination of details reveals a number of little matters which the author will necessarily revise at his first opportunity, as well as some obvious errors which, if they did not mislead students, might shake

their confidence in the writer's care and accuracy. In the following running commentary attention will be directed to these mainly with the object of enhancing the immediate utility of the work, especially for students.

The tabular statement showing the sensibility of scale beams and counter-weighing machines (page 16) is not so clearly expressed as it might be, and the author should not appear to imply that he would countenance an error of 5 grains in a weighing machine, the maximum load of which is 1 oz. The source whence he obtained the figures of glass measures, marked P^l 1 pint, 20 Pl. oz., P 1 Dr., 1 Dr. 8, is not mentioned, but the author should alter this before the next edition, which will certainly be called for. An unfortunate blunder occurs on page 336, where the numbers refer to the cuts of suppositories on the opposite page.

The paragraph on the use of specific gravity beads should have a caution to the student not to continue the evaporation till the contents of his dish bring the bead to the surface of the hot liquid. The description of the Westphal sp. gr. balance is not so full as it should be for the guidance of readers who are not already familiar with it. A small thermometer hangs at one end of the beam, and its counterpoise at the other. The student may fairly ask "Why a thermometer?" or "What thermometer?" and what weights are used as riders? From the expression "a small thermometer" he may suppose any one will do, and if he breaks it may replace it with any other. An intellectual student may make all these points clear for himself, but it is the duty of the writer of a manual to make clear the relation between the bulk of the thermometer and the weight of the riders, so that it may be appreciated by an average student.

The chapter on heating is fairly well put, though it bears some appearance of being compiled from illustrated catalogues, or written to fit their blocks, there being a little absence of point in the descriptions of less common appliances, thus of the evaporating tray described, page 48-9, it is said, "A tray of the capacity illustrated will evaporate twenty gallons of water an hour." But no dimensions are given, and no pressure of steam at which it is to be worked.

Page 58, on the use of "condensed water" in place of distilled water, there is a little confusion of ideas in the statement that if a boiler is fed by means of an injector, the condensed water may be sufficiently pure for all ordinary purposes; "but if fed by means of a pump, the distilled water nearly always contains traces of oil used for lubricating the working parts of the engine." It is well known to engineers that water obtained by condensation of steam, which has passed through a steam engine, is much contaminated with oil. If pure water be supplied to a boiler, the use of a pump does not contaminate it so much as to spoil the condense, but if oily water be fed to the boiler by an injector, the use of the latter in place of the pump would not improve the quality of the condense.

Extraction, page 79: Maceration is said to be a prolonged infusion, "except that alcohol, either strong or dilute, is substituted for water as a menstruum." Why the writer should limit the term to operations with alcoholic solvents is not obvious. In the old Pharmacopœias it was applied to aqueous menstrua, as in the B.P., 1867, instructions for making extracts, etc.; quassia is to be macerated in water, rhubarb is to be macerated in water with 10 per cent. of rectified spirit.

Under "Pressure Maceration" syrup of senna is taken for illustration, and it is stated to be made by "moistening the leaves with 60 per cent. alcohol." The B.P. says 20 per cent. alcohol.

Under "Percolation" more evidence is found of the writer's familiarity with his subject, and much information not only

valuable to the student, but of practical value to the working pharmacist. The chapter on dialysis is not so full as it might be. The preparation of dialysed solution of iron is taken for illustration, and the information copied from the B.P., 1885. Unfortunately the error in the gravity as it stood in the first issue of that edition has also been copied. Mr. Lucas says it is 1.407, evidently having overlooked the correction subsequently supplied, which says "For 1.407 read 1.047." The chapter on filtration is a good one, and shows evidence of practical experience. The sterilising filter made of Bath brick gives precisely the results that might have been predicted, but is a good illustration of the readiness to adopt and adapt common materials to uncommon purposes, which ought to be a characteristic of every pharmacist. On page 117 the mode of priming a syphon is described as if by a person not well acquainted with the task. Not many operators would cork the long leg as a preliminary, especially if it be fitted with a piece of rubber tube, as the figure seems to indicate, nor is the reason for the rubber tube and pinch-cock on the suction tube explained.

About one page is devoted to the separation of immiscible liquids. More might have been said with advantage on this subject, and the concluding lines suggesting the extemporising of a separating funnel by the use of a stout penholder had better have been unsaid, unless to condemn such use of a penholder where stirring-rods are sure to be available. The use of a glass rod mounted with a blind teat, or half an inch of rubber tube, has long been a common expedient for this purpose.

Referring to *lin. potassii iodidi c. sapone*, is it a necessary or legitimate suggestion to add a little soft soap? Or is it consistent that the teacher who does so should speak with something like holy horror of the use of concentrated infusions, and be pained at the introduction of concentrated vegetable liquors into the Pharmacopœia? "As they are neither tinctures nor fluid extracts," is it reasonable that he should question their utility? This is a pure prejudice, and is unworthy of any teacher of science.

Under *liq. ammon. acet.* (p. 166) the difficulty of determining neutrality in the presence of free carbonic acid is mentioned, but without noting that the application of heat to drive off the free carbonic acid is also capable of driving off ammonia, and converting a neutral solution of ammonium acetate into one holding an excess of acetic acid, and no mention is made of Proctor's test for this particular point. *Liq. sodii ethylatus* receives a very scanty notice, and as it is a preparation better made in small quantities as wanted, it should have had more particular description. *Liq. zinci chloridi* also might have had more particulars supplied with advantage.

The chapter on fats, etc., is a readable and useful article, rather brief, but good so far as it goes. The chapter on ointments would also have been better for a fuller treatment of some points. *Ung. zinci oleatis*, in the opinion of the writer, is not to be compared with the corresponding ointment of B.P., 1885 (p. 190), but he does not explain on what evidence he bases his opinion, or what are the faulty features of the new form. The statement at p. 194 that ordinary potash ley is now used in making hard soap is at least questionable.

Chapters 28 to 36 are short notices of tablet making, eye-discs, powders, cachets, capsules, medicated cotton, and gauzes, granular preparations, etc., which will be found to contain practical information useful to most pharmacists.

Chapter 38, treating of essential oils, though disproportionately long, contains matter which pharmacists should be able to refer to, but scarcely coming within the requirements of a student's manual. The processes described for the determination of aldehydes, ketones, esters, etc., belong to organic chemistry and the charac-

ters of the individual essential oils to treatises on chemistry and materia medica. Pharmacy is, however, so elastic a term that their presence cannot be objected to, unless it curtails matter of more general utility, as in the present instance.

Dispensing occupies Part III. of the work, that section being one of the least satisfactory. It contains lists of contractions common in prescriptions, incompatibles, explosive combinations, etc., also a very useful list of terms, likely to occur in French and German prescriptions, which will be a great assistance to many dispensers, especially in seaports. The chapter on emulsions is also worthy of commendation, though a few trifles want correction, as at page 309 "powdered gum arabic 2 fluid drachms," and on the next page, salolis to be emulsified with powdered acacia, 2 fluid drachms. At page 311 the author says, "Certain seeds, such as almonds, form excellent emulsions," but the mode of treatment he describes is inferior to that given in the Pharmacopœia for almond emulsion. To meet the case of a prescription requiring the production of an emulsion from some particular seed, without gum and sugar, a much fuller description of the mode of obtaining a good result should have been supplied.

Pills occupy Chapter 47. The writer runs so readily from dispensing counter appliances to the steam machinery of the factory, that dispensing might be looked upon as despicable, except as a step to the greater operations; however, he reverts to dispensing and gives many useful points, rather more briefly, perhaps, than desirable. On page 320 he gives countenance to the superstition that compound decoction of aloes has a special virtue in massing aloes with extract of colocynth, etc. Many of his dicta would have much greater value if he had quoted the experiments upon which they are founded. A pharmacist's creed should not be based simply upon the traditions of his elders. At page 322; dried sulphate of iron of the Pharmacopœia is said to be of uncertain composition, a statement which is scarcely justified. It is recommended to mass it with syrup, taking care to add enough at once. To say use the right quantity at once is scarcely guidance worthy of a teacher, unless he can state what proportion is the right quantity for a salt answering the B.P. requirements. The paragraph on amorphous phosphorus would have been better for a note that it is not to be substituted for the translucent variety. Without this it might mislead a student.

Some of the instances above mentioned may be attributed to oversight or too hasty production of the work, though many of them indicate that the desirability of more lucid exposition of scientific principles is a point requiring notice by the author in a future edition. Dry empirical rules of procedure, that can be learnt and applied without being understood, are too frequently substituted for the more instructive rational explanations necessary to induce students to think. This is especially noticeable in the description of volumetric analysis, the definitions of specific gravity, hydrolysis, and the directions given for diluting alcohol.

The chemical portion of the book is ambitious though generally the least satisfactory; but with careful revision and judicious pruning it might be made very useful. The explanations of very simple operations are over-elaborated. For example, the confusing half-page of calculation to explain the determination of phosphoric acid in *Acid. Phosph. Conc.* (p. 419), misses the essential point of showing how the observed increase of weight of the lead oxide used, is a means of ascertaining the desired result by an ordinary rule-of-three sum. The simple manner in which this calculation can be performed will be seen on comparing the author's problem with that given in the Students' Page of the Journal for September 17. Again, on the same page, the parade of unnecessary for-

mulae in the series of equations given to explain the determination of phosphoric acid with magnesia mixture, is calculated to confuse a student, while one simple equation would suffice to show the essential details, and the space occupied by unnecessary formulae might have been more usefully devoted to stating the necessity for adding ammonia and ammonium chloride. Moreover; in a work of the kind, the attempt to indicate molecular volumes in equations, as at pp. 137, 168, 170, 172, 360, 362, 363, and elsewhere, seems out of place, and such a formula as $\text{Na}_2(\text{OH})_2$ is surely unnecessary to express two molecules of sodium hydroxide (p. 383).

Mr. Lucas has been loyal to authority even to the extent of adopting errors, thus the statement that most oxalates are converted into carbonates on ignition (p. 445) is only partially correct—though taken from the Pharmacopœia—and it is insufficient information for a student. The description of potassio-mercuric iodide solution as Nessler (p. 432)—probably derived from the same source—really applies to a different test solution. No authority can be found for the statements that bleaching powder “may be considered as consisting of $\text{Ca}(\text{OCl})\text{Cl}$ ” (p. 171); that a solution of chlorinated soda contains calcium chloride (p. 171); that ethylic alcohol is always the product of vinous fermentation (p. 129); that in the preparation of ferric chloride, nitric oxide and oxygen are evolved together (p. 169); while in any case the statement that oxalic acid “decomposes cupric sulphate, liberating sulphuric acid” (p. 446), is not a happy mode of representing the formation of insoluble cupric oxalate.

Mr. Lucas has constructed, on the basis of the atomic weights adopted in the British Pharmacopœia, a table of co-efficients very convenient for use in volumetric analysis; but, unfortunately, instead of showing how easily these co-efficients can be applied for ascertaining the quantity of a substance to be determined in any particular operation, he has followed the practice of the Pharmacopœia by supplementing the specification of official standards of purity with a statement of the measures (in cub. cent.) of volumetric solutions requisite for stated quantities of the particular articles to be tested. Provided the operations of volumetric analysis are understood, no assistance is rendered by the practice referred to, and no useful purpose is served. It is rather a wooden device introducing apparent discrepancies which might perplex an inexperienced operator as much as the obscure explanation of it given in the preface to the Pharmacopœia, while it makes the use of refined atomic weights a mere unsubstantial semblance of precision. The student should, on the contrary, have been made to understand that statements as to a particular quantity of the article to be tested requiring so many cubic-centimetres of the corresponding volumetric solution, are merely approximate. Thus, in the testing of hydrocyanic acid the amount of HCN corresponding to 3.7 cubic-centimetres of the silver solution would be nearer 1.98 per cent. than 2 per cent. as officially required. The quantities stated in the case of arsenious oxide would correspond to over 100 per cent. As_2O_3 if the correct co-efficient were used, while in the case of acid potassium tartrate they correspond to a percentage less than that required. Altogether these calculations are roundabout and not free from errors.

The desirability of including urine analysis in a book professedly written for students is doubtful. The chapter on that subject contains a brief *résumé* of the information on chemical points more thoroughly furnished in Allen's treatise. At p. 494 the proportion of ammonium chloride to be used in the determination of uric acid is incorrectly given, and at p. 493 the description of Heller's blood test is contradictory.

Instances of lax phraseology and misuse of terms occur too

frequently, as at p. 34 “identical” for definite; p. 35 and other places “colourless” to describe a Bunsen flame; p. 93 “first discoverer”; p. 167 “perfectly cold”; p. 135 “transmitted” for reflected; p. 246 “fusion” of granulated preparations, and “sufficient as”; p. 305 “limpid” as the opposite of viscous, and in several places “estimation” instead of determination.

Notwithstanding the defects above mentioned, Mr. Lucas's ‘Practical Pharmacy’ contains much useful information, and it will no doubt be the text-book on that subject. Though students using it must remember that some of its statements require correction, even that necessity may be made a means of adding to the instruction otherwise to be derived from the book.

THE DETERMINATION OF THE COLOURING MATTER IN SAFFRON.

BY EDWIN DOWZARD, F.C.S., ETC.*

The value of saffron depends on its tinctorial power, and the only real method of valuation is to determine the amount of colouring matter present. There are, of course, several methods by which the colouring matter may be estimated, but they take up a considerable time, and are more or less laborious.

The following method has the advantage of being quick, and requires very little attention or manipulation, the results are not absolute, but they give an approximation which is quite near enough for commercial purposes. It is, of course, necessary to examine for the usual adulterants. The method about to be described is not designed to give evidence of adulteration, but to enable one to say the value of a sample of saffron as a colouring agent.

A standard solution of chromic acid is prepared containing 78.7 grammes chromic acid per litre.

100 C.c. of the above solution are equal in tinctorial power to 0.15 gramme crude crocin dissolved in 100 C.c. of water (crude crocin is obtained by extracting saffron with ether, drying, and exhausting the residue with 50 per cent. alcohol, the alcoholic solution is evaporated to dryness, and the residue taken as crude crocin).

The sample is reduced to a coarse powder by pestle and mortar, 0.2 gramme of the powder is transferred to a stoppered cylinder having a capacity of about 35 C.c.; 20 C.c. of 50 per cent. alcohol are then introduced into the cylinder, which is tightly stoppered, and placed in water at 50° C. for 2½ hours. The solution is cooled and filtered, 10 C.c. of the filtrate (= 0.1 gramme saffron) are diluted with water to 50 C.c., and the depth of colour compared with 50 C.c. of the standard chromic acid solution (for comparing the colours it is necessary to have two Nessler glasses of equal bore). If the chromic solution is deeper in tint than the solution under comparison, small quantities are removed until equilibrium is produced, and *vice versa*; the solutions are then measured, and the amount of crude crocin calculated.

Example:—10 C.c. of saffron solution (= 0.1 gramme saffron) diluted to 50 C.c. had a depth of colour equal to 40 C.c. of the standard chromic acid solution.

$$100 : 40 :: 0.15 : x$$

$$= 0.06.$$

∴ 50 C.c. contains 0.06 gramme crude crocin.

$$0.1 : 100 :: 0.06 : x$$

$$= 60.0.$$

The above example therefore contains 60 per cent. crude crocin.

The finest samples on the market contain upwards of 75 per cent. crude crocin, good samples of saffron should not contain less than 50 per cent.

* Read before the Liverpool Chemists' Association, on Thursday, October 13, 1898

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY.

ANNUAL DINNER,

The annual dinner of the above Society was held on Thursday evening, the 13th inst., in the Masonic Hall, Sheffield.—Mr. GEO. SQUIRE, the President, occupied the chair, and the company included Alderman Langley, M.P.; Mr. J. Rymer Young, F.C.S., Warrington; Mr. G. T. W. Newsholme, Vice-President of the Pharmaceutical Society of Great Britain; Dr. Hicks, F.R.S., Principal of the Sheffield University College; Mr. J. Humphrey, *Pharmaceutical Journal*; Dr. Robertson, B.Sc., Medical Officer of Health for Sheffield; Dr. Geo. Wilkinson, B.A., F.R.C.S., President of the Sheffield Microscopical Society; Dr. Andrew Walker, M.A., B.Sc.; Mr. A. H. Allen, F.I.C., Public Analyst for Sheffield and West Riding County Council; Messrs. A. R. Fox, S. T. Rhoden, W. Ward, J. F. Eardley, J. Pater, J. Austen, T. Dobb, R. C. Gibson, J. Dale, H. T. Watts, C. O. Morrison, J. Parkes, etc.—The after proceedings were enlivened by an excellent programme of vocal and instrumental music and recitations.—The loyal toasts having been duly honoured, Mr. A. Fox, in submitting the toast of

The Houses of Parliament,

said that during the 22 years he had attended the annual dinner of the Society this was the first occasion on which they had been honoured by the presence of a member of Parliament, and as the Cutlers' Feast was near he wondered if this dinner would in the future assume an importance approaching that of the banquet he had referred to. Would the chemists' feast in the future be looked forward to with a similar amount of expectation and interest that was now excited by the approach of the Cutlers' Feast? He would aspire to something which would lead to that kind of thing, and then the newspapers would be speculating as to which member of the Government would be coming down to the pharmacists' banquet each October, just as they now speculated about the chief guests of the master cutler. When the time came those who were now present would recall this occasion of Alderman Langley's visit, and the fact that he (Mr. Fox) had the privilege of proposing the first toast of "The Houses of Parliament." He was glad to know that Mr. Langley fully grasped the idea that the Pharmacy Acts Amendment Bill which came before the House of Commons last session was not a measure that would interfere with the rights or privileges of the people, but something which was to cement pharmacists more closely together, and to ensure that the desires of those who years ago originated the Pharmaceutical Society should be rightly carried out. He was glad to know that that Bill was carried through and had now become law. They were greatly indebted to the member for Attercliffe (Mr. Langley), for his assistance in the passing of the measure. He (Mr. Fox) was far from claiming anything that was a monopoly for his craft, but he held that the Act in question was a good one from every point of view. It was calculated not only to cement pharmacists together, but also with the parent Society, which was so well represented that night. He understood that in the next session the Government were to introduce a new Poisons Bill, and he trusted that their members of Parliament would endeavour to secure the protection of the public by insisting that the men who dealt with potent drugs should be fully qualified by education for their work. By asking this pharmacists were not asking for the creation of any monopoly.—Alderman LANGLEY, M.P., who was very cordially received, designated himself an Imperialistic Radical, and said he always felt embarrassed when called upon to respond for the House of Lords. He was not connected with the House of Lords by family ties nor by political sentiment, but all unprejudiced men were compelled to acknowledge that the House of Lords contained a large number of men of commanding ability and intellect, and men who took a great interest in the nation's welfare. At the present time the House of Lords was in the happy position of having very little to do, which was always the case when the present political party happened to be in power. The peers grumbled sometimes at what the Government did, but they always gave way in the end. The House of Lords would not have much to do next year, but when the wicked Liberals returned to power they would have to bestir themselves and protect the interests of the Empire. Some years ago the House of Lords did yeoman service for the country, but he was of opinion that it might with advantage be mended without actually being ended. As to

the House of Commons, although they had had no heroic legislation, several valuable measures had been passed during the last session. The Government introduced a Food and Drugs Bill, but in such a way as to lead the members to suppose that there was no intention to proceed with it. In all probability the Poisons Bill would be reintroduced next session together with a Government measure dealing with the adulteration of food and drugs. It would be an advantage to the members of the House of Commons if the pharmacists, through their societies or individually, would pronounce on the Bill as soon as its provisions were made known. He was quite sure Parliament would heed their voices. In conclusion, Mr. Langley said he would reply to those who complained that there was too much legislation, that these were days of progress, and the country must not stand still in political progress any more than in that of commerce and education.

Mr. A. EBERLIN, Hon. Secretary of the Nottingham and Notts. Chemists' Association, gave the toast of

The Sheffield Pharmaceutical and Chemical Society.

He said the Society was his *alma mater*, and under its auspices he learned all the pharmacy he knew. It was the Sheffield Society which brought him out in the domain of pharmacy. Replying to the queries of unfriendly critics as to the functions of these local societies, he said as he understood the question, they were three in number. The first was to promote good fellowship. If anyone doubted their success in this direction let them come to this gathering and they would be convinced. The second function was that of a great educational machine. The Nottingham Society had, he claimed, done a great deal to educate the rising generation. It was a mistake to suppose that the ordinary commercial schools were sufficient to supply all the educational requirements of the young pharmacist who was studying for his examination. No school could supply it so well as an association like the Sheffield Pharmaceutical Society, which provided for a regular continuous course of study to a youth in the most critical part of his career, and he knew that the Sheffield Society was eminently doing its duty in this respect. He had been told that the school had made a distinct advance this year. Among other things, they had affiliated themselves with the Sheffield University College, a course which they in Nottingham adopted several years ago, and which had been attended with the greatest success. They were now conducting a series of classes for the training of young pharmacists, which he thought were not beaten by any in the land. They had a distinct curriculum extending over a three years' course, and forty students were regularly attending them year by year. The third function of the local society was to promote legislation in the interests of the public and of pharmacists. Last year a Pharmacy Acts Amendment Bill was passed—not a great measure in itself, but one which was a move in the right direction in consolidating pharmacists and bringing them more into harmony. As an instance of the value of an association he mentioned that the Nottingham society succeeded in completely changing the opinion of one of their local M.P.'s, who intended to oppose the measure. From being an opponent of the Bill he became a supporter at the last moment, and this change was entirely due to the efforts of the Association. Their member also promised that all future legislation in the interests of pharmacists should have his most hearty support.—The PRESIDENT, responding to the toast, said in looking over the old minute books he found it stated that the objects of the Society were threefold. They were to promote social intercourse among members of the craft; to give help to everything which stood for the progress and advancement of pharmacy; and, last but not least, it was to provide means by which their juniors might study during their early apprenticeship, and so qualify for their examinations. If asked if the Society was at present fulfilling these objects his reply would be "Yes, as far as possible." All must agree that the past session had been a successful one. That the classes had been well attended was evidenced by the number of students who had obtained prizes. The social side of their work had also been well attended to, and the ladies had gained a concession in the establishment of a ball. He could assure the gathering that the Council of the Society would spare neither time nor effort in order to fulfil all their objects, and more especially in regard to education. He must congratulate Mr. Eberlin on the position of his Society, for Nottingham certainly took the lead in education. It was to the universities pharmacists must look in the future for education. The Sheffield school had been a success as they had carried it on in the past, but they were looking forward to a much

greater success as the result of their amalgamation, as it were, with the Sheffield University College. One of the difficulties in the past had been that they could not rely upon having the services of their lecturers for any length of time, and they were frequently compelled to change them. The classes for materia medica and theoretical pharmacy would still be carried on at the school, as there was no one more capable of conducting these than a pharmacist. He held great hopes that the alteration would turn out a great success, and that they would eventually have a curriculum. No doubt that was what it would have to be before long. He thought a course of three or four years' study would be required before a student could enter for the "Minor," and it was his idea that the "Minor" should be divided into first and second classes, so that a student could get through it in reasonable time, and show that the apprentices and juniors had studied during their early training. Since their last gathering many changes had taken place in the world of pharmacy, and local associations had had a good deal to do. The Pharmacy Acts Amendment had been passed and the Sheffield members of Parliament had been well whipped up to support it. The Poisonous Substances Bill came on next and was stoutly opposed. Owing partly to the action of the chemists throughout the country, and to the societies, the measure was discarded altogether, and the result showed, at any rate, that the local associations were something to be reckoned with. Over these two Bills the chemists of the country had shown themselves a power, and if united they would be almost irresistible in any just cause they took up.

The PRESIDENT, in the absence of Mr. J. M. Furness, submitted the toast of

The Pharmaceutical Society of Great Britain,

and said it was the duty of local societies to assist the parent Society in its efforts to benefit their craft. The Society had done good work in the past and he was sure it would continue to do good work in the future. Last year was a red-letter year for the Society. There were many things which the Society might do, and he thought it would be a good thing if the Council carried a test case on the subject of company pharmacy right through to the House of Lords, and ascertain if these companies possessed any legal right to call themselves chemists and druggists. Individuals, as they all knew, were not allowed to use that title until they had passed the Minor or Major examination, and it was a great shame that this condition could be evaded by a small number of people combining together and calling themselves a company. This matter seemed to him to be worth trying for, even if they failed, and it would be something gained supposing the law required the name of the manager of the shop to be placed over the door in bold letters.—Mr. G. T. W. NEWSHOLME, who responded, at the outset of his remarks expressed regret at the absence of Mr. J. M. Furness, who, he said, gave him valuable help when he first became a member of the Council in taking up the question of the consolidation of the Pharmaceutical Society. From the first he (Mr. Newsholme) felt that those who had passed the Minor examination ought to have the same privileges in the Society as those who had passed the Major. As most of those present knew, only the pharmaceutical chemists were allowed to be members of the Society, with the exception of those who were in business prior to the year 1868. The law permitted a man who held only the Minor qualification to carry on the business of a chemist and druggist, and in fact to do everything that pertained to the qualification of a pharmaceutical chemist, with the exception that he could not use that title in science, which was reserved for those who had passed the higher examination. It had always recognised the right of the man who had passed the Minor to carry on business, and he had regarded it as an anomaly that such a man should be debarred from being a member of the Pharmaceutical Society and voting for the election of Council. It had taken them ten years to get through Parliament a Bill to remove this anomaly, and such a Bill became law last session. The members of the Council acknowledged that what they had accomplished had been largely due to the assistance they had received from the local societies and also to the great body of chemists throughout the country. The result of this movement, Mr. Newsholme contended, proved that after all the chemists were not such a disunited body as some would have them believe. It showed that when the interests of the craft were concerned, they could be united for their common good. He did not want anyone to get the impression that pharmacists were seeking legislation merely to benefit their craft, as they had in view the welfare and protection of the public, and

in his position as Vice-President of the Society he wished to impress upon all the members the fact that they were charged with public duties and responsibilities. It was also a fact that they were responsible to the Privy Council. He would remind those critics who complained that the members of Council did not do this or that, that they were bound by Act of Parliament, which told them their existence depended entirely upon the public good. One subject which loomed before them was that of company trading, and he wished to emphasise what had been already said on the subject. A prompt remedy for the evil was possessed by the qualified chemists. If these refused to sell themselves to the limited liability companies, the latter could not carry on their business for another day. It was not for the public good that this state of things should continue. It was perfectly well known that the General Medical Council possessed the power to prevent unqualified men from practising under the cover of a registered medical man by removing from the medical register any medical man lending himself to such arrangements, and he thought the Council of the Pharmaceutical Society ought to possess similar power. It seemed to him a very great anomaly that an individual grocer or ironmonger was not allowed to hire a qualified chemist and to carry on the business of a chemist by his aid, whereas seven ironmongers or grocers could combine together and do this. The law had been appealed to on the point, and the House of Lords ruled that limited companies were not contemplated when the Act was passed, and were therefore outside the Act. That might be very good law but it was not common sense. If it was right for seven persons to combine and act as chemists by simply engaging a qualified man, it was right for individuals to do the same thing. This company trading was certainly contrary to the spirit of the Pharmacy Act, and if each individual qualified chemist would keep in mind the duty to his craft and to the public which was imposed upon him, and would set up a high ideal of what was right and honourable, a remedy would soon be found. Alluding to criticisms of the Society, he said whatever feeling there might be against it, the organisation was charged with everything that pertained to the welfare of the pharmacist and his craft, and no good could be accomplished from anything outside it. He was, therefore, sorry that so many chemists failed to realise that it was their duty to join it. He acknowledged the indebtedness of the Council to Sir Howard Vincent, Alderman Langley, and other local members of Parliament for their assistance in the passing of the Pharmacy Acts Amendment Act. In connection with this legislation the chemists had demonstrated the power and influence they possessed, and having succeeded so well he asked what might be accomplished in the future if they acted in concert and used their powers to the fullest extent. It was possible for the members of the craft to secure a far better position than they had occupied up to the present time. Referring to the Poisonous Substances Bill introduced in the last session, the speaker said the Council could not see their way to accept it. Legislation on the subject was needed, but they wanted a Bill which would be both for the benefit of the public and of themselves. They contended that, charged as they were with duties upon which the safety of the public depended, chemists ought to be educated men. It was not sufficient to have a Bill dealing with the registration of poisons pure and simple, for they knew that the mere labelling of an article that was a poison was no protection. An educated pharmacist would use an intelligence when a customer asked for a deadly poison, in the direction of ascertaining the use that was going to be made of it. He would not be satisfied altogether in selling anything that was asked of him. He knew the value of poisons and their liability to misuse. If asked for prussic acid, for example, the educated chemist would inquire what it was intended for, and if the customer had the appearance of being a weak-minded individual, who might have conceived the idea of suicide, he would not sell the drug. The more experience one had in these matters the more one saw how much to the advantage of the public it was that the sale of poisons should be in the hands of suitably educated men. He disclaimed on the part of the chemists any desire for legislation in this direction for their own advantage, as in mere pounds, shillings, and pence it frequently occurred that legal restrictions of this kind were distinctly disadvantageous. The Government had undertaken to introduce next session a Bill to deal with the sale of poisonous substances. It was a large question, and there was a difficulty in drawing the line as to what were poisonous substances. Many things not now in the Poisons Schedule required handling

with very great care. However, no less a statesman than the Lord Chancellor, together with other members of the Government, had stated that they were prepared to do something more in protecting the public from poisons in the near future. The Council would like to see carbolic acid scheduled as a poison, but they could do no more than they had done. They were, however, fully alive to the fearful evils which might and did result from the facilities which existed for obtaining deadly poisons, and would miss no opportunity to remedy the matter.—Mr. J. RYMER YOUNG also replied, at the outset advising societies on all possible occasions to accept all the help they could get from their members of Parliament, whether Liberal or Tory, as there was not much difference between the two parties when it came to measures affecting their craft. He also described Mr. Newsholme as one of the most popular members of the Council, and thought Sheffield was distinguished by the fact that one of their citizens held the position of Vice-President of the Society. Appealing for increased support for the Society, he said that notwithstanding the ridicule which it was the fashion and the caprice of certain people to throw upon it the organisation was the only permanent power to be of the slightest assistance to the craft.

Mr. J. F. EARDLEY gave the toast of

The Medical Profession.

—Dr. ROBERTSON, replying, said the two professions were allied in several important respects. The medical profession admired the ability shown by the chemists in coming to their aid with new preparations, and in making more certain in composition the old ones. The profession also owed a debt of gratitude to the Pharmaceutical Society for the work it was doing to improve the education of its members, and to enable them to keep abreast of the times. The medical profession and the chemists, he thought, might, with great advantage to the State, join hands in an effort to stamp out the abominable and criminal use of *abortifacients*. It was an evil which required legislation.—Dr. GEORGE WILKINSON, who also replied, said the medical profession owed much to the Pharmaceutical Society, and sympathised with its attempt to amend the Pharmacy Act and to improve the regulations as to the sale of poisons. Dwelling upon the immense advance which had taken place in pharmacy in recent years, he said drugs were now prepared in much more simple and convenient forms, and new drugs were constantly being brought out; indeed, he thought pharmacists were making things too easy for the medical man. Everything he produced, both drugs and food, were in such beautiful form that the medical man had no need to compound his own formula or regulate the dose, or in fact to do anything but prescribe occasionally. As the interests of the two professions lay on parallel lines in many respects, he hoped they would work together in the future for the advancement of those objects which both had in common, and for the public good.

Mr. A. H. ALLEN gave the toast of

Sheffield University College and Learned Societies.

He said the learned societies were able to bring powerful influence to bear on public departments and officials, and they might exercise their power in such a way that the Pharmacopœia of the future—if they ever got one—would be compiled on reasonable, rational lines. The present one was irrational. In other directions the learned societies could help the pharmacists, and he was glad they were being brought together more than was formerly the case.—Dr. HICKS, F.R.S., in reply, said he had long thought it would be an advantage to the chemists and to the College to secure that connection which was being inaugurated this year. He regarded, as one of the most peculiar features of the time, the tendency to systematise all matters of knowledge, a tendency which he thought they owed to the German. We owed to them the idea of teaching in a methodical manner a profession or a calling—in fact, the whole idea of technical education. Pharmacists, like the other crafts and professions, have kept on improving their methods and curricula for education, and when the Society obtained the powers it was seeking, it would be able to enforce the proper education of the younger members of the profession. In that way they would secure systematic education throughout. The Professor alluded to the enormous confidence which the public placed in the chemist. The slightest mistake by the chemist might cause fatal consequences, yet his preparations were taken without the slightest doubt. He doubted if the extent of this confidence was fully realised, but it was there and it was due to that confidence that the pharmacists should see to it that the future members of the craft were

thoroughly educated.—The final toast was that of "The Visitors," proposed by Mr. W. WARD and replied to by Mr. J. HUMPHREY.—On the following day some of the officers of the local society and several of the visitors drove to Ashopton and spent a happy day in the beautiful Peak county. The weather was highly favourable.

SELECTED FORMULÆ.

QUININE URETHANE FOR INJECTION.

Professor Gaglio recommends a mixture of 2 parts quinine hydrochloride and one part urethane as a substitute for other quinine salts for subcutaneous injections. The mixture is readily soluble in water, also neutral and non-irritating. Quinine hydrochloride, 3; urethane, 1½; and distilled water, 3; form the injection recommended—*Ztsch. d. allg. oest. Apoth. Ver.*, lii., 358.

SYRUPUS CALCII PHOSPHOLACTICI CUM FERRO ET MANGANO.

Calcium phospho-lactate, 20; iron lactate, 5; manganese lactate, 1, are dissolved in 74 parts of water. After filtration, the fluid is mixed with simple syrup, 900. Two drops of lemon oil are added for every 1000 grammes of the syrup.—*Pharm. Cent.*, xxxix., 460.

LEATHER CREAM FOR BROWN OR YELLOW SHOES.

(a) Yellow wax, 2, and stearine, 1, are melted in linseed oil, 1, on the water bath; turpentine, 6, and yellow ochre, 1, is stirred in. (b) One part hard soap is melted separately in 10 parts water, with continued stirring, both solutions are mixed to a uniform milky fluid, which is made up to 30 parts with water. The mixture is stirred until cold and filled into bottles.—*Zeit. d. allg. oest. Apoth. Ver.*, lv., 442, after *W. Drog. Ztg.*

RUBBER CEMENTS.

(1) Gutta-percha, 2; caoutchouc, 4; fish glue, 1; carbon disulphide, 26. (2) Dissolve caoutchouc, 9, in chloroform, 60, and add powdered mastic, 15.—*Zeit. d. allg. oest. Apoth. Ver.*, lii., 442.

REMEDY FOR PEDICULI.

Sem. staphisagria, 5; ung. hydrarg. ammon., 40; chloroform, 5. M. f. ung. Rub in three times per diem and wash off at night with lukewarm water and carbolic soap.—*Zeit. d. allg. oest. Apoth. Ver.*, lii., 442, after *Pharm. Ztg.*

PRESERVATIVE.

Preservative for preserving meat is said to consist of sodium chloride, 9.07; nitre, 24.6; borax, 34.56; boric acid, 32.2.—*Pharm. Centr.*, xxxix., 425, after *Amala. d. Farmacolog.*, 1891, 19.

STRAWBERRY POMADE.

Prepared suet, 3, are melted with lard, 5, and cacao butter, 8; fresh strawberries, 3, are added and set aside for 24 hours at a moderate temperature. The solution is strained through linen and a little rose oil or neroli oil added before cooling.—*Zeit. d. allg. oest. Apoth. Ver.*, lii., 360, after *Natt. Drugg. Ap. Ztg.*

LIQUID DENTIFRICE.

Benzoin, 12; ol. menth. pip., 12; powdered cochineal, 0.6; alcohol (90 per cent.), 300. D.S. 20 drops in a glass of water.—*Zeit. d. allg. oest. Apoth. Ver.*, lii., 360, after *Ph. Ztg.*

ANODYNE APPLICATION FOR BURNS AND BLISTERS.

Menthol and chloral hydrate, āā 1; spermaceti and cacao butter, āā 2; spread on linen.—*Zeit. d. allg. oest. Apoth. Ver.*, lii., 359.

TINCTURE OF EUCALYPTUS FOR COVERING THE ODOUR OF FORMALIN.

Formalin (40 per cent.), 25; eucalyptus tincture, 5; spirit of wine, sufficient to make 200. The solution smells agreeably, each teaspoonful corresponding to 0.25 gramme of pure formalin.—*Zeit. d. allg. oest. Apoth. Ver.*, lii., 360, after *Pharm. Ztg.*

INDIAN CREAM.

White wax, 3, is melted on a water bath with spermaceti, 2; olive oil, 20, is added, in which alkanet root, 20, has been digested until a deep red colour results. The mixture is strained through muslin into a mortar, a little lavender oil and tincture of ambergris are added, and the whole is beaten until cold.—*Zeit. d. allg. oest. Apoth. Ver.*, lii., 360, after *Nat. Drugg.*

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THE DUTIES AND NEEDS OF LOCAL SECRETARIES.

THE time is rapidly approaching when the appointment of local secretaries for the ensuing twelve months will be under consideration by the Council of the Pharmaceutical Society, and meanwhile voting papers have been sent to all members and associates in business residing in towns where such officers of the Society may be appointed. It may not be out of place to recall the fact that local secretaries may be appointed in all towns in Great Britain, except London and Edinburgh, which return one or more members to Parliament, or which contain not less three members of the Society or associates in business. Last year, however, no less than forty-eight towns, eligible to be represented by local secretaries, were distinguished by the fact that no nominations for the post were sent in from those places. Such a circumstance is deeply to be regretted, as it seems to indicate only too clearly that the chemists in business in the towns referred to were either ignorant of or indifferent to the advantages offered by complete organisation. This is the more remarkable when it is considered that, including assistant local secretaries and the divisional secretaries for London and Edinburgh, there are nearly three hundred and seventy voluntary officials of the Society, stationed throughout the whole country, and that if they were properly supported on all occasions, the results attained might be not only beneficial to the craft, but also far reaching and enduring. The voluntary principle is not the least valuable feature of these appointments, and it is open to doubt whether paid canvassers and collectors could effect all that it is possible for local and divisional secretaries, appointed as at present, to do.

Coming to the duties attaching to the office of local secretary, they are partly general and partly special. The special duties are to report the changes of address of registered chemists in the district, and so assist in keeping a correct Register; the notification of infringements of the Pharmacy Acts; the collection of subscriptions to the Society and its Benevolent Fund. The general duties are to furnish such information as may be required at headquarters from time to time, and the promotion of the interests of the Society in every other possible way. The reporting of changes of addresses should, of course, include the notification of

arrivals in, as well as departures from, the district, and that in the case of all registered chemists, whether principals or assistants, and whether subscribers to the Society or not. Infringements of the Pharmacy Acts may be committed by registered chemists as well as by unregistered persons, and it is necessary to bear in mind that, in accordance with Section XV. of the Pharmacy Act of 1868, it is not only illegal for unregistered persons to "sell or keep an open shop for the retailing, dispensing, or compounding poisons," and to "take, use, or exhibit the name or title of chemist, etc.," but it is also illegal for any person, whether a registered chemist or not, to "compound any medicines of the British Pharmacopœia, except according to the formularies of the said Pharmacopœia." The infringements dealt with in Section XVII. of the Act are, as is well known, omission by the retailer of any scheduled poison, whether a registered chemist or not, to label the poisons properly, and failure to record the sale of poisons in the first part of the Schedule, as provided by the Act. Here, then, are five distinct offences against the law, instances of which should be duly reported to headquarters by local secretaries whenever they are brought under their cognisance. Of the collection of subscriptions it is unnecessary to say anything beyond the fact that this duty is usually well performed by local secretaries.

The general duties of local secretaries, as distinct from their special duties, are best considered in connection with their needs. For local secretaries have peculiar needs as well as duties. As the capable and much esteemed local secretary for Liverpool pointed out a few days ago (see p. 439), they are men in business having many claims upon their time, and often ill able to afford to neglect their own private affairs to any large extent. They need, therefore, a fair measure of assistance from neighbouring chemists. Every registered chemist in a given town should consider it incumbent upon him to intimate, either through the local secretary or direct to headquarters, any breach of the Pharmacy Acts of which he is cognisant, or any alteration in the Register of Chemists and Druggists that may be required to secure accuracy in that all-important list. And this brings us to the local secretary's chief need—that of a complete and correct Register. The subscription-list for his town shows him how many of the local chemists in business on their own account subscribe to the Society, but he must usually depend upon the local directory, checked by the Register, to ascertain what other registered chemists are in business there, whilst he is quite at sea with regard to the registered assistants in the district, neither local directory nor Register affording him the least clue with regard to that class. The Register, unfortunately, frequently only records the addresses of assistants at the time they passed the qualifying examination, and any radical reform of that list would seem to require that the actual addresses at the time of publication should be given in all cases. More than that, quarterly lists of alterations in addresses might well be supplied to local secretaries, who, in turn, should do whatever they can, aided by their fellow-chemists in the district, to help the headquarters' staff to keep the list of addresses correct up to date. In fact, the ideal of a correct Register can only be realised by the cordial co-operation of local secretaries and registered chemists as a body with the Registrar. Another need of local secretaries is the opportunity of comparing notes with each other. It ought not be difficult for district conferences of local secretaries to take place three or

four times a year under the chairmanship of the nearest member of the Council of the Pharmaceutical Society. In addition, as Mr. SMITH suggests, representatives from all the districts in Great Britain might meet once a year—at the place and during the time selected by the British Pharmaceutical Conference. Such meetings would be of the greatest possible advantage to local secretaries, and through them to all the registered chemists in their respective districts. But, above all, it should be evident that if local secretaries are to do their best for pharmacy they must receive the cordial sympathy and co-operation of all the registered chemists around them, as well as of the headquarters' staff. Thus, and thus only, can they be expected to fulfil satisfactorily their general duties—furnishing such information as may be required from time to time in the interests of pharmacy and the general public, and in other ways doing all that is possible to promote the interests of the Pharmaceutical Society.

THE USE AND ABUSE OF MEDICINES.

IN an address to the Reading Pathological Society, Mr MALCOLM MORRIS has pointed out that the improvement in methods of local treatment of skin diseases is attended with certain disadvantages, since the very excellence of the numerous elegant applications, due to the inventiveness of UNNA and other skin specialists, has tempted medical men to rely too exclusively upon them. To some extent the best effects of internal remedies have been masked by polypharmacy, a superfluity of drugs being ordered in a prescription to conceal a possible want of knowledge on the part of the prescriber. But however useful as a cloak for the doctor's ignorance, to the patient polypharmacy is always more or less injurious, inasmuch as every drug taken into the stomach damages to some extent the delicate machinery of the body. "Nothing probably has hindered the progress of therapeutics as much as polypharmacy. If we fire charges of medicinal small shot at a disease, how are we to tell which of them hits the mark? And how is it possible to gain an accurate knowledge of the action of remedies if we administer them in mixtures as complex in their ingredients as the *bouillabaisse* so lovingly described by THACKERAY?"

After defining the sphere of influence of internal remedies, the lecturer proceeded to describe their action, classifying them as alteratives—arsenic, antimony, phosphorus, potassium iodide, the salicylates, thyroid extract; internal antiseptics—mercury and ichthyol; and nerve sedatives, such as opium, chloral, sulphonal and phenacetin. All were spoken of as useful remedies if administered under suitable conditions, and in conclusion it was stated that in dermatology, as in every other department of medicine, progress has been greatly hindered by blind adherence to tradition and authority, "Tradition tends to keep alive superstitions like the 'constitutional' bogey; authority creates fallacies of its own." These largely spring from an unscientific use of a multiplicity of remedies, which leads to effects being attributed to wrong causes. VOLTAIRE says it is unquestionable that certain words and ceremonies will effectually destroy a flock of sheep—if administered with a sufficient quantity of arsenic. Similarly "we have still a vast amount of 'words and ceremonies' to get rid of in dermatological practice before we learn to use with precision the arsenic or other agent which is the efficient cause of cure in skin diseases."

ANNOTATIONS.

COMMERCIAL MORALITY was, as pointed out by Mr. Mumbray (see p. 455), touched upon by the Bishop of Ripon in his recent inaugural address to the Church Congress. It was there remarked that when business and personal character go hand in hand, when a man trades in his own name and on his own responsibility, any deviation from truth and honesty is an impeachment of personal honour; but anonymous trading or trading under the impersonal title of a company has diminished the sense of personal responsibility. Sensitiveness to dishonour is blunted, the opportunity of gain without the loss of personal prestige being a powerful persuasive which sweeps away many scruples. "An anonymous society feels less need of a conscience than an individual, and a company is too often more limited in honour than in capital. The theory that trade is not a system for the interchange of needful commodities, but a method of predatory warfare is too often tacitly accepted; and the principle in this warfare that anything is fair is, alas, frequently adopted in practice. And so it happens that men who would be expelled from a club for cheating at cards may be held blameless members of society, though they have been responsible for a seductive and inaccurate circular followed by inflated prices, and the ruin of those whose only fault was the weak faith which led them to believe that noble names were a guarantee of honourable dealing."

DISPENSERS IN H.M. NAVAL HOSPITALS must, according to the latest regulations, (a) have passed the Minor or Major examination of the Pharmaceutical Society of Great Britain, or (b) hold "the certificate of competency granted by the Pharmaceutical Society of Ireland." Whether the certificate referred to implies that the holder is a L.P.S.I. or not is left to the imagination. What is quite clear is that an individual legally qualified to dispense anywhere in Great Britain will not be accepted for service in a Royal Naval Hospital without further examination. The candidates must not be more than twenty-five years old, they must pay an examination fee of ten shillings each, and if successful will be required to satisfy the Civil Service Commissioners as to their physical fitness to serve on foreign stations. The subjects of examination are pharmaceutical chemistry, materia medica, poisons, recognition of chemicals and drugs, and practical pharmacy. "Pharmaceutical chemistry," as understood by the Civil Service Commissioners, treats of the sources, adulteration, and active principles of drugs, the principles of dosage and dispensing, flavouring agents, incompatibility and antagonism, idiosyncrasy, toleration and habit, accumulation, weights and measures, including the metric system. Such a jumble could have emanated only from the brain of a naval medical crank, and the duty of interpreting this part of the syllabus should be rewarded by the granting of a special decoration, not the Victoria Cross, but something equally distinctive.

OF THE OTHER SUBJECTS, the only useful one is that of "poisons," and no reasonable objection could be taken if the Minor syllabus required candidates to show an acquaintance with "the symptoms produced by the commoner poisons, the modes of evacuating the contents of the stomach, emetics and their mode of administration, antidotes and their mode of preparation." In "materia medica" a knowledge is required of "the physical and chemical characters, preparations, actions and doses" of the elements and compounds usually dealt with in an elementary course of chemistry; "the physical and chemical characters, mode of administration or application, actions and doses" of "synthetical compounds,"

including alcohol and alcoholic drinks, anæsthetics, anti-septics, salicylates, iodoform and its substitutes, chloral and butyl-chloral hydrates, sulphonal and its congeners, nitro-glycerin and amylnitrite; "the source, physical characters, preparations, actions, doses and uses" of some forty drugs of vegetable origin, together with cod-liver oil and cantharides. The "recognition of chemicals and drugs" is to be confined to those commonly employed in medicine, a very wise limitation, most readers will think. Finally, in the practical pharmacy examination, the candidate "may" have to dispense mixtures, pills, suppositories, etc., and to spread plasters; but he "must" be able to dispense percentage solutions. Where this practical examination is to be held is not stated, nor who amongst the Civil Service Commissioners is to apply the necessary tests. The date, however, is fixed for November 8, and to ensure the attendance of some candidates, such temporary men as are at present engaged at the Royal Naval Hospitals have received orders to present themselves for examination, doubtless to avoid causing disappointment to the expectant examiners as might be the case if they had no one to operate upon.

AT THE SANITARY INSTITUTE the introductory lecture to the sessional course of lectures and practical demonstrations in sanitary science for sanitary officers and students was recently delivered by Sir Douglas Galton, who explained that the passing of the Public Health Act, 1875, was the first effort made by the Legislature to deal with the health of this country as a whole, though that Act has since been supplemented by numerous others, as well as by bye-laws. One of the first problems which occupied the attention of the founders of the Sanitary Institute was that of improving the knowledge and, through that, the status of the sanitary inspectors. In the Public Health Act of London, 1891, Parliament required that sanitary inspectors should possess a certificate of competency for the performance of their duties from some examining body approved by the Local Government Board, and that Board has determined that in future there shall be a single examining body, composed of delegates representing the Sanitary Institute, the medical officers of health, the municipal and county engineers, the Royal Institute of Public Health, the National Health Society, and the Carpenters' and Plumbers' Companies. The Sanitary Institute, however, will continue to hold examinations generally for persons who desire certificates of proficiency in sanitary knowledge without reference to any official posts in London.

THE GOVERNMENT LABORATORY REPORT, for the year ended March 31 last, shows that the number of analyses and examinations made during the year amounted to 65,313, being a slight increase over the previous year, notwithstanding the interruption caused by the removal of the Department from Somerset House to the new laboratory which the Treasury had directed should be built. The first part of the Report relates to work in connection with the Revenue Department, and gives particulars of the numerous samples of tobacco and alcoholic liquors examined. The second part shows that 3480 samples were received from other Departments than those of Inland Revenue and Customs. Those samples were of a very miscellaneous description, ranging from butter and gold lace to soaps, cements, metals, milk, and sealing-wax. Such samples of drugs as were examined during the year were referred to the Somerset House authorities in accordance with the provisions of the Sale of Food and Drugs Act. They numbered sixty-five in all, and so far as registered chemists were concerned the results of the check analyses proved distinctly favourable on the whole. In one case it was alleged that there was a deficiency

on the average of 45 per cent. of each of three ingredients, but Dr. Thorpe reports that two of them were present in full proportion, and the third entirely absent. A sample of glycerin alleged to be diluted with water was found to come up to the B.P. standard, olive oil said to be adulterated with cotton-seed oil was in reality mixed with sesame oil, and glycerin was found to be present in samples of "lime juice and glycerin" and "lime cream and glycerin," reported by public analysts to be innocent of that ingredient. Under the circumstances it is not to be wondered at that registered chemists and other traders are sometimes septical about analytical results produced as evidence in courts of law.

THE PUBLICATION OF SCIENTIFIC CRITICISM of proprietary articles is now, as recently stated in the Journal (*ante*, p. 405), legally justified in France. The *Lancet* joins with other leading organs in agreeing that nothing could be more satisfactory than the legal decision reported, and expresses the wish that a similar example may be followed in this country. Presumably, however, our medical contemporary does not expect to be taken seriously when it suggests that it would be instructive and useful to the whole community if the Fellows of the Royal and Chemical Societies could be induced "to leave abstruse pursuits for a while, and present papers, say, on the composition of 'Munyon's Remedies,' 'Pink Pills,' 'Seigel's Syrup,' 'Blood Mixture,' 'Microbe Killer,' and so on *ad nauseam*." Still more will readers be inclined to doubt that, could such an ideal be realised, "the scales would be removed from the eyes of a remarkably gullible public." Judging from experience, the probability is rather that the "remarkably gullible public" would simply copy the results of the analyses and, whilst congratulating itself upon its smartness in getting the mixtures concocted at a considerable reduction upon the prices of the original articles, consume vastly larger quantities of unnecessary and unsuitable physic than even now.

THE MEDICAL SOCIETY OF LONDON inaugurated its one hundred and twenty-sixth session last week, when an introductory address was delivered by Mr. Edmund Owen, surgeon to St. Mary's Hospital, who remarked that amongst the many treasures of the Society's library were fifteen volumes of manuscript which had formed the diary or common-place book of the Rev. John Ward, who was vicar of Stratford-on-Avon from 1662 to 1681. Having taken his M.A. degree in 1652, Ward left Oxford for London to study anatomy at the Barber-Chyrurgeons Hall in Monkwell Street (where Dr. Scarborough, the friend of Harvey, was giving demonstrations), and to acquire a general knowledge of the healing art, for not very many years ago it was quite usual for the professions of Divinity and Medicine to be combined in the one individual. On taking up his work in Stratford-on-Avon, in the forty-sixth year after Shakespeare's death, Ward must, both as vicar and doctor, have been told of many facts concerning the bard by those who had been intimately acquainted with him. Unfortunately, he did not record much about him in those memorandum books; what he did say had been seized upon by Halliwell Phillipps, and duly recorded in his 'Life of Shakespeare.' One extract was given, the duodecimo volume being handed round so that it might be seen just as Ward had written it, nearly two centuries and a-half ago:—"Shakspear, Drayton, and Ben Johnson had a merry meeting, and, itt seems, drank too hard, for Shakspear died of a feavour there contracted." In those times it was customary to call obscure diseases "feavours," just as they were now called "influenzas" or "neuroses"; but, whatever the actual causes of Shakespeare's death might have been, it was evident that local tradition ascribed it, rightly or wrongly, to the effects of that "merry meeting." For a "merry meeting" it doubtless was.

CHEMISTS' ASSISTANTS' ASSOCIATION.

The inaugural meeting of this Association was held at 73, Newman Street, London, W., on Thursday, October 13. There was a very good muster of members, and the new PRESIDENT (Mr. F. W. Gamble) was accorded a hearty ovation on taking the chair. —Mr. H. E. MATTHEWS, the Hon. Secretary, having read the minutes of the last meeting, Mr. H. S. Wellcome was proposed for election as a patron of the Association; four new members were also nominated, and the PRESIDENT then delivered the inaugural address, the subject of which was

Education in Pharmacy.

Mr. GAMBLE expressed his consciousness of the great honour done him in his election as President of the Association, and his intention to make every endeavour to maintain the traditions of the Association, and with the help of the members to widen its sphere of influence. He proposed to speak principally of education in pharmacy, with particular reference to the post-examen period, when the fruits of previous study are ripening and their value is receiving a tardy appreciation. Most of the members of the Association had undergone the training necessary to obtain a pharmaceutical qualification and had attained to a degree of knowledge in some of the most alluring branches of science. But, examinations safely negotiated, books are often cast away to the farthest corner, and the little sum of learning acquired with so much labour is allowed to slowly melt away. This, Mr. Gamble deplored, because degeneration necessarily follows disuse of a faculty, and as training is necessary to its development, so is exercise essential to the maintenance of its efficiency. Hence it becomes incumbent upon the student to continue his studies after the post-examen period is reached. That this is not a habit amongst chemists might be conceded from the records of the Association, inasmuch as it is a matter of the greatest difficulty to obtain a dozen papers on pharmaceutical subjects from about a hundred and fifty members. Any man of ordinary ability who has continued to take an interest in the advances made in pharmacy and its cognate sciences, Mr. Gamble was of opinion, should be able to write a paper on some subject for which he has a special liking, without the slightest difficulty. A consideration of the reasons for this neglect of what might be called secondary education showed that the one of paramount importance is the apathy which appears to permeate the pharmaceutical body politic, and which receives encouragement in the change from compulsory study to optional reading. In the opinion of the speaker many men who have the will would continue their work if they could receive efficient assistance. It was, he thought, a striking fact that there is not, to his knowledge, a single course of post-graduate instruction given in any school of pharmacy in, for instance, pharmacognosy, or the analysis of water, urine, foods, or drugs. He did not know whether this is due to lack of energy on the part of students or of teachers, but he was sure that an analytical class could be formed if teaching and accommodation were good. Again, the present method of preparation for the examinations chokes any desire for the acquirement of knowledge for knowledge' sake, and prevents the development of that scientific enthusiasm which is the true basis of post-graduate study; the attempt to assimilate an inchoate mass of fact in the shortest possible time results in a species of mental indigestion not favourable to later work. Mr. Gamble then went on to show how that the progress of pharmacy is bound up with the progress of every other science, each advance being reflected upon pharmacy through the medium of *materia medica*, which is the chemist's cynosure, the whole course of his education tending to a thorough comprehension of the substances which form the armentarium of the physician. He strongly emphasised the necessity for continual diligence on the part of chemists by noticing in some detail this influence of science upon *materia medica*, and showed how a more complete understanding of the physiological function and use of certain secreting glands in the human economy has aided to *materia medica* several preparations of great interest, such as the products of the salivary, gastric, and thyroid glands and of the pancreas. The enormous influence upon *materia medica* of the growth of bacteriology was mentioned, it being shown that the science of preventive medicine is entirely based on the knowledge accruing from the study of these minute forms of vegetable life. Mr. Gamble next referred to the branch of chemical research which deals with the substances forming the cells and tissues of

the body and with the chemical nature of its secretions and excretions, which has added some new remedies to *materia medica*, Lecithin was instanced as being the most complex and apparently of the greatest importance of the fats of the body, containing as it does, in addition to carbon, hydrogen and oxygen, nitrogen and phosphorus, and yielding as products of its artificial decomposition glycerophosphoric acid, in addition to stearic acid and the alkaloid choline. The efforts of synthetic chemists to produce imitations of natural products were then spoken of, and Mr. Gamble remarked that there appears to be no theoretical obstacle to the production of any organic substance, beyond the curious fact that it has been found impossible to produce any single substance possessing optical activity by purely artificial means, this requiring the intervention of the life process. The recently introduced proteid compounds of silver were next noticed, and the chemistry of digestion as applied to the production of readily assimilable and palatable concentrated foods. The few examples given, Mr. Gamble said, were but a tithe of what could be adduced to show the influence of progressive science upon *materia medica*, but they were sufficient to show that for a proper study of this subject some versatility is required, and that continual application is necessary if a pharmacist would possess an adequate knowledge of his business. He ventured to maintain that the average newly-qualified chemist is not prepared to give this application, and he concluded his address by emphasising one point which he believed to be a great factor in causing this apathetic condition. To quote a well-worn platitude, the thorough pharmacist is made in the days of his apprenticeship; but usually the three or four years of pupilage are not only wasted themselves, but are generally spent in forgetting all the book-learning of the schools. As almost every town of importance possesses facilities for technical education, Mr. Gamble urged that it is the duty of the pharmacist to see that in addition to receiving a proper training in shop routine, his pupil avails himself of the opportunity of the study of scientific subjects. The subject of the training of apprentices is of such importance that in his opinion, seeing that a gradual acquirement of the necessary knowledge during three or four years is infinitely preferable to entire dependence upon a course of training of six or even twelve months' duration, there should be required on entry for the Minor examination in addition to a certificate of training for three years in a chemist's shop, certificates of attendance on science lectures during the days of apprenticeship.—Mr. T. MORLEY TAYLOR, the ex-President, said he rose with great pleasure to propose a hearty vote of thanks to Mr. Gamble for his interesting and instructive admonitory address, in which he had given very good reasons for suggesting the extension of knowledge amongst chemists after they had got their diploma. There could be no doubt that it would greatly improve the status of pharmacists all round. The President had asked whether the absence of any post-graduate course is due to the apathy of students or of teachers. He was afraid the fault did not lie with teachers, but with pupils. The study of physiology and physiological products had been dealt with at some length in the address, and although the Pharmacy Act contained a clause to the effect that no subject dealing with the theory and practice of medicine should be included in pharmaceutical examinations, Mr. Gamble had proved that it is almost impossible for a pharmacist to understand many branches of his calling or even to have a true appreciation of vegetable physiology without some knowledge of human physiology. He (Mr. Taylor) thought all would agree that Mr. Gamble, as President of the Association, was the right man in the right place, and the man, above all, competent to give them the admonitory address he had given.—Mr. G. PEARSON, in seconding the vote of thanks, said he was very much surprised that pharmacists do not take up even an elementary course of bacteriology and therapeutics. He believed that a knowledge of those subjects would improve their position very much, as many valuable posts are open to pharmacists who make themselves masters of such subjects.—The vote of thanks was carried with acclamation.—The PRESIDENT acknowledged the thanks and took the opportunity to refer to the irreparable loss the Council and Association have suffered by the death of one of the Council, Mr. F. Cooper. He was perhaps little known to many of the members, but by his gentle courtesy he had endeared himself to all who had to work with him.—In response to a question by Mr. STROTHER, the PRESIDENT said the Council, on behalf of the Association, had sent a letter to Mr. Cooper's relatives, accompanied by a wreath and expressing sympathy with them in their bereavement.

MANCHESTER PHARMACEUTICAL ASSOCIATION.

At the annual general meeting of the above Association, held on Wednesday, October 12, at the conclusion of Mr. Harrison's address (see *ante*, p. 433), Mr. A. Blackburn, the Secretary, submitted a report of the work of the past session, which had been a successful one.—The PRESIDENT (Mr. G. S. Woolley), in moving its adoption, said that, although it had been stated that this was the thirty-first meeting in the history of the Association, a Manchester association was founded twenty-six years before that, and he held in his hand a small relic showing that the first meeting was held at the Manchester Mechanics' Institution, on November 18, 1841, when a resolution was passed, "approving of the general principles of the Pharmaceutical Society of Great Britain." They ought never to forget the names of the gentlemen engaged in the work of those early days, and the names of those present at the meeting were most interesting. The President was Mr. George Danson, a very old pharmacist. He (the President) thought he had a pharmacy subsequently held by Mr. Pyne, and their friend, Mr. Hampson. They elected certain officers. The President was Mr. John Mottershead. The names followed of Danson, Simpson, C. Standing, Wright (he supposed that was old Mr. Wright of Oxford Street), Pickup, now of Piccadilly; Lett, Lynch, Roberts, Mason, Sharp, James Woolley, Bowker (who he supposed would be the same Bowker who was subsequently Mayor of Manchester), Richards, Booth, of Rochdale; G. Le French, of Bolton; Simms, Stockport; Hargreaves, Oldham; Kenworthy, Ashton; Crompton, Bury; Bowman of Bury. On the other side was an autograph letter written by his (the President's) father, who was appointed Honorary Secretary, calling the meeting together; he should be glad to show it to any gentleman who might desire to see it afterwards. In regard to the session just gone by, it had been one of considerable interest. There had been a great deal of good work, and at the first meeting alluded to in it, Dr. Paul was present, and a resolution was passed supporting the Council in its efforts to obtain desirable legislation. He thought Manchester lent considerable assistance in obtaining the passing of

THE PHARMACY ACTS AMENDMENT ACT,

and they might congratulate themselves that that Act was now passed and was on the Statute Book. He thought it one of the most important steps which had been taken since the passing of the Act of 1868. It gave them the means of consolidating the Society—making the whole trade into the Society, in fact—and did away with the cry which many of them had been familiar with, What was the Pharmaceutical Society doing? That cry no longer held good. The Pharmaceutical Society now consisted of the whole body of pharmacists, and those who would not join the Society had no right to complain if they did not approve of the gentlemen who were giving their time and their labour on the Council in London. If they did not approve, then let them take steps for finding others to carry the work out to their satisfaction, but they had no longer grounds for asking what was the Pharmaceutical Society doing unless they were members of that Society and took some part in the government of the affairs of the Society. A very interesting event already alluded to was the banquet to the Lord Mayor of Manchester. He could assure everyone present on that occasion that the Lord Mayor was very much gratified with the reception they gave him. The occasion was unique, and the banquet was a great success. In moving the report he had to say that before it was printed he tried to get the complimentary allusions to himself struck out, but was not allowed his own way. The rejection of

THE POISONOUS SUBSTANCES BILL,

was an instance of what they could obtain if they were only united. He supposed the number of pharmacists on the Register stood at something like 15,000. If they only numbered 10,000, such a body of men when united must be a great power, but unless they were united that power was entirely lost. In regard to the syllabus for next year, although they had an interesting syllabus last year, he thought the present one excelled it. The papers were all of interest and high character, and he hoped they would be able to secure large audiences when the gentlemen came before them with their papers. He had to express his thanks to the gentlemen who addressed them last year for their efforts to advance the interests of that Association and to interest the members, and he could assure them that they had the thanks of the latter as well. He had great pleasure in moving the

adoption of the report and the Treasurer's statement.—Mr. J. BLYTON, in seconding the motion, said he was pleased to attest the fact that the accounts were perfectly correct.—The resolution was carried unanimously.

ELECTION OF COUNCIL AND OFFICERS.

The following retiring members of the Council having been nominated without any opposition, there was no ballot, and they were declared duly elected:—Messrs. F. W. Bates, A. Blackburn, H. Kemp, W. Kirkby, W. Lane, A. J. Pidd, J. W. Walton, G. H. Westmacott, J. Wild, G. S. Woolley, E. Yates, J. Rymer Young; and auditor, Mr. J. Blyton.—Mr. H. KEMP moved that the month of April be substituted for October in Rule XI., which was seconded by Mr. C. SWINN, and agreed to.—Mr. KIRKBY moved in substitution of Rule X., "that the President, Vice-Presidents, Treasurer, and Secretary shall be elected at the Annual General Meeting by the members present from among the newly elected Council. Each nomination shall be seconded, and the election shall be by ballot." Referring to the Chairman's remarks, he said they should remember that the meeting in question was called with the object of establishing a direct branch of the Pharmaceutical Society of Great Britain, and if they could only have branches up and down the country which should be in constant official touch with headquarters, more interest would be taken by the members at large. Another point he should like to speak of was that there was a Chemists' and Druggists' Society in Manchester and Salford in 1826. He had in his possession a members' list, at the beginning of which there were the rules for the government and welfare of the Society, and it dealt with the times at which they should close on Saturdays and Sundays, and so on. He thought it was interesting to know that there was at that time an organised Society in this district.—Mr. A. J. PIDD seconded the motion, which was carried by nineteen votes to three.—The CHAIRMAN (Mr. G. S. Woolley) pointed out that the effect of the resolution would be that they would have to elect all the officers named that evening. He added that Professor Huxley said that men over sixty became fossilised, and that they ought to be relegated to some spot where they could consider as to the preparation for their latter end, and Professor Max Müller had also said that they ought to make room for the younger ones and give them a chance. He did not think that the office of President should be held for any long term by any one individual. He trusted that they would take this in a friendly manner, but in any case his interest in the Society would continue. He was willing to serve on the Council or in any other capacity.—Mr. KIRKBY nominated Mr. G. S. Woolley, who, he said, was not in danger of becoming fossilised.—Mr. A. BLACKBURN had great pleasure in seconding the nomination of a gentleman who might be regarded as a very young fossil, and he hoped they might see him in the same position for a very long time. He was sure those who had been on the Council and knew the good work which Mr. Woolley had done for the Association would regret if he retired from the position. He for one should be very sorry indeed to see anyone else take it at present.—The CHAIRMAN: We will not have a contest for this office, gentlemen.—On the suggestion of Mr. KIRKBY, the nomination was endorsed by acclamation.—The CHAIRMAN expressed his obligations, and said that no effort should be wanting on his part to secure the future success of the Association. The Chairman then said the next business was the election of two vice-presidents, and as they had made no change in the President he trusted they would make no change in the vice-presidents. He had great pleasure in nominating Messrs. W. Kirkby and Harry Kemp.—Mr. SMITH (Radcliffe) seconded the motion, which was supported by Mr. J. BLYTON, Mr. J. RYMER YOUNG, and others, and carried unanimously.—The CHAIRMAN said they must be very "conservative" that night and make no changes. He had to nominate Mr. A. J. Pidd as Treasurer. Although he shook his head at one time over the financial statement, it had actually come out with a balance. They could not afford to pass by a gentleman like that, and he trusted he would kindly consent to undertake the duties of the office.—The resolution was seconded by Mr. HARRY KEMP and carried.

CHANGE OF SECRETARY.

The CHAIRMAN said he was sorry to monopolise these resolutions, but he must say a word about the election of secretary. They would remember that last year they had the greatest difficulty in getting Mr. Blackburn to act again. As they knew, his time was very fully occupied, and as he had served the office

for five years, it seemed to him that he had right on his side in asking to be relieved of the duties. He would presently propose a resolution of thanks to Mr. Blackburn for his services, but he might say they were very much obliged to him for what he had done for them, and particularly for filling the position at great sacrifice to himself during the past year. They had been casting about for a gentleman who would take the office of Secretary, and was pleased to say that they had induced Mr. J. W. Walton, of Higher Broughton, to accept. Mr. Walton had been a member of the Council, and had shown considerable interest in the welfare of the Association. He was sure they would have a very effective Secretary in Mr. Walton, and he had great pleasure in proposing his election for the coming year.—Mr. BLACKBURN seconded. He had known Mr. Walton for some years past, and was sure they could not have made a wiser selection. He had no doubt that Mr. Walton would have the same help and support that he had had during the past year or two. He thought a good syllabus had been prepared by the Sub-Committee, and he trusted that under Mr. Walton, the Association would increase in numbers and usefulness in the future.—The resolution was carried, and Mr. WALTON expressed his acknowledgments.—The CHAIRMAN moved that the best thanks of the Association be given to Mr. Blackburn for his services during the past five years. He did not know that he could add anything to what he had already said, but the Association was greatly indebted to him for his services.—Mr. HARRY KEMP, in seconding the vote of thanks to Mr. Blackburn, said those who were members of the Council during the years he had acted as Secretary to the Association, were fully alive to the fact that at times he had worked under considerable disadvantages, and it had been often a great trial with his business and domestic ties to do justice to the duties of the office.—Mr. SLACK said he knew something of secretarial duties, and if he might use the comparison, he seemed to him he was the chief engineer of the whole ship.—The resolution was carried with great cordiality, and Mr. BLACKBURN said it was a difficult thing to reply to a vote of thanks of that kind, because during the past year or two he had not really had the time or the energy to devote to the duties, and he therefore told Mr. Woolley that if they could get a gentleman with more time to devote to the affairs of the Association it would be a great advantage. He had to thank the President and other gentlemen for the very great help they had given him in the work, and he also thanked those who had spoken so kindly of him that evening. He should always think with pleasure of the time he had devoted to the work of the Association, and he should always do his best to promote its welfare in the future. He hoped it would become a power and continue to flourish. This concluded the formal business of the meeting.

NORTH STAFFORDSHIRE CHEMISTS AND DRUGGISTS' ASSOCIATION.

The inaugural meeting of the third session of the North Staffordshire and District Chemists and Druggists' Association was held at the Copeland Hotel, Stoke-on-Trent, on Thursday, October 13. The PRESIDENT (Mr. J. Averill, J.P., Stafford) was in the chair, and amongst others there were present: Messrs. Edmund Jones (Hon. Secretary, Hanley), Weston Poole (Treasurer), E. Croydon, C. J. Wain (Newcastle), R. Prince (Longton), W. Jenkins (Stone), W. Allison (North Staffordshire Infirmary), and Anderson (Hanley). Letters of apology for absence were read from Mr. T. C. Cornwell (Hanley), and Mr. W. H. Hartley (Leek).

Presidential Address.

The PRESIDENT in opening the meeting said: It is my privilege this evening to address a few words to you at the commencement of the third session of our Association, and I think I cannot do better than refer to two or three of the most notable events which have taken place since our last meeting in the spring. The first may fairly be said to be the Pharmacy Acts Amendment Bill, which was discussed and approved of by this Association previous to its introduction into Parliament, and has since become law. The Bill was introduced into Parliament by the Hon. W. Smith, member for the Strand division, and read a first time in the House of Commons on February 24, the second reading being passed on March 7. Then came the opposition, which was said to be personal rather than otherwise, and at one time it was feared the Bill might

be wrecked. But, many thanks to the persistent energy and frequent presence in the Lobby of the House of Commons of our highly esteemed and valued President, Mr. W. Hills, and the impression made by him and others on the members of the House that the Bill was essential in the interests of pharmacists, it was safely steered through the storms which beset it, and finally received the sanction of the House of Lords. The effect, then, of the Act is that the Society will now comprise only two grades of supporters, namely, members and student associates, membership being available to all who pass the qualifying examination, and giving them a vote in the election of the governing body. It will also render them eligible for election as members of the Council. I trust, therefore, the passing of the Bill will be the means of bringing every qualified pharmacist into membership of the Society, which is the only organisation of chemists recognised by the Legislature, and which, if cordially and loyally supported by the craft, will be able to speak with great weight on matters connected with our trade, and have an enormous influence in bringing about such measures as may be for the advancement of the trade generally.—I claim it to be not only a privilege, but a duty that we should be associated together as members of the Society, thereby assisting not only ourselves, but the general body to which we belong. I have a great idea of unity. The saying that unity is strength is perhaps trite, but it is positively true. I trust then that whatever differences of opinion may have existed in the past they will now be removed, and that every chemist and druggist will become a member; if that is done I shall have no fear that the future of pharmacy will be brighter than at the present and far greater than it has been in the past. I would strongly urge upon all chemists who are not already members—especially the members of this Association—to join the Society, bearing in mind that the work of the Society is carried on for the benefit of all engaged in the business. Another measure which engaged our attention for a time was the Poisonous Substances Bill—a Bill which was read three times in the House of Lords, and only required to go before the House of Commons to become law. I think you will agree with me that the Bill, as it stood, constituted a danger not only to ourselves, but to the public at large. Its intention was to allow certain poisonous substances to be sold retail by any person who chose to deal in them. Happily, the Bill did not pass, and possibly will not be heard of again. If its introduction served no other purpose it has at least been the means of bringing chemists and druggists together for the defence of their class, and at the same time afforded an opportunity of convincing legislators that the support or opposition of the craft is not a thing to be despised. A new Pharmacopœia has been introduced during our recess, and taking it for all and all, I think the British Pharmacopœia of 1898 is an improvement on its predecessors. Hitherto new pharmacopœias have appeared in a rather erratic manner, and I must confess it is difficult to understand what good can be achieved by revising the work in this manner, or keeping secret the date on which its appearance may be expected. It surely might be revised at definite and regular intervals of ten years, and if necessary a list of additions made five years after each issue. Another reform is needed as to the exact time at which a new edition becomes official. The present Pharmacopœia became official and binding when its publication was announced in the *London Gazette*, but there was a kind of tacit understanding amongst some pharmacists that the work should not be deemed to come into force for some months. It was doubtful, therefore, whether a prescription, written immediately after the edition became official, should be dispensed according to the new or the old. My own view is that a reasonable but definite interval—say, three months—should elapse between the circulation of a new Pharmacopœia and the date it shall become official. Both physicians and pharmacists would then have an opportunity of gaining a knowledge of its contents before it came into general use. There are a few old formulæ which we miss in the new book, and some alterations which may be advisable, but I must say one is rather at a loss to know why the good old tincture aurantii is replaced by one made with fresh peel instead of the dried peel, fresh peel being only obtainable for a short period in the year, and the tincture is little used. The introduction of liquors is an advantage if the profession will prescribe them in place of infusions. I am sorry to notice that there is a growing tendency amongst members of the medical profession to study advertisements of proprietary articles and prescribe them

instead of making the Pharmacopœia their standpoint. One more topic I will refer to, and that is the gross injustice caused to the qualified chemist by allowing limited liability drug companies to carry on the business of chemists and druggists without the members being qualified, whereas an individual is prevented from doing so. I think for these companies to style themselves "cash chemists" and the "largest chemists in the world" is a direct contravention of the Pharmacy Act of 1868, and it ought to be stopped. It would appear that some of our legislators are beginning to see the injustice, for when the Pharmacy Acts Amendment Bill was before the Standing Committee of the House of Lords the Lord Chancellor directed attention to the fact that the Pharmacy Act did not cover the case of drug stores carried on by joint-stock companies, and he urged that, looking at it from a common-sense point of view, it was necessary that such bodies should be treated in the same way as individuals. Lord Herschel supported this view. This is exactly what we claim in justice to ourselves, and we must hope that some day our claim may have effect. I hope the coming session of our association will be profitable and agreeable.—Mr. WESTON POOLE moved a vote of thanks to the President for his address. Speaking with reference to the Pharmacy Acts Amendment Act he said he thought it would prove to be very beneficial. He wished it could have included a clause making it compulsory that youths should pass their Preliminary examination before they entered upon an apprenticeship, because it was only too evident that the system of taking poorly educated youths resulted in increasing the number of drug stores and various other malpractices. He looked upon the new Pharmacopœia as a step in the right direction, for it helped them to become more and more scientific. The Poisonous Substances Bill aimed at placing chemists and druggists on the same level with ordinary persons who had no qualifications.—Mr. JENKINS seconded the resolution. In regard to the Pharmacopœia, he considered it a mistake to have altered the old form of using strychnine and nux vomica. The old form was far better for the safety of the public. The thanks were heartily accorded, and the PRESIDENT briefly acknowledged the compliment.

Classes for Pharmaceutical Students.

—The SECRETARY (Mr. Ed. Jones) stated that at the beginning of the winter sessions of the Hanley evening continuation classes he was sorry to find that there were no classes of interest to pharmaceutical students in chemistry or botany; at least, such classes were not held at opportune times. He had, he was glad to say, been able to arrange with Dr. Reid, the Chairman of the Hanley School Board, and Mr. Wilson, M.A., Master of the Higher Grade School, for classes to be held in advanced chemistry and botany, both theoretical and practical, and there were already a dozen young pharmacists in attendance. He thought masters ought to take an interest in their young men beyond being merely satisfied with their manual labour, and help and guide them in their studies as far as practical. He complimented Mr. Weston Poole upon the fact that one of his young men, Mr. Finmore, had won the Jacob Bell Memorial Scholarship. This was the third time that scholarship had been won in North Staffordshire. Mr. Jones added that he had asked Messrs. Southall Brothers and Barclay, Limited, to help the Association in encouraging the study of pharmacy, and the firm had promised a gift of one of their students' series of materia medica specimens and a copy of the book on the subject by Mr. Barclay.—Mr. Jones was thanked for his service in connection with arranging the classes, and on the motion of the PRESIDENT, seconded by Mr. CROYDON, the kindness of Messrs. Southall Brothers and Barclay was acknowledged.—Following a suggestion made by Mr. Jones, it was decided, on the motion of the PRESIDENT, seconded by Mr. CROYDON, to appoint Messrs. Jones, Poole and Wain a committee to purchase two microscopes, subject to Mr. Jones making satisfactory arrangements for an instructor and room where students could meet.—Mr. JONES moved that a letter of condolence be sent to the family of Mr. George Viggars, of Tunstall, who died during the summer. Mr. Viggars, who was only thirty-six years of age, was a member of the Association. He also moved that the sympathy of the Association be expressed to Mr. T. C. Cornwell who, a fortnight ago, met with a serious accident.—Mr. WAIN seconded, and the motions were carried.—It was decided to hold future meetings on the third Thursday in each month. Mr. Jones gave notice of two motions for the next meeting—one dealing with the advisability of

every chemist and druggist joining the Pharmaceutical Society, and the second in reference to Minor and Major examinations.—The CHAIRMAN announced that at the next meeting Mr. Allison would give a paper on the "Preparation of Emulsions."

NEWCASTLE ON-TYNE AND DISTRICT CHEMISTS' ASSOCIATION.

The second annual meeting of this Association was held at the Métropole Hotel, Newcastle, on Wednesday evening, October 12. There was a good and representative attendance, the chair being occupied by Mr. T. MALTBY CLAGUE, retiring President.—The minutes of last annual meeting were read and confirmed, several new members were elected, and the Treasurer's and Secretary's reports adopted. These latter were considered satisfactory, the balance in hand being £8 odd, somewhat larger than the previous year. In all eight meetings were held, and the average attendance at each meeting was over eighty. Mr. F. E. Schofield (Morpeth) was elected President for the year. Messrs. Clague, Owen, Ridley, and Rose were elected Vice-Presidents. Messrs. R. Wright and Geo. Whitehead are the Auditors. The Treasurer, Mr. Kerse, and the Hon. Secretary, Mr. G. F. Merson, 24, Newgate Street, were re-elected. The Committee is as follows:—Messrs. R. Brand (Wallsend), R. Cubey (Blaydon), W. Buckley (North Shields); J. Gibson, Jun. (Hexham), and G. Duncan, F. R. Dudderidge, W. Pescod, L. Williamson (Newcastle).—The newly-elected President gave the following short address:—

President's Address.

In days of yore an "ancient" of my father's was sent to the moors with a cartload of bees. Such an expedition abounds in dangers and delights! Presumably to ward off the one and heighten the other, a "Drappie in the E'e" is indispensable to the equipment. Night was falling fast when in hope they began their long journey; but with the usual like of mice and men, on the road they missed a turning, and ere the gleams of the rising sun had gilded the purple hills, Jack and his companion were wandering about the classic region of Elsdon Rigg, fogged outside and in. In their aimless perigrinations they chanced upon a rickety old sign-post—but neither of them could read! They looked at the post; then looked at each other, conscious that the centuries looked down upon them! There is a kind of courage the product of chagrin, and a patriotism begotten wholly of the pest! 'Twas on these very hills that—

"The Douglas and the Percy met—
Two captains of might and main."

No Northumbrian could say die on such a field. Fired with a new hope from the eternal spring, they addressed the sign-post in words of appropriate endearment, fell upon it and slew it, stuck it in the cart among the hives, and triumphantly drove away rejoicing in the thought of meeting some one who could read it and show them the road to the "Birkie Burn." I am inclined to think that you gentlemen of the Newcastle and District Chemists' Association, with the kindest and best of intentions, have unconsciously, to some extent, been playing Jack! Like the sign-post, in a place of comparative obscurity, your newly-elected President might be of some little service to the wanderers who come his way, but you have transported him to the precincts of your proud city; you have pulled up the sign-post—certainly to his discomfiture and probably to your own disappointment! Nevertheless, though he be but lumber in your cart he highly appreciates the compliment, and will endeavour to keep in the centre. In my youthful days I used to take a great interest in sign-posts, and I am afraid the county council has cremated many a unique venerable friend. But there are sign-posts worthy of your attention other than those graven by men's hands. I like to think of our grand old county—kingdom should I not call it?—of Northumbria as a sign-post. Who can ever read of Paulinus, of Edwin, of Oswald, of Aidan, or of Cuthbert without seeing the kingdom of Northumbria pointing the kingdoms of the earth to Christianity and civilisation? My own good little town (Morpeth) gave to the scientific world Turner—its earliest botanical sign-post. In science and in commerce what a prodigality of sign-posts has been reared on the good old banks of "Coaly Tyne"! In what better pose could we wish to see Henry Brady, with his transparent purpose and enlightened and enlightening views, than as a pharmaceutical sign-post? And has the grand old man of pharmacy, who is

still happily with us—Barnard Proctor—not spent the best of his days in playing the part of a sign-post? These might we not call Watling Street signs—known and read of all men!

“Ye who boast in your free veins the blood of Sires like these—lose not their lineaments!”

But I would have you look on the ordinary rank and file of pharmacists to-day each in his own sphere, on high-road or on bye-road as so many sign-posts. Are we not all by tradition and training expected to be such? Are we sufficiently alive to the greatness of our heritage in this respect? Sometimes I doubt it, and sometimes I think we are too much so. Probably in both views I am correct. In these competitive days the race is coming more and more to the swift, and the battle to the strong. At the very sound of “store” the spirits of some men are stifled, but if we would keep our match alight we must face the wind!

“How can men die better
Than in fighting fearful odds?”

If we would successfully fight the fight, it must be with our commercial morality kept up to sign-post standard. Conscience is only a coward revealer, not a coward maker, whatever “will” might say, and this matter of conscience should be the chemist’s special property, proverbially expensive to keep, but more get-at-able than the ambergris.

I can conceive of nothing more demoralising than what appears to be the established customs of some branches of modern business. The wholesale tipping of servants is perfectly astounding, and must sooner or later become a public question. Not long ago I had the offer of the account of a large house, provided I would allow the particular servant 10 per cent. upon the total and work it in. Live-stock auctioneers tell me it is an every-day story with them. Of course, I know that “canny Newcastle” would not tolerate such a system, but I feel it my duty to warn you, for the practice is rife enough in your immediate neighbourhood. The material influence of the “stores” is bad enough, the moral influence of such a practice is infinitely worse. It is only by maintaining a high sense of individual duty, by keeping the sign-post erect in its place and clean, that we can hope for our profession—for profession I consider it—to maintain its high character. The potsherds of the earth may strive with the potsherds of the earth, but ours is a higher, nobler, calling. There is something greater and grander than mere gold-getting, though this generation does not seem to believe it! “Dark and true and tender is the North” sang the Poet Laureate, and in thanking you for the honour conferred upon one so unworthy, may I express the sincere hope that the sturdy sign-posts of the North may long maintain their reputation for moral worth and scientific attainments.—At the conclusion of the address, a circular was read from the secretary of the Federation of Local Pharmaceutical Associations, asking the discussion of various matters decided upon at the meeting of representatives of local associations held in Belfast during the Conference week.

LIVERPOOL CHEMISTS’ ASSOCIATION.

The first meeting of the winter session of this Association was held on Thursday evening, October 13, in the Royal Institution, Colquitt Street, the PRESIDENT, Mr. J. Bain, in the chair.—After reading the minutes of the last meeting the SECRETARY, Mr. Wardleworth, mentioned that he had received from Monsieur A. Serée, of Le Vésinet, France, a communication thanking the Association for having honoured him by electing him a corresponding member, and expressing his appreciation of their courtesy. The library and museum of the Association being in need of a thorough revising and indexing, the Secretary announced that Mr. Prosper H. Marsden had offered to undertake the task, providing another member would assist him one evening a week, and Mr. H. Wyatt, jun., was detailed for the purpose.—Mr. WARDLEWORTH as one of the delegates to the Conference meeting at Belfast gave a short *résumé* of the work done there, and the hearty reception the English delegates received at the hands of Irish pharmacists generally, his remarks being further emphasised by Dr. SYMES.

NOMINATION OF PRESIDENT.

The question of the nomination of a president for the next session was then introduced by Mr. T. F. ABRAHAM, who said that in view of the fact that next year would be the jubilee of the Association, many members thought it would be as well to make a new departure, and instead of electing a president in the ordinary

way from amongst their active members it would be a graceful act and one by which they would at the same time honour themselves, and afford no small amount of gratification to one of their very oldest supporters, if they were to appoint Mr. Edward Evans, of Wrexham, to the office. One of the original founders of their Association, Mr. Evans had always shown a lively interest in it, and was for many years a regular attendant at its meetings until his retirement from business a few years since. In making this nomination Mr. Abraham thought they would recognise the worth of Mr. Evans personally and the great assistance they had invariably received at the hands of his firm.—Dr. SYMES, in seconding the nomination, endorsed cordially the remarks made by Mr. Abraham.—Other members supported the nomination, amongst others being the PRESIDENT and Messrs. J. SMITH and T. S. WOKES, and on putting to the vote was carried with unanimity.—Mr. J. SMITH then contributed a paper on

THE DUTIES OF A LOCAL SECRETARY,

which is printed at p. 439.—A hearty vote of thanks was awarded Mr. Smith for his paper, and he was congratulated upon the opportune moment he had chosen for its reading.—In the absence of the author, Mr. Edwin Dowzard, F.C.S., the SECRETARY read a communication entitled

THE DETERMINATION OF THE COLOURING MATTER IN SAFFRON, which is printed at p. 443—At the close a discussion took place, during which Dr. SYMES remarked upon the practical character of the paper and its utility to pharmacists, who were at times considerably troubled by variability in saffrons. For dispensing he had been in the habit for some years past of making a saccharate of saffron by pouring a strong aqueous infusion upon sugar and carefully evaporating to dryness. The resulting powder, used in the proportion for syrupus croci, gave a product which was of uniform colour, even after the saccharate had been made some time.—Mr. Dowzard’s method of determination was, in Mr. R. C. COWLEY’S opinion, preferable to that of the German Pharmacopœia, from its more definite character.—The meeting, which was very well attended, then came to a close.

WESTERN CHEMISTS’ ASSOCIATION OF LONDON.

The annual meeting of this Association was held at the Westbourne Restaurant, Paddington, W., on Wednesday last, when the chair was taken by the retiring PRESIDENT, Mr. J. H. Mathews. The minutes of the previous meeting having been read, Mr. E. M. Holmes was proposed as a member, and, after the Chairman had explained that there was a deficit on the river excursion account owing to lack of support by members, scrutineers were appointed to deal with the voting papers for the

ELECTION OF A COMMITTEE

for the ensuing year. As the result of the scrutiny, Messrs. Andrews, Cracknell, Dyson, Gulliver, Harrington, Hyslop, Martindale, Mathews, Parker, Philp, Phillips, Smith, Taplin, Warren, and Worsley were elected to form the new Committee. The accounts for the past year were then submitted and adopted, satisfactory balances being shown both on the general and entertainment accounts. A communication from Mr. R. C. Cowley, the Hon. Secretary of the Federation of Local Pharmaceutical Associations, was next read. This directed attention to a report of the Federation meeting at Belfast and a list of subjects suggested for discussion. The Hon. Secretaries having been directed to acknowledge the receipt of the communication, the Chairman then proceeded to review the work of the Association during the past session, stating that both the business and social meetings had been very successful, and proffering the thanks of the Association to Mr. Worsley for his valuable services. The annual dinner, he announced, will be held at the Café Royal, Regent Street, on November 16. At the conclusion of Mr. Mathews’ remarks, he was cordially thanked for his services as President during the past session. The next business was brought before the Association by Mr. Humphrey, who suggested that a small provisional committee should be appointed to consider the advisability of inviting the

BRITISH PHARMACEUTICAL CONFERENCE

to London in 1900. The suggestion was warmly taken up, and Messrs. Mathews, Cracknell, and Harrington were appointed as a committee, with power to add to their number and instructions to report to the Association at an early date. Thanks were then awarded to the Hon. Secretaries for their arduous labours on behalf of the Association, after which the meeting terminated.

NOTICES TO CORRESPONDENTS.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ADVERTISEMENTS AND ORDERS for copies of the 'PHARMACEUTICAL JOURNAL' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers."

ARTICLES AND REPORTS sent for the Editor's approval should be accompanied by stamped directed envelopes, otherwise no guarantee can be given that they will be returned if not found suitable.

CORRESPONDENTS should write in ink, on one side of the paper only, and must authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

DRAWINGS FOR ILLUSTRATIONS should be executed twice the desired size; clean sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

NAMES AND FORMULÆ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

QUERIES addressed to the Editor will be replied to in the Journal as early as possible after receipt, though not necessarily in the next issue. Replies cannot be sent by post, even though stamped envelopes accompany the queries.

LETTERS TO THE EDITOR.

LOYALTY TO THE CRAFT.

Sir,—Your appeal to the craft at large ought to be productive of some good results—backed as it is by the practical and eloquent address of Mr. Young. The great difficulty to contend with is demonstrated in a note from one of your correspondents in the last issue of the Journal. Grocers, imitative of company traders or co-operative stores, steal in the character of brigands, who not merely rob, but also destroy. During a tour not long since, I recommended my friends to keep certain remedies at hand in case of emergencies. The general inquiry was: "Shall we send to the grocer or to the chemist—for you know it is a great saving to buy of the grocer—and he is so very obliging?"—another word for pushing and touting for orders. At one friend's I asked for a little bicarbonate of soda. On tasting it I remarked "There must be some mistake here."—"It was supplied by the family grocer, a most respectable man."—"At what price?"—"4d. a lb. My doctor told me it was just as good as the chemist's, who charges exorbitantly for every article." It is difficult to say what a chemist can do for the best, for however loyally disposed, he is so heavily handicapped that he cannot move. Compete he cannot, for the law forbids him to sell any drug or chemical that will not abide the ordeal of Somerset House. The great root evil of this debasement is that the professions of law, physic, and divinity have given not only their sanction but their support to the nefarious system which by reaction will recoil upon themselves. Thousands of honest industrious men and women are being brought to poverty and ruin day by day, tradesmen of all grades are filled with "envy, hatred, and uncharitableness" against their oppressors, and are ready to compete with each other for a crust of bread. I could give numerous illustrations of this grievous stern fact, but will content myself with referring your readers to the remarks of the Bishop of Ripon at the Church Congress, in which he showed how company trading appears to encourage commercial immorality. I trust that more able pens will take up the subject, and by united effort and loyalty to the principles of our Society secure a scientific rather than a haphazard frontier.

Kew, October 17, 1898.

R. GOODWIN MUMBAY.

Sir,—I have read with great interest the address of Mr. Rymer Young, and perhaps as a "blackleg" you will allow me a little space to give you some personal experiences as a reply to his onslaught. A few years ago, after having spent a considerable term in one of the historic houses, I went into business, lost my own savings and some of my friends' as well, and then turned my attention again to London. After vainly endeavouring to procure a living wage at legitimate pharmacy, I took a situation in the

stores, strongly as I felt and still feel that it is a wrong principle of business (I make Mr. Young a present of that admission), but a man with a wife and child is not enamoured of starving or stone-breaking for the honour of the craft. Some of my experiences while I was fondly hoping to find a means of salvation might interest your readers. One gentleman in the S.E. district offered me thirty shilling per week and two rooms—a bedroom of unknown dimensions and a "living room" (save the mark) of about 4 ft. square. Another hailing from Hammersmith "tempted" me with a similar offer and a commission on the returns when they reached £1000, which I was assured would rapidly be the case in competent hands. They were then £300. A third feared I had been too long in the historic house aforesaid, and might have imbibed too extravagant notions of the professional side of the craft, and could not soil my hands with penny-worths. I could multiply instances, but the above, which are *bona fide*, forced me to find refuge and a living in the stores. The fact is that for the majority of assistants (and the majority must remain assistants) a situation in the stores offers better prospects of success, with easier conditions of life altogether, than obtains in the legitimate retail. May I ask Mr. Young were the evils of legitimate pharmacy—"small salaries and long hours"—unknown before the advent of the stores, or have the stores forced chemists, if not to pay better salaries, at least to modify the hours of their assistants? Why the case only wants plainly stating, and it is obvious on which side the truth lies. The fact is there is a great deal of nonsense talked and written ignorantly or thoughtlessly about the stores. How many men outside the stores are getting salaries of £200 or over? Very few. No. I may be called all sorts of naughty names, but why should I starve or break stones so that others may have their bread buttered on both sides?

London, October 18, 1898.

C. P. (148/8).

TINCTURÆ QUININÆ AMMONIATA.

Sir,—When Mr. North gives a fluid drachm of ammoniated tincture of quinine and a fluid drachm of syrup of lemons with water, he gives a draught with an acid reaction, and so changes the chemical constitution and therapeutic action of the tincture. The draught will contain ammonium and quinine in combination with sulphuric and citric acids. The method most in vogue for prescribing tinct. quin. ammon. for the last eight years in Edinburgh, so far as I have experienced it, has been in a draught of aerated water, the only means of fairly retaining the therapeutic action of the ammonia, as well as rendering the quinine soluble and so ensuring the full dose. The alteration in the tincture is the momentary solution of the alkaloid and the temporary saturation of the ammonium by the carbonic anhydride.

Edinburgh, October 15, 1898.

GEORGE LUNAN.

MEDICAGO SATIVA.

Sir,—Mr. L. P. Balkwill's letter suggests that the term "scarcely naturalised" does not apply to this plant. The term is applied to it in Babington's 'Manual of British Botany,' pp. 74, 81. If the word naturalised is assumed to mean, as represented in English dictionaries, "become like a native," the term "scarcely naturalised" is quite appropriate. A few of the remarks given in local floras under this plant will show that to be the case:—

1. Sowerby, 'English Botany' (1864), vol. iii. p. 22, says: "Not uncommon in districts where lucerne is cultivated, but having no claim to be considered indigenous."

2. Ley, 'Flora of Herefordshire' (1889), p. 66: "Comes up amongst clover crops and maintains its ground for a season, and then dies out." (This description perhaps best explains the meaning of the words "scarcely naturalised.")

3. Druce, 'Flora of Berkshire' (1897), p. 133: "Denizen," *i.e.*, not indigenous. P. CC.

4. Pryor, "Flora of Hertfordshire": "Scarcely wild, being only the remains of cultivation." Townsend, 'Flora of Hampshire' (1887), p. 84: "Occasionally naturalised on banks and field sides."

5. 'Flora of Leicestershire' (1886), p. 37: "Alien; occasionally cultivated, and no doubt an escape."

6. Murray, 'Flora of Somerset' (1896), p. 77: "Alien; how quite naturalised in many places."

7. Bagnall, 'Flora of Warwickshire' (1891), p. 56: "Alien; in many of the stations this plant appears to be more a casual than a denizen, but in others it is well established."

8. Lees, 'Flora of Yorkshire,' 1888, p. 190: "Alien, not naturalising readily."

9. Griffiths, 'Flora of Carnarvon,' 1895, p. 34: "Alien or casual."

My acquaintance with the botany of Plymouth Hoe only extends to about thirty-six years, but I do not ever remember seeing *Medicago sativa* there, although I have often gathered *Medicago denticulata*, *M. maculata*, and *Trifolium scabrum*, as well as *Poa bulbosa*, nor have I ever seen *Datura stramonium* there. The only place where I noticed *Medicago sativa* at Plymouth was on railway banks, but I could never depend on finding it more than three years in the same place. It may interest some Plymouth readers of this Journal if I state that, so far as my experience goes, the common maple (*Acer campestre*) and the comfrey (*Symphytum officinale*) were quite rare twenty-five years ago around Plymouth. *Sevenoaks, October 15, 1898.*

E. M. HOLMES.

DIVISION OF THE MINOR AND MAJOR EXAMINATIONS.

Sir,—In reference to Mr. Edward Jones's letter in your issue of October 15, in which he draws attention to the fact of Sir J. C. Browne and Mr. W. Hills having expressed their opinions on the division of the Minor, I quite agree with him, the more especially as I have previously advocated the following plan:—There should be a compulsory curriculum of three years at some recognised school, and the subjects should be passed either singly or in pairs, a student not being allowed to go on to other subjects until he had passed in the previous ones. Of course, the knowledge required of a subject would be considerably more than that required now. There may be objections raised to this as to how the poorer students are going to manage. My answer is, we want to raise the standard of a qualified pharmacist, and I think that the only way it can be done. I still hold to that idea, in spite of having been derided by some critics, one of whom wrote all the way from Cape Town to say he could not help feeling disgusted and pained at the last few sentences in my letter, and remarking that he has even heard this abominable heresy of "Scriven's" openly preached "in the Council's meetings." "New Age," living as he does at Cape Town, is not, I think, properly able to appreciate the present wants and necessities of a man living in London, in the midst of tremendous competition. The average pharmacist requires assistance to enable him to hold his own with the stores, on all sides endeavouring to take everything they can out of his hands. If the examination is divided, made harder, and with a compulsory curriculum, as in the medical profession, qualified pharmacists would be fewer and better able to combine to thwart the efforts of those unqualified men who trade under the "name" of a company. That every owner in whole or part of a business in which drugs of any sort are sold should be qualified is my decided opinion.

London, October 18, 1898.

SCRIVEN (147/41).

"PROGRESS" (148/3), who also writes on this subject, has omitted to enclose his name and address. Further, he has ignored our rule which requires that all communications intended for publication must be written on one side of the paper only.—[ED. P.J.]

ANSWERS TO QUERIES.

LEAVES OF "LUNGWORT."—The leaves are insufficient to identify the plant. [Reply to E. F.—17/33.]

POWDER FOR SOFTENING WATER.—It is a mixture of dried sodium carbonate and slaked lime. With this information you will doubtless be able to determine the proportions yourself. [Reply to A. F.—16/31.]

COCAINE HABIT.—The simplest remedy is to abstain totally from the use of the drug, but the probability is that some other stimulant would require to be taken at intervals. Possibly very strong coffee or tea might serve. [Reply to G. G.—17/19.]

COIL FOR X-RAY WORK.—Any of the makers you mention will supply you with a satisfactory article, but you might do well to communicate with Reynolds and Branson, of Leeds, who make a specialty of such apparatus, and could also give you useful hints with regard to literature, etc. [Reply to C. S. F.—17/11.]

MONSEL'S SOLUTION.—This is solution of persulphate of iron.—[Reply to D. M.—18/2]

HYPODERMIC INJECTIONS.—We are not disposed to furnish any information on the subjects concerning which you write.—[Reply to G. W. B.—17/27.]

MACERATION PROCESS OF THE NEW B.P.—You must follow the instructions exactly and not dilute the liquid by making up to any particular quantity. [Reply to F. G. P.—17/32.]

MINOR EXAMINATION.—The regulations will presumably be strictly adhered to, but you will do well to make yourself practically acquainted with all the official assay processes.—[Reply to IPECAC.—17/22.]

SPRAY FOR VINES.—The preparation you require is Bouillie Bordeaux. To prepare it take copper sulphate, 6 lbs.; lime, 4 lbs.; soft water (preferably rain water), 22 gallons. Dissolve the copper in 16 gallons of water, slake the lime, and mix it with the 6 gallons. Mix the two solutions. [Reply to W. W. M.—17/20.]

MAKERS OF PILL MACHINERY.—Werner, Pfeleiderer and Perkins, Ltd., 17, Queen Victoria Street, London, E.C.; J. W. Pindar and Co., 75, New Church Road, Camberwell, London, S.E.; Bennett, Sons and Shears, Ltd., 167, Kingsland Road, London; Death and Harris, Leicester. [Reply to LIQ. AMMONIÆ.—17/21.]

ASSOCIATES AND M.P.S.—All associates in business are now virtually members, and will be formally elected such as soon as the new Bye-laws have been approved by the Privy Council. No further subscription will be required for the current year from any class of subscribers, nor will any further payment be expected from life subscribers. [Reply to S. H.—17/23.]

DOSES OF DRUGS.—Gadd's 'Synopsis of the British Pharmacopœia, 1898,' gives the doses of all official medicaments in tabular form, and is small enough to go into the waistcoat pocket. You will find the doses of unofficial remedies conveniently arranged in the index to Martindale and Westcott's 'Extra Pharmacopœia.' [Reply to STUDENT.—17/30.]

BOOKS.—There are very good accounts of the progress of chemistry in the introduction to Roscoe and Schorlemmer's 'Treatise on Chemistry,' in Rodwell's 'Birth of Chemistry,' and in Thomson's 'History of Chemistry,' all in the Society's Library. We do not know of any English translation of Berthelot's book. Do you mean animal or vegetable histology? [Reply to HOLOZOON.—17/26.]

SODIUM BENZOATE IN GOUT.—In cases where patients suffer from decomposition of urine in the bladder, so that it becomes ammoniacal and irritant, sodium or ammonium benzoate fending the urine acid may prevent or dissolve concretions. The benzoate, passing out of the system as hippuric acid, tends to act as a vesical antiseptic, and thus renders the urine more nearly normal. [Reply to F. P. B.—17/17.]

PSORALEA CORYLIFOLIA.—These seeds, commonly known in India as "Bauchee" seeds, are used in various skin diseases, especially leucoderma and lepra. The oleo-resinous extract of the seeds is used after being diluted with simple ointment. After application for a few days the oil appears to act as an irritant or stimulant, the white patches in leucoderma becoming red, and a little pain is produced. Little vesicles or pimples sometimes appear, and, drying up, leave a small spot of pigmentary matter, which forms a nucleus, others developing at the margin of the patch and ultimately coalescing. There is little doubt, therefore, that it acts as a stimulant to the skin. The seeds contain volatile oil, resin, tannin, and a bitter principle, but do not appear yet to have been sufficiently analysed, nor to have received the attention they merit (see 'Pharmacographia Indica,' i., p. 412; *Pharm. Journ.* [3], vol. xii., p. 257; xx., p. 183; Watt, 'Dict. Econ. Prod. India,' vol. vi., pt. 1, p. 355). It may possibly be obtained from Christy and Co., 25, Lime Street, London, E.C., or any other firm which deals in Indian drugs. [Reply to S. K.—17/15.]

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.



Sterilisation of Catgut. Dr. J. H. Dauber describes the method of sterilising catgut by dry heat adopted by Professor Tscherning, of Copenhagen. Ordinary commercial catgut is placed on trays in the steriliser, between sheets of cellulose paper, and heated for six hours, the temperature for the first hour being 60° C., for the second and third hours 100° C., and for the fourth, fifth, and sixth hours 140° C. On removing the catgut from the steriliser it is wrapped up and closely sealed in an envelope of cellulose paper, and that in turn is enclosed in a similar envelope of larger size. The closed packet is then placed in the steriliser and heated for two hours at 140° C., after which it need not be opened until the contents are required for use. Sterilisation by dry heat possesses advantages over the wet methods, and by keeping the catgut as described it does not tend to become soft and lax as when kept in antiseptic aqueous solutions, or slippery as when kept in glycerin. Moreover, the gradual raising of the temperature prevents the catgut becoming brittle, the grease and oil naturally present being driven off gradually at the lower temperatures.—*Lancet*, 3921, 1055.

Bacterial Cultures on Artichokes. M. Roger is of opinion that the artichoke possesses several advantageous qualities as a medium for bacterial cultures. After having stripped of the scales the thick part of the artichoke is cut up into little cubes, care being taken to preserve the fibres (*foin*). The pieces are then placed in tubes plugged with damp wadding, the fibres being uppermost, so that the culture medium is represented by a fleshy mass surmounted by a sort of tuft. When the wadding is inserted the whole is heated in an oven to 115° C. for a quarter of an hour. In making an inoculation the germs must be deposited at the point of insertion of the flowers.—*Lancet*, 3909, 285.

Pharmacology of the Mescal Plant. Dr. W. E. Dixon, Salters Research Fellow in Pharmacology at St. Thomas's Hospital, has studied the pharmacology of the alkaloids obtained from *Anhalonium lewinii*. Four crystalline alkaloids were prepared from the so-called "mescal buttons" by Edmund White, B.Sc., pharmacist at St. Thomas's Hospital, by a method modified from Heffter's. The alkaloids and percentages obtained were as follows:—

1. Mescaline	}	1.16 per cent.	
2. Anhalonidine			
3. Anhalonine			0.46 "
4. Lophophorine			0.13 "

All were found to be freely soluble in water and to possess a remarkable similarity in their physiological actions. They proved to be absolutely non-irritant when applied to the skin, hence injection would appear to be a suitable mode of administering the alkaloids. A 5 per cent. solution of any of them has no effect when applied directly to the conjunctiva. In the mouth the substances behave as specific sialogogues. After large doses nausea and vomiting may occur. Small doses are apt to cause constipation, but, when the dose is large, diarrhoea sometimes occurs, and in exceptional cases even bloody stools have been observed. These results are produced whether the alkaloids are given by injection or by the mouth. Small doses slow the heart and cause it to beat much more vigorously, whilst after a varying period, dependent on the dose, the heart recovers

its normal rate, and generally exceeds it, but is never very rapid. There is also a considerable rise in arterial pressure. In toxic doses paralysis of the nerve endings of the vagus and subsequently of the nerve cells occurs. The respiration is not effected by moderate doses, but toxic doses give rise to rapid shallow respiration, and death subsequently occurs from failure of the respiratory centre. This is the main danger to be apprehended when experimenting with the drug in the human subject. As regards the effects upon the nerves, there is a preliminary stage of excitement, talkativeness, and exuberance of spirits followed by a stage of intoxication. Like Indian hemp the effects vary considerably in different individuals. During the stage of intoxication there are increased reflexes, wide dilatation of pupils, auditory and nasal hyperæsthesia, inco-ordination, tremors, blunting of cutaneous sensation, a rapid flow of ideas with difficulty in concentrating the attention, and sensory hallucinations, especially visual, the latter consisting of a kaleidoscope play of colours ever in motion and the tints constantly changing. The movements may be linear, rotatory, or pulsating. The visions generally are only seen with closed eyes. Colouring of external objects is exaggerated. Intellection and introspection seem to the experimenter to be normal. Occasionally there is an indescribable sensation of dual existence. Lethal doses produce complete paralysis, and death is due to respiratory failure. Post mortem, a faradic current applied to the motor nerves produces contraction. The important effects of these alkaloids in therapeutic doses would appear to be: (1) A direct stimulation of the intracardiac ganglia, (2) an initial slowing of the heart, (3) an elevation of arterial tension, and (4) a direct stimulation of the brain and motor centres of the cord, as shown by the increase in reflex excitability.—*British Medical Journal*, 1971, 1060.

Preparation of Caoutchouc. M. L. Lindet, in a paper on the researches of Aimé Girard, upon the latex of rubber-producing trees, deals at length with the various methods adopted in different countries for the coagulation of the latex. Heat, as is well known, is the commonest agent employed: the juice may be heated to boiling, as is done in Mexico, or spread on tiles and exposed to the action of smoke (Brazil and Venezuela), or thickening may be accomplished by direct action of the sun's rays (West Africa, the Congo, etc.). In order to bring about coagulation, the inhabitants of Brazil use alum, on the Ivory Coast salt is used, sulphuric acid in Maranhão, the juice of the citron in Madagascar, and vegetable infusions in Peru and Madagascar.—*Bull. Soc. Chim. de Paris*, xviii.-xix., 812.

Labels for Bottles. Horace Jervis describes a method of labelling bottles with a solution of sealing-wax, recommended by him in *Chem. News*, lxxvii., 133. The solution is made by grinding sealing-wax first in the dry state, and then with a small quantity of a mixture of alcohol and ether in such proportions as to make a thick liquid. Instead of lettering with a stiff brush, as suggested in the original paper, it is better to use a piece of glass tubing drawn out at one end. This gives the letters a beaded appearance. When the above solution is partially evaporated and somewhat thickened a rubber tube joining the pen and the lips enables the solution to be forced out as required. In this way one can letter as well as with pen and ink. The wax is not brittle when dry, and forms a durable and ready means of lettering the backs of note-books. It may be used also for such purposes as waxing the calcium chloride tubes of Geissler potash bulbs, where heating tends to fracture the ground-glass joint. Such articles should then be dried in a water-oven.—*Chem. News*, lxxviii., 63.

The three Chilian Solanums, *S. crispum*, *S. gayanum* and *S. tomatillo*, have been examined by F. Ramdohr and F. Neger, who find the alkaloid present to be the same as in European species, but it exists in considerably greater quantity, one per mille of solanine having been obtained from the fresh leaves. Known as "Natre," these plants are employed by the natives as a remedy for measles, scarlet fever, and other febrile diseases.—*Pharm. Central.*, xxxix., 521.

The juices of most fruits, in addition to the ordinary reducing sugars, are stated by Aderhold and Heintze to contain a substance which powerfully reduces Fehling's solution. It is obtained by fractional precipitation with alcohol, the pectin at first thrown out being removed by filtration. On adding stronger alcohol to the filtrate, the reducing body is precipitated in flakes, which, on drying, yield a yellowish-brown resinous substance. This substance was found in all fruits examined, and in larger amount in those not fully ripe. The body entirely loses its reducing power after exposure for some hours on the water bath.—*Chem. Zeit.*, xxii., 632.

NOTES ON ESSENTIAL OILS.*

In reference to the statement of Flatau and Labbé (*Compt. rend.*, 126, 1876) that they have obtained from palmarosa oil (Indian geranium) a saturated fat acid, $C_{14}H_{28}O_2$, melting at $28^{\circ}C.$, Messrs. Schimmel remark that in all their investigations they never found such an acid in oil of undoubted purity, and they suggest that the French chemists have operated on an oil adulterated with cocoanut oil or some similar material. In Réunion oil Flatau and Labbé found an oily acid, $C_{10}H_{18}O_2$, but they could not obtain tiglic acid, which was found in that oil by Messrs. Schimmel some years since.

The wood exported from Buenos Ayres under the name of "Palo balsamo," and the source of the oil now largely used for perfumery purposes, is, according to Dr. E. Paetzold, of Strasburg, the produce of *Bulnesia sarmienti*, Lor., belonging to the family Zygophyllæ, and closely related to guaiacum. It is indigenous, according to Grisebach, in the extreme north-west provinces, Oran and Gr. Chaco, of the Argentine republic. This oil is the most recent adulteration of Turkish rose oil: as it consists for the most part of an alcohol melting at $91^{\circ}C.$ it has the property of assuming a beautiful crystalline appearance at the ordinary temperature, and therefore serves for giving rose oil largely adulterated with geranium oil, the requisite crystalline character which is always relied upon in Bulgaria as the measure of good quality. The mild agreeable smell of the oil allows its admixture in large proportion without being recognisable.

Messrs. Schimmel are of opinion that the leaves and the buds met with commercially are not always derived from the same plant. Of late they have been unable to obtain from the distilled oil the readily crystallisable matico camphor, but in its place a substance melting at $62^{\circ}C.$ (after re-crystallisation from petroleum spirit), which proved to be asarone. When dissolved in petroleum spirit it assimilates a molecule of bromine, forming a crystalline dibromide melting at 85° to $86^{\circ}C.$; oxidised by permanganate, it yields asarylic acid, melting at $144^{\circ}C.$ (silver salt,

33.82 Ag). The oil seems to contain some methyl eugenol, as it yields, on oxidation, a small quantity of an acid melting at $174^{\circ}C.$ (veratric acid?).

Messrs. Schimmel point out that the statement in the *Kew Bulletin*, No. 140, p. 206, as to *Lemongrass Oil*, *Andropogon nardus*, L., being the source of this oil is in opposition to Flückiger and Hanbury (*Pharmacogr.*, 2nd ed., p. 725), as well as Dymock (*Pharmacog. Indica* [3], 564), who state that it is the produce of *Andropogon citratus*, D.C., and that *Andropogon nardus*, L., yields citronella oil.

In reference to the statement in the British Pharmacopœia that this oil is obtained from "the full-grown unripe green fruit," Messrs. Schimmel say that such oil is never made in that way on the large scale. According to an antiquated statement by Zeller, unripe berries are said to yield most oil, but the oil distilled from unripe material would be very inferior in quality to that obtained from ripe fruit. The statement in the B.P., that the oil dissolves in four times its volume of alcohol (equal parts absolute alcohol and 90 per cent. alcohol) is also disputed as being applicable only when juniper oil is quite freshly distilled. After a few weeks it becomes less soluble, and then forms with four times its volume of 95 per cent. alcohol a sensibly turbid mixture.

For the determination of methyl salicylate, the chief constituent of natural wintergreen oil, Kremers and James (*Pharm. Rev.*, 16, 131) have recommended a process long since described by Messinger and Vortmann—converting the salicylic acid into diiod-salicylic acid by adding excess of iodine solution to a very alkaline solution of the acid and then ascertaining the quantity of iodine unconsumed by titrating with thiosulphate solution. But although the oil of *Gaultheria procumbens*, as well as that of *Betula lenta*, contains, beside methyl salicylate, other esters which are expressed as methyl salicylate in saponification, Messrs. Schimmel are of opinion that simple saponification is preferable to the more troublesome method recommended by Kremers and James. The observations of Dr. van Romburgh at the Buitenzorg Botanic Garden show that methyl salicylate is of very much more frequent occurrence than has been supposed. Out of 900 plants examined as to their volatile products, 160 yielded the ester. It is remarkable that in all instances the distillates from fresh leaves gave no indication of methyl salicylate, but only the distillates from leaves which had been kept some days before being distilled. This circumstance appears to favour the view of Bourquelot, Schneegans, and Gerock that in the plants the ester is in a state of glucoside combination. Methyl salicylate occurs very frequently in the Leguminosæ, also in several species of Aurantiaceæ, Celastrineæ, Compositæ, Cupuliferæ, Ebenaceæ, Euphorbiaceæ, Gramineæ, Jasmineæ, Lonicereæ, Meliosmeæ, Myrtaceæ, Olacineæ, Polygaleæ, Rhamneæ, Rosaceæ, Rubiaceæ, Sapindaceæ, Staphyleaceæ, and Tiliaceæ. Its occurrence is not confined to any particular part of the plants, but is common to the roots, leaves, flowers, and bark.

Besides limonene, of which Wallach showed that this oil consists chiefly, it contains some citral and minute proportions of an oxygenated substance. No other constituents, accounting for its peculiar odour, have been detected until quite recently. Flatau and Labbé (*Bull. Soc. Chim.* [3], 19, 361) have studied the oxygenated constituents. They obtained traces of citronellal with a minute proportion of another aldehyde having the characteristic orange smell. On saponification a small quantity of alkali was

* From Schimmel and Co.'s Semi-Annual Report.

neutralised, indicating the presence of an acid or an ester. The acid, as well as its ethyl ester, is very sparingly soluble in alcohol, and it can be obtained by distilling off 95 per cent. of the more volatile portion of the oil, then adding alcohol to the residue when the sparingly soluble ester separates as a brown pulverulent precipitate, melting at 64° to 65° C., and having the agreeable odour of orange peel.

In addition to the oil of *E. punctata*, D.C.

Eucalyptus (grey gum) examined by R. T. Baker and Oil. H. G. Smith (*Journ. Roy. Soc. N. S. Wales*, 31, 259), and the oil of *E. toxophleba* described by

E. J. Parry (*Ph. J.*, lxi., 198), three samples of oil from the eucalyptus plantations in Portugal have been examined by Messrs. Schimmel:

(1) *Eucalyptus rostrata*, Schlecht, sp. gr. 0.921 [α]_D - 1° 8' at 30° C., soluble in 2 parts 70 per cent. alcohol, no phellandrene reaction, high percentage of cineol, and agreeable odour.

(2) *Eucalyptus resinifera*, Smith (?), contains cineol, phellandrene, and a terpene not hitherto found in the oil of *E. rostrata*; specific gravity 0.893 [α]_D - 17° 8' at 30° C., insoluble in 70 per cent. or 80 per cent. alcohol.

(3) *Eucalyptus obliqua*, L'Herit, sp. gr. 0.914 [α]_D - 7° 28', soluble in an equal volume of 80 per cent. alcohol; contains cineol and phellandrene.

Caparrapi Oil.

This is described by B. F. Tapia as the produce of a Laurinaceous tree *Nectandra caparrapi* growing in Columbia, and there called "canelo," probably on account of the cin-

namon odour of the bark. The oil is obtained, in the same manner as turpentine, by making incisions in the trunk of the tree, and it is used as a substitute for copaiba balsam. As met with commercially it is more or less coloured. It contains a monobasic acid, C₁₅H₂₆O₃—obtainable from pale samples of the oil in a crystallisable form, melting at 84°·5 C.—and a sesquiterpene alcohol, C₁₅H₂₆O, readily convertible by dehydrating agents into a hydrocarbon, C₁₅H₂₄, caparrapene. Both the alcohol and the hydrocarbon are readily polymerised, and by distillation with steam three-fourths of the oil resinifies.—*Bull. Soc. Chim.* [3], 19, 638, through Schimmel's *Bericht*, October, 1898.

Citronella Oil.

From the examination of several samples of Ceylon oil, Messrs. Schimmel conclude that there are two kinds differing in physical characters and in the percentage of geraniol (and citronellal), as shown by the following figures, No. 8 being a sample from the Straits Settlements.

	Rotation at 20° C.	Specific Gravity at 15° C.	Amount of Geraniol per cent.	Solubility in 80 per cent. Alcohol.
1	- 0° 46'	0.892	88.6	1:7 clear
2	- 0° 54'	0.892	80.9	"
3	- 0° 48'	0.892	82.5	"
4	- 1° 18'	0.890	85.4	1:4.5 clear
5	- 1° 32'	0.886	85.1	"
6	- 2° 20'	0.888	83.4	"
7	- 1° 25'	0.894	81.8	1:8 clear
8	- 0° 53'	0.890	90.6	1:10 "
9	- 7° 10'	0.919	56.9	1:4 "
10	- 0° 34'	0.888	86.4	"
11	- 9° 53'	0.915	65.5	1:10 "
12	- 20° 37'	0.896	50.4	1:3 "
13	- 7° 13'	0.918	54.1	"
14	- 9° 36'	0.908	61.1	1:4 "

In connection with the view that high specific gravity and a low percentage of geraniol result from the presence of a hitherto unknown sesquiterpene (Umney and Swinton, *Ph. J.*, lix., 139),

Messrs. Schimmel state that they have obtained from No. 5 a considerable quantity of a highly rotatory camphene, as well as a high boiling fraction of 0.915 sp. gr., having the smell of methyl-eugenol and yielding, on oxidation by permanganate, an acid melting at 179° C., like veratric acid, but further experiments are requisite for the purpose of deciding whether the high specific gravity of citronella oil, poor in geraniol, can be explained by the presence of methyl-eugenol, the specific gravity of which is 1.055 at 15° C. While adhering to the opinion that the relative value of citronella oil can be determined by acetylation, notwithstanding the presence of citronellal, which is converted into isopulegol acetate, isomeric with geranyl acetate, Messrs. Schimmel doubt whether 60 per cent., suggested by Umney as a minimum, is not too low a standard for oil of good quality.

Dill Oil.

Messrs. Schimmel give the following determinations to show that dill oil may have a specific gravity lower than 0.900, and that English oil has not always the high specific gravity required by the British Pharmacopœia (0.905 to 0.920).

	Specific Gravity.	Rotation.
1. Thuringian	.911	
2. "	.907	
3. "	.906	
4. "	.909	
5. "	.910	+76°
6. "	.902	+78° 32'
7. "	.899	+79° 13'
8. "	.908	+76° 17'
9. Russian	.909	
10. English	.906	+80° 2'
11. Spanish	.913	+50° 21'
12. Indian	.970	+41° 30'

In view of these data Messrs. Schimmel consider that Umney's suggestion as to the abstraction of carvol from German dill oil is not justified, and that the relatively low specific gravity of dill oil affords no evidence of adulteration (see *ante*, 176). The samples No. 10 and 11 contained so much phellandrene that they gave the characteristic reaction with sodium nitrite and acetic acid, but this terpene could not be detected in the German oil until after fractionating.

Caraway Oil.

In reference to the specific gravity (0.910 to 0.920) specified in the British Pharmacopœia, Messrs. Schimmel state that while normally ranging between 0.905 and 0.915 it is generally below 0.910, and they suggest that a preferable plan would have been to introduce pure carvol in place of the natural oil, as the present Pharmacopœia requirement necessitates the partial removal of limonene from the lighter oil.

Lemon Oil.

In reference to the data on which Umney and Swinton infer the presence in lemon oil of a hitherto unobserved constituent (see *antè*, 196, 370), Messrs. Schimmel remark that they are inconclusive, and that, even though the oily substance they obtained had been proved to be geraniol, the treatment adopted would have left a doubt whether the geraniol had not been produced in the operation, since the possibility of such a result of the reaction of citral with alcohol potash cannot be ignored in view of the fact that under those conditions, isovaleric aldehyde is convertible into amyl alcohol. They also think the same uncertainty would exist as to the origin of the acetic acid found in the saponification liquor. Since formation of acetic acid is a conceivable result of the destruction of aldehydes, on these grounds Messrs. Schimmel consider that the existence of geranyl acetate as a constituent of lemon oil, though possible, is still doubtful.

SAMSHU.

BY FRANK BROWNE, PH.C., F.C.S.

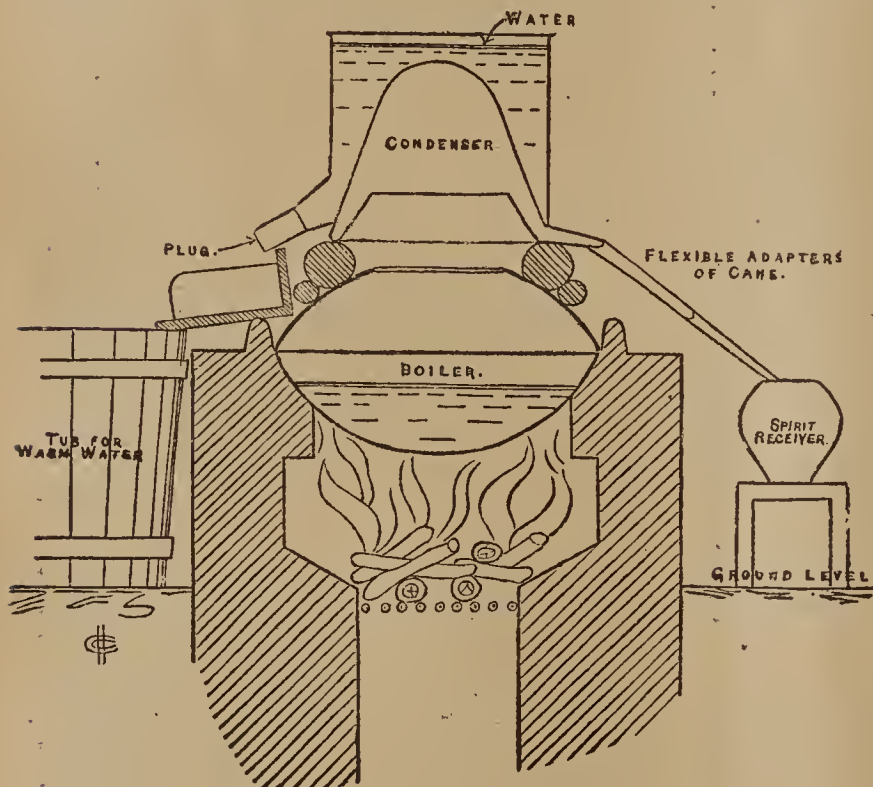
Acting Government Analyst, Hong Kong.

Samshu is a name which is derived from the Chinese word "Sam Shiu," or thrice burnt. The term Samshu refers to that variety of Chinese liquor known as Sam Ching Chau, or thrice-distilled liquor, but as now used it covers the three spirits known as Leu Pun Chau, Sheung Ching Chau, and Sam Ching Chau, all of which are obtained from rice. Moreover, the name Samshu is frequently loosely applied so as to include any spirit of Chinese production, such as beverages in which either Leu Pun Chau, Sheung Ching Chau, or Sam Ching Chau forms a part, and also to the liquor known as Fa Chau—a spirit obtained from molasses, and to the beverages prepared from Fa Chau; but in this report Samshu should be understood to mean only Leu Pun Chau, Sheung Ching Chau, and Sam Ching Chau.

There are three well-known varieties of Samshu:—

1. Leu Pun Chau (half materials liquor) or Mei Chau (rice liquor).
2. Sheung Ching Chau, or twice-distilled liquor.
3. Sam Ching Chau, or thrice-distilled liquor.

These three kinds are not made by all distilleries; in several of the nine Samshu distilleries in Hong Kong only Leu Pun Chau is made.



APPARATUS USED FOR DISTILLATION.

LEU PUN CHAU.

To make Leu Pun Chau, the chief beverage, 180 catties* of rice are mixed with 180 catties of water, and the mixture is placed in an iron pan heated direct by means of a wood fire and boiled for half an hour. The softened rice is spread out on a large wooden tray placed at an angle so that the rice water drains away. The cooled rice is now put into twenty pots, together with the rice water. To each pot is added one and a half catties of a substance known as Chau Pang, together with 10 catties of water. "Chau Pang" is a substance composed of rice, bean flour, red earth, and leaves which are stated to be cassia leaves. It is imported from Canton, but it is manufactured in Honan. Chau Pang is usually in dry flat cakes, about 8 inches square by 1 inch thick. An analysis showed that 100 parts contain:—

* One catty equals $1\frac{1}{2}$ pounds (Avoir.).

Moisture 7.24.
Ash 44.01.

Chau Pang is the fermenting material. It has no particular odour. The mixture of rice, Chau Pang, and water is allowed to stand for a period varying from 23 to 28 days, after which the contents of three pots are transferred to a still heated direct by means of wood. The still is composed of three parts.

1. A circular iron pan furnished with an iron cover, in the centre of which is a large orifice. On the top of this perforated cover is

2. The adapter, which is merely a coil of cane plaited very thickly and closely, so as to be impervious to moisture. Sometimes two or more adapters are used. On the top of the adapter is

3. The condenser, which is a cylindrical metal apparatus greatly resembling an alembic with a reservoir above the upper surface of the alembic to contain water for cooling purposes. A piece of metal piping carries off the spirit, which has been condensed and run down into the upturned inner rim of the alembic, while a much larger piece of piping serves to let out the water from the reservoir, which serves as a condenser (see figure).

The contents of the three pots having been put into the pan, a rope basket containing thick, crude, earth-nut oil is situated on the adapter by means of a piece of wood so as to swing in the orifice of the pan. This arrangement is to prevent bumping and spurting. The condenser is then put in position, and the reservoir having been filled with water, the distillation commences. The weight of water in the condenser keeps it firmly pressed on the adapter. Thirty catties of samshu are collected in about one and a half hours. The water in the condenser is changed three times during this period, the hot water being run off completely from the bottom by the large pipe in a few seconds. The distillation being finished, the pan is almost emptied of its contents by means of a large ladle, three more pots of liquid are emptied into it, and another distillation proceeds. Thus it will be seen that to make 200 catties of Leu Pun Chau it is necessary to take—

Rice 180 catties.
Chau Pang 30 catties.

To distil this quantity 200 catties of firewood are allowed.

SHEUNG CHING CHAU.

This liquid is a little stronger than Leu Pun Chau. It is made by placing in the still 3 pots of the usual fermented liquid and 10 catties of Leu Pun Chau, and distilling 30 catties.

SAM CHING CHAU.

This liquid is the strongest samshu. It is made by placing in the still 3 pots of the usual fermented liquid and 30 catties of Leu Pun Chau, and distilling 30 catties.

COMPOSITION OF SAMSHU.

The following table shows the nature of samshu. The ethers and higher alcohols were determined by the method as used by Bell in his investigations for the Select Committee on British and Foreign Spirits, 1891, as described in Appendix No. 4 of their report.

Description.	Strength of Sample.	Total Solids dried at 100° C. in 100 fluid parts.	In 100 fluid parts of proof strength.		
			Free acid as acetic.	Compound ethers as acetic ether.	Higher Alcohols.
Leu Pun Chau, 1	58.7 u.p.	0.015	0.279	0.230	0.032
Do. 2	50.9 u.p.	0.006	0.127	0.205	0.034
Sheung Ching Chau, 1	53.5 u.p.	0.035	0.217	0.231	0.062
Do. 2	42.4 u.p.	0.008	0.123	0.321	0.035
Sam Ching Chau, 1 ...	15.0 u.p.	0.012	0.078	0.242	0.034
Do. 2 ...	22.6 u.p.	0.018	0.073	0.205	0.068

All the samples contain a faint trace of furfuraldehyde.

The amount of compound ethers is noteworthy, but it is not a

surprising amount considering the nature of the materials used for the production of Samshu.

The strength of Leu Pun Chau somewhat varies, as will be seen from the following analyses.

Sample	Strength.
Leu Pun Chau 1	58.7 u.p.
" 2	50.9 u.p.
" 3	52.2 u.p.
" 4	53.7 u.p.
" 5	59.0 u.p.
" 6	62.6 u.p.

Leu Pun Chau is the staple beverage, and is preferred to the others, which are not liked for habitual use on account of their greater strength in alcohol. Samshu is never diluted; when Sheung Ching Chau or Sam Ching Chau is drunk very small sips only are taken. Drunkenness is very uncommon amongst the Chinese. Many do not drink Samshu except on festival days. It is a common thing on such occasions for some Chinese to drink a catty or even more of Leu Pun Chau without being intoxicated.

Samshu is a colourless liquid of characteristic odour. It may be defined as a spirit consisting of plain spirit or ethylic alcohol mixed with the bye-products derived from rice and Chau Pang. Leu Pun Chau and Sheung Ching Chau are usually slightly opalescent. The opalescence disappears when alcohol is added. It is usually stored in jars and it is said not to improve by keeping.

By mixing Samshu with certain substances a number of well-known Chinese beverages are prepared. The names and composition of these liquors are as follows:—

Ching Mui Chau is composed of Leu Pun Chau, sour plums, and sugar.

Mau Kan Chau from *Triticum repens*, Leu Pun Chau, and sugar.

Chang Chau from oranges, Leu Pun Chau, and sugar.

Mui Kwai Chau from roses, Leu Pun Chau, and sugar.

Ka Pi Chau from Ka Pi (a bark used for rheumatism), Leu Pun Chau, and sugar.

Ning Mun Chau from limes, Leu Pun Chau, and sugar.

Muk Kwa Chau from papaws, Leu Pun Chau, and sugar.

OTHER LIQUORS.

Several distilleries are making a liquor known as Fa Chau. Of this 100 catties are prepared from:—

Molasses	165 catties.
Tso Sui (contents of pots for making Leu Pun Chau), ..	165 "

Of coal 90 catties are allowed.

Two samples of Fa Chau were 41.5 u.p. and 38.9 u.p. respectively.

Fa Chau is used for making several of the wines in which Leu Pun Chau is ordinarily used. Shüt Li Chau is made from Fa Chau and Tientsin pears.

No Mei Chau is a liquid of varied composition. Fa Chau is used for it together with No Mei or full-grown rice, or No Mei Chau is frequently sweetened Leu Pun Chau, in the preparation of which No Mei or full-grown rice has been used. Shan Kut Chau is a wine prepared from Shan Kut—a very small hard bitter orange—and Fa Chau.

OTHER INDUSTRIES CARRIED ON BY SAMSHU MAKERS.

All distillers make sauce by converting Leu Pun Chau or Fa Chau into vinegar and adding the appropriate ingredients.

One distiller makes vinegar for the purpose of making white-lead as well as for sauce-making.

COST OF MATERIALS IN HONG KONG.

Rice	3.00 dols. for 100 catties.
Chau Pang	4.50 " "
Firewood	0.70 " "
Coal	10.00 " a ton. "

Labour. A coolie gets 42 cents for every 100 catties of Samshu made.

PRODUCTION AND CONSUMPTION.

The following statistics show the amounts of Chinese liquors distilled in, imported into, sold in, and exported from Hong Kong during 1897, by Chinese holders of distillery licences, and other particulars. It should be remembered that the statistics refer only to the business done by Chinese holders of distillery licences. There are also in Hong Kong 289 holders of Chinese spirit licences who sell, export, and import Chinese liquors:—

Amount of Chinese liquor distilled	1,979,831 C.
" " " " imported	20,800 C.
" " " " sold for export	
" and local consumption	2,011,885 C.
Amount of Chinese liquor known to have been exported	323,057 C.
C. = Catty.	

The 323,057 C. of Chinese liquor were received by Australia, British North Borneo, China, Sandwich Islands, Japan, Philippine Islands, Straits Settlements, Peru, and the United States of America.

COST TO CONSUMERS.

Samshu is a cheap beverage.	
Leu Pun Chau ..	costs 5 cents a catty
Sheung Ching Chau	" 7 " "
Sam Ching Chau ..	" 10 " "
Fa Chau ..	" 7 " "
Ching Mui Chau ..	" 8 " "
Mau Kan Chau ..	" 8 " "
Chang Chau ..	" 8 " "
Mui Kwai Chau ..	" 40 " "
Ka Pi Chau ..	" 30 " "
Ning Mun Chau ..	" 8 " "
Muk Kwa Chau ..	" 8 " "
Shüt Li Chau ..	" 8 " "
No Mei Chau ..	" 7 " "
Shan Kut Chau ..	" 8 " "

A visit was paid to each distillery in order to observe the processes used and the quality of the materials. The processes are practically the same in all. The rice in all factories is the cheapest kind, known as Choo Mei; in no case was it unsound. The Chau Pang was of good quality. The factories were kept in a clean condition.

RECENT WORK IN BOTANY.

GLUTAMIN IN PLANTS.—According to Herr E. Schulze, asparagin is often replaced by glutamin as the soluble nitrogenous food-material of plants. He found it in twenty-two species belonging to ten different families, e.g., in *Lepidium sativum*, *Raphanus sativus*, *Camelina sativa*, *Spergula arvensis*, *Spinacia glabra*, and *Pinus excelsa*. It is especially frequent in the Cruciferae, the largest proportion being 2.5 per cent. of the dried substance. In all cases where glutamin has at present been found, the seeds contain much oil; though the seedlings of some oily seeds, such as *Papaver* and *Tropaeolum*, contain asparagin and not glutamin.—*Landwirthsch. Versuchs-Stat.*, 1898, p. 442.

ARTIFICIAL PRODUCTION OF ALPINE CHARACTERS IN PLANTS.—M. G. Bonnier has made a series of experiments at Fontainebleau, from which he concludes that it is possible to produce artificially the special characters of alpine plants by subjecting them to alternations of temperature similar to those which they experience at high altitudes. He compared cultures of the same species obtained from the same stock:—(1) Kept constantly at a low temperature (4° to 9° C.); (2) subjected to the normal alternations of temperature in the neighbourhood of Paris; (3) exposed to a very low temperature at night and to strong insolation by day. In comparison with lots 1 and 2, those of lot 3 were found to exhibit a decrease in stature; the internodes becoming proportionately shorter, the leaves smaller, thicker, and of firmer consistency, with a more rapid production of flowers.—*Comptes rendus Acad. Sci. Paris*, cxxvii., 1898, p. 307.

British Institute of Preventive Medicine.

THE new building which has now become the permanent home of the British Institute of Preventive Medicine has been erected on a site on the Thames Embankment, near Chelsea Bridge, from designs by Messrs. Waterhouse and Son. The building is completely detached, and stands in its own grounds, which were acquired from the Duke of Westminster, who is a member of the Council of the Institute.

ADMINISTRATION.

The board room and general offices, together with a waiting-room, are situated on the ground floor, near the main entrance, to the right of which is the Director's private office, together with two laboratories for himself and his assistants. These laboratories will accommodate six workers, and are fitted up with the usual appliances for bacteriological investigation. A lift is provided for goods and passengers, and there is lavatory accommodation on every floor.

BACTERIOLOGICAL LABORATORY.

The main bacteriological laboratory is situated at the back on the ground floor, and occupies the entire length of the building. It has accommodation for twenty-five students, and has the advantage of a north light for microscopical work. The working benches are of teak, impregnated with paraffin, and are provided with gas, water, and electric light. Each worker is provided with a complete set of apparatus for his work, as well as with a set of drawers and lock-up cupboards. For dissections and aseptic operations a slate-topped table is provided. The incubators stand on slate slabs, and a special glass-blowing table has been provided. At one end of the room is a fume chamber, and a wash-up sink with hot and cold water. A small room in connection with this laboratory will admit of operations being carried out under the best conditions for aseptic work. The floor is concrete, the benches are of slate, and the walls covered with opalite. This laboratory will be mainly utilised for instruction. The Institute has already attracted workers from all parts of the

world, and the number will no doubt greatly increase with the enhanced facilities of its new building. The courses of instruction are attended by qualified medical men, army surgeons, and students of hygiene. The students of hygiene will receive a course of bacteriological instruction specially suited to their requirements, and dealing with the bacteriological examination of water, soil, and air, food-stuffs, etc. A course of systematic bacteriology will also be given, and will comprise lectures and practical work. This practical instruction will extend over three months, and, following the method adopted at the Institut Pasteur, will touch on all the phases of bacteriological work. From time to time six weeks'

courses will be given, dealing especially with bacteriology in relation to clinical work. This laboratory will also be utilised to give those desiring it a thorough grounding in bacteriological methods, with a view to subsequent research work. A room in the basement has been specially fitted up for the preparation of the culture media. There is a stone bench with hood for the steam sterilisers, stone benches for the autoclaves and serum inspissators, tables, shelves, etc., two large sinks, and a large copper with counterpoised top for boiling out old tubes and plates. In this room the student will be instructed in the methods of the preparation of the various culture media, such preparation of media being regarded as an essential part of the training. Adjacent to this room is another which will be maintained at incubation temperature.



BRITISH INSTITUTE OF PREVENTIVE MEDICINE.

The convenience of this will be recognised by all bacteriological workers. Such a room will be particularly useful for the preparation of tuberculin, mallein, and similar fluids on a large scale. There is further a large room which will be fitted up as a workshop for general repairs. The same room will contain a large centrifugal machine, and a water distilling apparatus.

THE PHOTOGRAPHIC LABORATORY.

The back of the basement is devoted to photography. In a large room are provided two complete photo-micrographic cameras, one for use with the electric arc light and constructed to carry out work with the highest powers, and the

other to be used for lower power work, and also for purposes of preliminary instruction. The larger form of apparatus is of the latest design, with some new features introduced to facilitate its working. Thus, to ensure firmness and freedom from vibration, there are two brickwork and masonry supports for the cameras, each of which is so placed that a curtain can be drawn at any moment to effectually screen off either apparatus. Attention will be given to the application of photography to spectroscopy, so far as it is applicable to bacteriological research, and apparatus will also be provided for photometric observations. It is hoped later to establish a lantern-slide library, when illustrations for lectures on any branch of work carried on at the Institute will be available. This department is under the care of Mr.

J. E. Barnard, who is responsible for many of the fittings.

THE CHEMICAL LABORATORY.

The large chemical and water laboratory is situated on the first floor. It contains all appliances for chemical work, and working accommodation for twenty students. The two fume chambers contain water and gas supply which can be regulated without opening the chambers. In these, distilling and evaporating operations can readily be carried on. There is also a special hooded chamber for water baths. The teak benches have ample water and gas supply, as well as taps and wastes for distilling purposes, and an electric light supply. The centre bench also contains an experimental main which will allow of electric currents of any strength being used. This main is regulated by means of a motor transformer in the basement. Provision is likewise made in the basement for elementary organic analyses in the shape of a combustion

furnace. In this room investigations of a chemical character and bearing on hygiene and preventive medicine will be conducted, and it is hoped the laboratory will become a centre for the investigation of matters concerning public health. The chemical analyses of water are conducted in this room, and a number of samples are received from local authorities for this purpose. Here also the necessary instruction in chemistry and physics for public health work is carried on, and special instruction also given in water analyses. It is intended that the general training given shall be of a thorough character, and compare with that given in hygienic institutes on the Continent. A small meteorological station will be erected for the use of the students. The laboratory is in charge of a trained chemist, who devotes his whole time to this work



BACTERIOLOGICAL LABORATORY.

THE BIOLOGICAL-CHEMICAL LABORATORY.

A fine room on the same floor will be completely equipped for instruction and research in the chemistry of fermentation and bacterial products, a branch of investigation from which the most important results may be anticipated in the future.

PRIVATE RESEARCH.

At the back of the building on the same floor are two rooms for private research work, a private chemical laboratory and the balance room. Further provision for private research is made on the floor above, where are a series of rooms, which will be fitted up as occasion demands.

VACCINE LABORATORY.

On the same floor are the laboratories and office that are to be used by the Local Government Board for the preparation and storage of glycerinated calf lymph.



CHEMICAL LABORATORY.

MUSEUM AND LECTURE THEATRE.

The museum is situated on the third floor. It consists of a

large room with a gallery and two bays. It is hoped in course of time to form a collection of pathological specimens. Attached to the museum is a preparation room. On the third floor is the lecture theatre, with accommodation for 150. The room can be darkened, and the lecture table is designed to afford facility for demonstrations. It is furnished with a sink, water, electric light, and a terminal of the experimental main. Ample provision is also made for lantern demonstrations.

CREMATORIUM AND ANIMAL HOUSE.

In the yard behind the Institute is a large crematorium in which all infective material will be destroyed. There is also a large animal house with loose boxes, and with a small laboratory attached. The construction of the animal house allows of thorough disinfection, and the cages for the smaller forms are made of galvanised iron, so that they can be sterilised.

ELECTRIC SUPPLY.

The whole block of buildings is lighted electrically, the current being taken from the mains of the local company. Current is supplied for experimental purposes by a distinct system of mains, which are carried into the various laboratories to terminals, to which temporary connection can be readily made. This main is fed by a motor transformer, taking current from the supply at a pressure of 200 volts, and allowing it to be supplied at any pressure from 5 to 50 volts. The whole of the electrical engineering has been carried out by Mr. C. V. Middleton.

GENERAL WORK OF THE INSTITUTE.

At present a large amount of diagnosis work is being undertaken for sanitary authorities, and a staff is kept constantly engaged in examining and reporting on waters, diphtheria specimens, sputa, and various organic fluids. A volume of transactions was published at the end of last year. The aim of the director is to make the Institute a national home for bacteriology in all its branches.

The present staff is as follows: Director and Honorary Secretary: Dr. Allan Macfadyen, the bacteriologists are Dr. R. T. Hewlett and Mr. Foulerton, F.R.C.S. Dr. Arthur Harden is chemist, Dr. Morris will lecture on technical mycology, Dr. Priestley is teacher of hygiene, Mr. J. E. Barnard is in charge of the photographic department, and Mr. G. Cooper assistant secretary. The department for the preparation of antitoxins remains at Sudbury, near Harrow, and is in charge of Dr. Dean, assisted by Dr. Salter.

CIMICIFUGA IN TINNITUS.—Extract of cimicifuga, in doses of 30 minims per diem, is said to relieve the distressing tinnitus which accompanies many aural affections. It appears to act as a sedative on the nervous system.—*Therap. Monats.*, xii., 414.

VEGETABLE SECRETIONS.*

BY T. MORLEY TAYLOR.

Life may be considered to be a state of chemical and physical unrest. Sachs, in his text-book, says that the essence of life is that organised structures are capable of constant internal change in contact with water and oxygen, only such part of the chemical and physical forces being in equilibrium as is necessary to determine the form of framework of the whole. If we accept this view, then, we may define life as a perpetual state of solution and precipitation, of synthesis and analysis, of composition and resolution.

The biological unit is the living matter of the cell, protoplasm a transparent more or less viscid mass, supposed to consist of a network of extremely attenuated fibrils, saturated with a fluid containing many substances. A published analysis of protoplasm suggests something like a score of different compounds, the elements of which are carbon, hydrogen, oxygen, nitrogen, phosphorus, and sulphur, besides some of the metals. It requires little imagination, therefore, to conceive that the great forces of nature, light and heat, plus the action of air and water; may perform a never-ending series of reactions.

If the student wades through the chapters devoted to metabolism in the various text-books published during the last ten years or so, he is likely to become so utterly muddled by the various conjectures, reiterations and contradictions as to give it up and seek relief in either, say, geometry or tobacco. One of his troubles will be the exact definition of the terms secretion and excretion. He finds these terms used synony-

mously and in opposition. He finds them both applied to active and also to inert matter, to useful and useless substances, whether they are collected internally or externally; an article in a well-known encyclopædia under this heading leaves nothing else of the plant to be considered after we have done with the "secretions." If we argue from analogy in the animal body, we must in the spirit of common sense define a secretion as something put aside by the organism as useful, and an excretion as something put aside as useless. Green, in his late text-book, as a matter of fact, gives us this definition, but he appears not to stick altogether to the letter of it.

We may now classify the vegetable secretions as follows:—

First, substances destined to form the framework of the plant, as cellulose and its modifications. Secondly, reserve food materials such as starch, proteid, and oils. Thirdly, special secretions, as unorganised ferments, chlorophyll and certain other

* Read before the Chemists' Assistants' Association, on Thursday, October 20, 1898.



A RESEARCH ROOM.

colouring matters and substances secreted by glands or specially differentiated cells.

A vegetable cell consists of a mass of protoplasm which has secreted for its own benefit a transparent elastic membrane of cellulose, the cell wall. This secretion commences by the granulation of part of the protoplasm, the granules forming a layer gradually changing into cellulose which, in a full grown plant, is destined to play several parts, to do which it adapts itself by partial decomposition or absorption of other matters. Cellulose is insoluble in the ordinary media used in histology, alcohol, water, glycerin or in dilute alkalis and acids, but is destroyed by strong sulphuric acid and is soluble in Schweitzer's cuprammonia solution. It is stained blue by iodine after treatment with sulphuric acid. Lignified cellulose, forming the woody tissue of the plant, is insoluble in cuprammonia, but is thoroughly disintegrated by Schultze's macerating fluid. After treatment with hydrochloric acid, phloroglucin will stain it red. Cutin is formed in the outer wall of the epidermis to prevent evaporation; both it and suberin, the principal constituent of cork cells, are disintegrated by nitric acid and Schultze's fluid.

Before passing on to reserve food material, we must notice chlorophyll and its action. In the protoplasm of living cells there are formed certain granules called plastids, which take on various duties, according to their position in the plant. These are: chloroplasts, which secrete the pigment chlorophyll, and of course found in all green parts; leucoplasts, which secrete starch grains, and are found in reservoirs, such as tubers, roots, and bulbs; chromoplasts, which secrete colouring matter other than chlorophyll, such as some of the colours in petals and occasionally in some seeds; elaioplasts, or oil-forming bodies. The chloroplasts, in the presence of suitable light, suitable temperature, secrete chlorophyll, for the production of which iron is also necessary; etiolin, the pale yellow colouring-matter of plants grown in the dark, is a primary stage in the formation. Chlorophyll is the most important of the secretions, as through its intervention sugar is formed from the carbon dioxide and water taken up. It is a green pigment collected in the meshes of the chloroplastids, from which it may be dissolved out by alcohol, ether, or carbon bisulphide, but not by water, a fact which suggests that it occurs in an oily solution in the plastid. Such a solution is fluorescent, red by reflected light and green by transmitted light. The function of chlorophyll is to absorb certain rays of the light which reaches it. It therefore gives a very characteristic spectrum, and may decompose into other colouring matters of a red and yellow character, to which decomposition the reds and yellows of autumn tints are due. The formation of sugar is the ultimate result of the physical action of chlorophyll, and it is supposed that formic aldehyde is an intermediate product in this formation, and combines with the nitrogen obtained from salts carried up from the roots to form amides of the fatty acids.

These nitrogenous and non-nitrogenous food materials are carried away to be taken up by the protoplasm at the points of growth or are transferred to various reservoirs, where they are absorbed and secreted in an insoluble form for future use.

Of course it may be argued that food under any circumstances cannot be called a secretion, but there are points of analogy between these reserve plant foods and the superfluous fat and muscle in animals which are certainly secretions, moreover, the secreted food material in plants is formed at the seat of storage by specially differentiated protoplasmic granules. The soluble sugar is here taken up by the leucoplasts and secreted in the form of starch in lamellated grains, the hilum being formed first and layer after layer poured out until the plastid is exhausted.

If the secretion remains in the mass of the protoplasm the grain will be spheroidal in shape, but if secreted externally the grains become more or less ovoid, the hilum being furthest away from the leucoplast at the end of the process.

But non-nitrogenous matter may be secreted in the form of oils and also in the form of glucosides. Oils are formed by the decomposition of the protoplasm, small drops being secreted in its mass which in time run together and fill the whole cell, or it has been observed in some seeds, that oils have been poured out like starch from special granules, and these granules have been termed elaioplasts. Glucosides may or may not be of use to the plants, those that are not must be classed with the excretions, such as resins, alkaloids, etc. Others contained in roots and seeds are certainly secreted as nutritive food material, their value in this direction being due to the glucose or other sugar produced when they are subjected to ferment action. Some of the glucosides contain nitrogen, as amygdalin, and myrotic acid.

The nitrogenous reserves take the form of proteids or albuminoids, generally soluble in sodium chloride solution and precipitable by heat. They may be secreted in an amorphous form, or in the form of crystalloids, and in some particular cases in grains of a peculiarly complex formation known as aleurone grains. These aleurone grains appear to be made up of three different forms of albuminoid, the outer coat being soluble in water, the rest of the body of the grain in dilute sodium chloride solution, leaving a crystal of proteid associated with a granule of amorphous mineral matter, which proteid is soluble in a strong solution of sodium chloride. They may be demonstrated by macerating sections of the seed of *Ricinus* in a 2 per cent. solution of mercuric chloride in absolute alcohol for twenty-four hours, the alcohol removing oily matters, the mercuric chloride rendering the whole grain insoluble in water.

Leaving reserve food materials, we naturally pass on to the first class of special secretions, which are used for converting them into soluble form, easily assimilable by the living matter of the growing embryo or shoot. These unorganised ferments occur in many forms, each having its particular substance to act upon and duty to perform. The protoplasm of the cell, amongst its many decomposition products, forms the enzymes, which are derived from zymogen secreted in its substance as a granular deposit. They are found wherever food-stuffs are stored, generally in the same cells, but often in special cells or aggregations of cells specially set apart. Such special cells in some plants develop into true glandular structures, as in the leaf surfaces of *Drosera*, *Pinguicula*, and the pitcher plants, all of which are carnivorous. The chief of these ferments are diastase, converting starch into maltose; invertase, converting cane sugar into dextrose, emulsin and other special enzymes having the power to decompose glucosides; and the proteid digesting ferments, trypsin and pepsin. These enzymes may be extracted from the tissues by means of glycerin or sodium chloride solution.

The glands in some of the insect-catching plants appear not to act until stimulated by contact with nitrogenous matter, when a violent agitation occurs in their cells and a copious fluid, with generally an acid reaction, is poured out. Other glandular secretions are the glutinous saccharine fluid exuding from the surface of the stigma and the nectar of leaves. This nectar is called an excretion in many text-books, but it is of considerable use to the plant, and is as much a secretion as the sticky exudation from the fly's foot, the web of a spider, and the odorous secretion of the musk deer and other animals. The specialised parenchymatous cells, which secrete this saccharine fluid, occur not only in the flower, but frequently at the base of bracts, and, in a few cases, in the flower stem

itself. Finally, we must notice the colouring matters and odours of petals, whose object, like that of nectar, is to attract the insects, which are the essential indirect aids to reproduction. The colours are in part due to the secretion of granular plastids, similar to those which secrete chlorophyll, and in part to pigments in the cell sap of the epidermis. This completes a rough outline of the substances secreted by plants for their present or future benefit. They form in themselves a study in natural economy. Their history accentuates the greatness of the infinitely little, and is another proof that nothing in nature is despicable.

REVIEWS AND NOTICES OF BOOKS.

A SHORT MANUAL OF ANALYTICAL CHEMISTRY. By JOHN MUTER, Ph.D., F.R.S.E., F.I.C., F.C.S. Eighth edition. Pp. 230. Price, 6s. 6d. London: Simpkin, Marshall, and Co., and Baillière, Tindall, and Cox. 1898.

The scope of this book is well expressed in the heading of the first chapter, "The Processes Employed by Practical Chemists." There is no discussion of "crystalline verities" or statement by the author as to an attempt at a "slight broadening of the horizon of his readers and students," nor as to "the mode of reasoning which from childhood onward teaches us that two separate things, *e.g.*, two pennies, are similar things," as in a well-known manual addressed to pharmaceutical students. It is essentially a short manual of analytical chemistry written by a master of his subject. It matters little where the book is opened. Everywhere it bears the stamp of the laboratory bench as distinct from arm-chair chemistry.

The student is led on by an explanation of the chief laboratory processes, such as solution, extraction, precipitation, etc., as preliminary to applied processes in the reactions and detections of the metals and acids. The chief organic acids, including oleic, malic, benzoic, salicylic, and the detection and separation of the halogens, sulphides, thiosulphates, nitrites, cinnamic acid, hippuric acid, are all dealt with in a manner as if in anticipation of the students' queries and difficulties. In the general preliminary examination in qualitative analysis the student is well reminded that it "should also be remembered that in many cases these inferences require subsequent confirmation, and therefore a student should be taught not to jump too readily at conclusions from the preliminary investigation." This is commonly the pitfall of a student, and perhaps it would have been as well to have warned him in the same way in the chapter on the detection of alkaloids and other organic bodies used in medicine by the colour tests, as, for example, that "a vivid emerald green" with H_2SO_4 and potassium bichromate is not invariably indicative of pilocarpine, or an evanescent "dirty red, followed by pinkish buff and gradual formation of green streaks" of cocaine. In fact, the colour tests for alkaloids, with a few exceptions, are more apt to lead the student into difficulties than to assist him. The five pages on the qualitative detection of organic bodies commonly employed in medicine and in the arts contain a very concise and accurate summary of the means for the ready detection of these bodies.

In the quantitative part there are useful descriptions of the methods adopted in practice for the taking of the specific gravities of liquids, solids, and gases, and vapour densities, and for the carrying out of volumetric analysis. In describing the operations of quantitative analysis, the author follows a vicious but not uncommon practice in speaking of the results as "estimations," as though they involved the exercise of judgment or opinion on the part of the operator, as would be the case in the procedure of an appraiser in valuing property, or of an architect in stating the probable cost of a building. Such an application of the term

estimation appears distinctly improper in the case of quantitative analysis, the results obtained being more correctly designated by the term "determinations," inasmuch as they are based on definite fixed values. The introduction of a standard Mayer's solution is hardly worthy of the author, as it is time that pharmaceutical students were disabused of the belief that all that is thrown down by Mayer's reagent is to be regarded as an alkaloid. The quantitative examples in Division II. describe the methods as usually carried out in analytical laboratories, and can therefore be accepted with confidence by students as examples for practical acquaintance with quantitative analysis. In the Dumas process of determining nitrogen the collection of the nitrogen in the manner described is, however, rather antiquated when it is much more easily collected in Schiff's nitrometer.

The chapter dealing with the analysis of water, air, and food is more or less the outcome of practical work, although in some instances, here as elsewhere, the methods adopted and inferences drawn may not be generally accepted, as, for example, the determination of starch in mustard by difference, on the assumption that genuine mustard contains as a minimum 33 per cent. of oil, that the specific gravity of chicory solution is invariably 1021.7, and that Marsh's test will detect one part of As in two hundred millions. The author very properly states, in describing the methods for the analysis of beeswax, that the B.P. test for paraffin "is unfortunately not always successful with the kind of paraffin now used for adulterating beeswax."

This edition contains the alterations necessary to bring it abreast of the new Pharmacopœia, as is essential in a work specially adapted for pharmacists, even to the latest refinement of atomic weights to the second place of decimals, as there adopted.

In conclusion, as the result of a careful perusal, it may be stated that Muter's 'Short Manual' should be the laboratory companion of all students of analytical chemistry in its relation to pharmacy.

GENERAL ELEMENTARY SCIENCE. Edited by WILLIAM BRIGGS, M.A., F.C.S., F.R.A.S. Second edition. Pp. 139 + 128 + 136. Price, 3s. 6d. London: W. B. Clive. 1898.

The inclusion of general elementary science as a compulsory subject for the matriculation is a wise decision on the part of the London University, since in no respect can the study of the elements of science be regarded as labour lost even by students who do not intend reading for a science degree. It is evident that there was the need of a book that should deal in a concise manner with the principles of science, from the issue of a second edition of this book within five months of the first edition. The book is divided into three parts, dealing respectively with Mechanics, Heat, Light and Electricity, and with Chemistry, each part by specialists such as Professors Bryan, D.Sc., F.R.S., Cracknell, M.A., and Don, M.A., B.Sc., and Drs. Bailey and Beddow. The method adopted is, first of all, to give definitions, then explanation of scientific terms with illustrations, whilst at the end of each chapter is a summary of the essential matter, and exercises thereon in the form of questions. Such as, for example, in the article dealing with the parallelogram of forces, there is, first, the proposition, then an experiment to verify it, geometrical construction, observed facts, and deductions. In this way, scientific terms that are frequently merely names to students, who use them glibly enough as examiners know, and the facts connected with them are clearly explained. The chemical portion, consisting of one hundred and thirty-six pages treats, in a manner very intelligible to the student, of the atomic theory, chemical calculations, equations, formulæ, then with the chemical properties of the atmosphere, of solution and distillation,

oxides and salts, chlorine, sulphur, etc. The book has the stamp throughout of an honest endeavour to give the student a clear conception of the fundamental principles of the chief subjects of elementary science that may be the ground work for future study without merely straining after examination results.

FORMULÆ, METHODS, AND REACTIONS, KNOWN BY THE NAMES OF THEIR AUTHORS.

Supplementary List.*

Barbier (ALCOHOL).—On the addition of an excess of potassium acetate to an essential oil, if much alcohol be present, the liquid becomes denser. Compare Bernouilly's test.

Baumann-Goldman (CYSTINE).—Benzoyl chloride, dissolved in aqueous sodium hydroxide solution, throws down a precipitate of benzoyl-cystine.

Bechamps (NITROBENZOL).—Essential oil of bitter almonds adulterated with nitrobenzol yields a blue colour on distilling it with ferric acetate, and adding chlorinated lime to the distillate.

Bedson (APOMORPHINE).—On boiling a solution of morphine containing apomorphine with potassium hydroxide, a brown colour is produced.

Behrens (OLIVE OIL).—A yellow colour should be produced on adding a cold mixture of equal weights of concentrated nitric and sulphuric acids to an equal weight of olive oil.

Beilstein (HALOGENS).—The presence of chlorine, bromine or iodine may be detected in organic substances by a green or blue colour being produced on dipping cupric oxide beads into the suspected substance, and heating it in the lower part of a Bunsen flame.

Béla von Bitto (ALDEHYDES AND KETONES).—A fine greenish fluorescence is produced after a few minutes on adding to the suspected solution an aqueous or alcoholic solution (0.5 to 1 p. c.) of a meta-diamine salt. The fluorescence disappears on adding an alkali and reappears on acidulating the solution.

Bellamy (COPPER AND IRON).—On adding tincture of logwood a blue colour is produced.

Bergman (MINERAL ACIDS).—If wine or vinegar contains free mineral acid, calcium oxalate is not precipitated on adding 5 drops of normal ammonium oxalate solution, followed by 5 drops of normal calcium sulphate solution.

Bernouilly (ALCOHOL).—Essential oils adulterated with alcohol form dense solutions on adding dry potassium acetate. Compare Barbier's test.

Berthelot (PHENOL).—On adding a little sodium hypochlorite or solution of chlorinated lime to the slightly ammoniacal liquid (urine) and warming, a blue coloration is produced if phenol be present. Acid changes the colour to red, and ammonia subsequently added restores the original blue. Compare with the reactions of Bodde, Jacquemin, Lee, and Salkowski.

Bertoni and Raymondi (NITROUS ACID).—On dialysing blood containing nitrous acid, evaporating the dialysate, and adding hot alcohol, the acid may be detected in the usual way with starch paste and potassium iodide.

Berzelius (ARSENIC).—A mirror is formed and an alliaceous odour given off on heating arsenic in a test-tube with charcoal.

Berzelius (MUSK).—An aqueous infusion of pure musk should not precipitate a solution of mercuric chloride.

Betelli (FUSEL OIL).—Mix alcohol, 5 C.c.; water, 6 C.c.; chloroform, 15 drops. Shake well, and on standing, any fusel oil present in the alcohol can be detected on evaporating the separated chloroform.

Bieber (FIXED OILS).—On mixing 5 volumes of a fixed oil with 1 volume of a mixture of equal weights of concentrated sulphuric acid, fuming nitric acid and water, a colour reaction is produced, which varies with the kind of oil.

Bieber (PEACH KERNEL AND ALMOND OILS).—With Bieber's reagent peach kernel oil gives a deep orange colour, whilst true almond oil forms a yellowish zone.

Biel (BENZIN AND BENZOL).—These two liquids differ in their behaviour to iodine (colour), alcohol (solubility), asphaltum (solubility), nitric acid (nitrobenzol), and in their specific gravity.

* After Wilder, Schneider, Altschul, Lee, Squire, Crookshank, etc. Continued from p. 119 of last volume.

Bill (BROMIDES).—A yellow to dark orange-red colour is produced on adding to a bromide 1 drop each of hydrochloric acid and gold chloride solution.

Biltz (IODIC ACID).—If iodic acid be present in nitric acid a blue colour is developed on diluting the acid with an equal volume of water, adding a few drops of starch solution and then a few drops of sulphuretted hydrogen water.

Biltz (SODIUM CARBONATES).—An aqueous solution of pure sodium bicarbonate (1 in 15) gives a white cloudiness when one-sixth its volume of an aqueous solution of mercuric chloride (1 in 20) is added. If, however, any monocarbonate be present, a brownish-red precipitate is thrown down.

Blachez (ALCOHOL).—If alcohol be present in chloroform, a precipitate is formed on adding a small piece of potassium hydroxide, agitating, pouring off the chloroform after standing five minutes, shaking it with an equal volume of water, then decanting the water and adding a solution of copper sulphate.

Blaise (QUININE).—See Vogel's reaction.

Blanc (FIXING INFUSORIA).—For larvæ of Echinodermata, Medusæ, and Porifera, mix saturated solution of picric acid, 100, sulphuric acid, 2, water, 600. For Rhizopoda and Infusoria, add 2 or 3 drops of 1 p. c. acetic acid to every 15 C.c. of the above mixture. Wash out with 80 p. c. alcohol, followed by 90 p. c., and absolute alcohol; then stain with tincture of saffron (saffron, 5 Gm.; absolute alcohol, 15 C.c.), wash out with 80 p. c. alcohol, and pass through absolute alcohol into clove oil.

Blanchard (STAINING BACTERIA).—A cover-glass preparation is treated with osmic acid, the cover placed in position on a slide, and a drop of methyl-violet solution run under. After the lapse of half an hour, complete the preparation by running in glycerin or saturated calcium chloride solution, tinted with a small quantity of methyl violet. If hæmatoxylin be used as the stain, it should be allowed to act for 24 hours, and the preparation must then be washed repeatedly before mounting.

Blarez (ANILINE COLOURS).—On shaking 20 C.c. of wine with 5 Gm. of lead peroxide for one minute, colour due to natural colouring matter disappears, but aniline colours are unaffected.

Bloxam (ALKALOIDS).—Distinctive colour reactions are given by various alkaloids on dissolving them in dilute hydrochloric acid and adding bromine water drop by drop.

Bloxham (UREA).—If a nitrate be present add a few drops of ammonium chloride solution, but if absent acidulate with hydrochloric acid. Evaporate to dryness in a watch glass and heat cautiously as long as thick white fumes are evolved. Dissolve the residue in a drop or two of ammonia, add a drop of barium chloride and stir. If urea be present crystalline streaks of barium cyanurate will be formed in the track of the rod.

Blum (ALBUMIN).—From 0.03 to 0.05 Gm. of manganous chloride is dissolved in a little water acidulated with hydrochloric acid and treated with 100 C.c. of 10 per cent. solution of sodium metaphosphate. Lead dioxide is then added in small quantities at a time, the liquid is allowed to settle, and is then filtered. The resulting pink solution of manganic metaphosphate is used to detect albumin in urine. The reagent is placed in a test-tube and the urine filtered into it.

Blyth (LEAD).—When present in potable water lead precipitates the colouring matter on adding tincture of cochineal (1 p. c.).

Boas (HYDROCHLORIC ACID).—A solution of 1 Gm. of resorcin and 3 Gm. of cane sugar in 100 Gm. of alcohol (50 p. c.) gives a red coloration on adding one drop to a solution containing free hydrochloric acid, and evaporating to dryness. Compare Conrady's test.

Boas (LACTIC ACID).—This test for the presence of lactic acid in the gastric juice depends upon the oxidation of the acid to aldehyde and formic acid by carefully acting on it with sulphuric acid and manganese. The aldehyde can be detected by the addition of Nessler's reagent or by the formation of iodoform when iodine solution is added. This test for lactic acid is more delicate than that of Uffelmann, which see.

Bobierre (LEAD).—If lead be present in tin, a yellow stain is produced on applying a drop of glacial acetic acid, heating, and adding a drop of potassium iodide solution (5 p. c.).

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.*

Aqua Chloroformi.—It is difficult to see why the strength of this should have been reduced. The 1 in 200 solution may have had a taste too pungent for many people; it could, however, always be diluted if required. As an antiseptic vehicle for drugs liable to go bad, the present chloroform water will be sometimes found inefficient.

Aqua Destillata.—The colour test for ammonia with Nessler solution is the one commonly employed in water analysis. The reaction is obviously very delicate. The ammonia present may be determined by comparison with the colour produced by the addition of the Nessler solution to ammonia-free water to which a known quantity of ammonia has been added. The ammonia-free water is obtained by distilling ordinary water, rejecting the first portions of the distillate until they cease to give the faintest yellow colour on the addition of the Nessler solution. The student should carefully distinguish between Mayer's reagent and Nessler's reagent. They both contain the double iodide of mercury and potassium obtained by adding solution of mercuric chloride to solution of potassium iodide in certain proportions. The Nessler's reagent, however, is made strongly alkaline with sodium hydroxide. The yellow tint produced in very weak ammonia solutions is due to the formation of dimercuric-ammonium iodide, NHg_2I , which may be regarded as derived from ammonium iodide, NH_4I , by the substitution of two divalent mercury atoms for four univalent hydrogen atoms. In stronger solutions of ammonia Nessler's reagent produces a brown precipitate of dimercuricammonium iodide. Mayer's solution, *i.e.*, potassio-mercuric iodide without alkali, is used as an alkaloidal reagent.

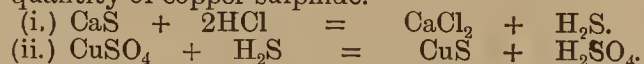
Bismuthi Carbonas.—The detection of the impurities commonly found in bismuth and its salts have been already explained in the Students' Page (*P.J.*, Feb. 27, 1897).

Bismuthi Subnitras.—The detection of calcium phosphate in this salt depends upon the fact that acid solutions containing bismuth are not precipitated by the addition of ammonia if a sufficient quantity of citric acid be previously added. Bismuth forms a soluble ammonio-citrate, while the calcium phosphate after solution in acid is reprecipitated when the solution is made alkaline with ammonia.

Caffeina.—Solution of potassio-mercuric iodide (Mayer's reagent) produces no precipitate in caffeine solutions. Mayer's reagent precipitates all the other alkaloids in dilute solutions, the reaction with morphine being the least delicate. In using Mayer's solution as an alkaloidal reagent these facts should be remembered.

Calcii Phosphas.—Calcium oxalate and phosphate dissolve easily in diluted hydrochloric or nitric acid. When sodium acetate is added in excess, thus substituting free acetic for free hydrochloric or nitric acid, the calcium phosphate is still held in solution while calcium oxalate is precipitated.

Calx Sulphurata.—When treated with sulphate of copper solution and hydrochloric acid as directed in the Pharmacopœia there should be no copper salt in the filtrate. Ferrocyanide of potassium is a very delicate reagent for copper; it produces a distinct red precipitate (or red coloration if the solution be very dilute) of copper ferrocyanide with solutions in which the blue colour of the copper salt is no longer visible. Calcium sulphide is soluble in water, for sulphuretted hydrogen produces no precipitate, in acid, alkaline or neutral solutions of calcium salts. The calcium sulphide in calx sulphurata is not readily extracted by water, first, because it is intimately mixed with the sparingly soluble calcium sulphate and, secondly, exposure of a substance to a high temperature—as in the process of preparation of calx sulphurata—often renders it less soluble than it is found to be in the non-ignited condition. For these reasons a little hydrochloric acid is added. It facilitates the reaction by liberating sulphuretted hydrogen from the sulphide, and this precipitates the corresponding quantity of copper sulphide.

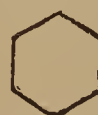


The student should verify the Pharmacopœia requirements by calculation from these equations, remembering that the crystals of copper sulphate contain water of crystallisation ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$).

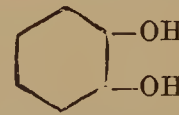
Cera Flava.—The composition of beeswax and the methods commonly used to determine its purity and detect adulterants will be found fully described in the articles on "Fats and Waxes," published in the Students' Pages for September 11, 1897, and following numbers.

Cetaceum.—Pure spermaceti consists almost entirely of cetyl palmitate, with small quantities of closely allied homologous esters. It should contain only a minute quantity of free fatty acid, hence the alcoholic solution should be made alkaline almost immediately by the addition of normal soda solution. Spermaceti dissolves in boiling 90 per cent. alcohol, but is re-deposited on cooling. The *cold* filtrate from the re-deposited spermaceti will still contain any free fatty acid present as an impurity in the sample examined. This is detected by adding water to the alcoholic filtrate, because the higher fatty acids are soluble in strong alcohol but not in water; hence they are precipitated when the alcohol is diluted.

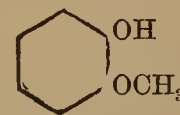
Creosotum.—Creosote is obtained from the portion of wood-tar heavier than water. This is treated with caustic soda solution, which dissolves the numerous varieties of phenols, *i.e.*, hydroxy aromatic derivatives, occurring in the tar, forming the soluble sodium derivatives, known as phenates. The alkaline solution is filtered to remove the insoluble hydrocarbons, etc., and the phenols liberated by addition of sulphuric acid to the filtrate. Those phenols which are easily soluble in water remain in the aqueous liquor, while the less soluble ones are deposited as an oily layer. This oily layer is separated and fractionally distilled, and the portion distilling between 200° and 220° C. constitutes the substance known as creosote. The phenols obtained from wood tar are for the most part methoxy derivatives, *i.e.*, they contain the methoxy group $-\text{O} \cdot \text{CH}_3$ linked to the benzene nucleus, while the coal tar phenols are simple phenols. The aqueous layer in the distillate obtained by the destructive distillation of wood contains, as is well known, considerable quantities of methyl alcohol. This indicates that the action of heat upon the organic substances in wood is very prolific in the production of methyl derivatives as compared to the action of heat upon coal. The two chief constituents of good creosote are guaiacol and cresol. The former is the methyl ether of pyrocatechin and is so-called because it was first obtained by the destructive distillation of guaiacum. Pyrocatechin is the ortho variety of the three isomeric di-hydroxy-benzenes, *i.e.*, it contains the two hydroxyl groups linked to adjacent carbon atoms in the nucleus.



Benzene.

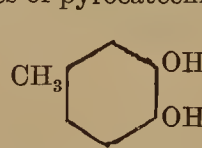


Pyrocatechin.

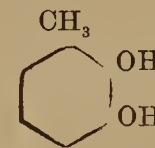


Guaiacol.

Creosol is the corresponding derivative of one of the two possible homologues of pyrocatechin.



(1)



(2)

It is the methyl ether of the methyl-pyrocatechin shown by formula (1), and may be distinguished as methyl-1-methoxy-3-oxy-4-benzene. The figures placed *after* the prefixes in this systematic name indicate the relative position of the substituting groups in the benzene ring. In addition to these two bodies methyl ethers of trihydric phenols and also simple phenols occur in small quantities in creosote. Guaiacol boils at 200° C. and cresol at 221° C., hence the fraction collected between 200° and 220° will naturally contain these two bodies in abundance. Distinguish carefully between creosol and cresol. Cresol is a monohydric phenol—hydroxy toluene $\text{C}_6\text{H}_4(\text{CH}_3)(\text{OH})$, the next higher homologue of ordinary phenol (carbolic acid). The methyl ethers differ from the simple phenols in being less soluble in water, and also less caustic and poisonous. The green colour produced by addition of ferric chloride to a dilute solution of creosote is characteristic of the ortho-oxy derivatives of benzene. Compare the colour given by ferric chloride with resorcin and hydroquinone.

* NOTE.—This series of articles should be read in conjunction with the series referring to the 1885 B.P., and published in the *P. J.* during 1897 and the earlier portion of the current year.

PHARMACEUTICAL JOURNAL.

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THE FEDERATION PROGRAMME.

THE greater number of the leading local pharmaceutical associations in Great Britain are now, as should be well known, federated to some extent, and once a year delegates from those associations meet at the same time and place as the British Pharmaceutical Conference for the purpose of comparing notes on the previous year's work and drawing up a programme for the coming winter session. The Federation of Local Pharmaceutical Associations is not a separate body, such as the Pharmaceutical Society, Proprietary Articles Trade Association, or any of the federated associations, but it has a real existence as a bond of union between local associations, bringing them into close touch with each other, and serving an extremely useful purpose in securing simultaneous discussion of all subjects of pressing importance to registered chemists at one and the same time. At the annual meeting of delegates an opportunity is afforded for bringing under the notice of representatives of the craft from all parts of Great Britain any topic that has been suggested as being worthy of special discussion, and if it be the opinion of those present that such general discussion should take place, the Hon. Secretary of the Federation notifies all parties interested in due course, and suggests a date for the simultaneous discussions to take place.

At the Belfast meeting several subjects were held to be of sufficient importance to be generally discussed by all the pharmaceutical associations in the country during December next, and Mr. R. C. COWLEY, the recently appointed Honorary Secretary, has duly intimated that fact to the bodies interested. The first question suggested for discussion is embodied in the form of a resolution, which states, "that it is desirable in the interests of pharmacy that firms trading under ancient titles should also use the names of the present proprietors in conjunction therewith." The idea underlying this proposition is apparently that "any person who shall sell, or keep open shop for the retailing, dispensing, or compounding poisons," or "who shall take, use, or exhibit the name or title of chemist and druggist, etc.," ought to sell or keep open shop in his own name, displaying that name over his pharmacy and printing it upon all his labels. It is a moot point whether

a strict interpretation of the law would not compel every registered chemist in business on his own account to practise under his own name, and as there is much to be said in favour of such a practice, the more especially as it need not involve the entire abolition of the ancient titles of historic houses, a general expression of opinion on the matter would be very useful. In view of the passing of the Pharmacy Acts Amendment Act, 1898, the Federation next suggests that local associations should use their best efforts "to induce all registered chemists to become members of the Pharmaceutical Society." This suggestion should not require much in the shape of argument to commend it to those who have already shown their adherence to the principle of trade organisation by joining a local association. No national association exists for the protection of the interests of registered chemists but the Pharmaceutical Society, and all that is required to make it as powerful as such an organisation can be is for it to become more fully representative of the craft than at present. At present it includes only sixty per cent. of the pharmaceutical chemists of Great Britain, and less than forty per cent. of the registered chemists in business on their own account, but if every member can induce one other person to become a member, nothing much better need be required.

In the third place, the Federation invites local associations to elicit the opinion of their members as to whether the recommendations issued by the Pharmaceutical Society regarding the keeping and storing of poisons, should become bye-laws of the Society. This raises anew a question that was very decidedly negatived by the members of the Pharmaceutical Society some twenty-seven years ago, but which is yet persistently brought forward by the Privy Council. It may be confidently asserted that the adoption of the Society's (not the Council's) recommendations as regulations would not inflict any hardship on registered chemists, since the vast majority of them already have similar regulations in force in their pharmacies, and the only immediate effect of compulsory regulations would be to secure unanimity in the matter. As an indirect effect, the views of the Privy Council would be met, and the sympathy of that body with the Society's objects might, as a consequence, assume a more practical form than we have been accustomed to of late years. Finally, the Secretary of the Federation was instructed to send a communication to all local associations, suggesting that during the ensuing winter session each association should consider "in committee" the whole question of company trading, as it affects the legitimate interests of registered chemists and the protection of the public safety aimed at in the Pharmacy Acts, and that an effort should be made "to formulate some definite line of policy on which all registered chemists could agree to act." This is perhaps the most important item in the Federation programme, and it calls for very serious consideration, as it is quite time some definite line of policy was agreed upon. The suggestion that this matter should be considered in private merits the most cordial approval, for nothing can be more absurd than for individuals engaged in a life and death struggle to reveal all their views and intentions to their opponents through the medium of the public press. Let the subject be thoroughly discussed in the absence of reporters and let the conclusions arrived at be submitted to the Hon. Secretary of the Federation, who will communicate them to everyone legitimately interested, at a proper time and in a proper manner.

ANNOTATIONS.

THE CHEMISTS' BALL will be under consideration at a general meeting to be held, by permission, at 16, Bloomsbury Square, London, on Monday, November 7, at 2.30 p.m. A Committee will then be appointed and other preliminary arrangements made for the ball to be held in January next. Any one who may be willing to act as steward, but unable to be present at the meeting, will oblige by writing to the Honorary Secretary, Chemists' Ball Committee, 17, Bloomsbury Square, London, W.C.

THE PHARMACEUTICAL SOCIETY OF IRELAND will inaugurate the winter session by the opening of the Society's schools and the presentation of gold and silver medals to successful students, on Monday next, October 31. An interesting feature of the meeting will be the delivery of an address on the new Pharmacopœia by Professor C. R. Tichborne, LL.D., who is to illustrate his comments by some experiments. The chair will be taken by the President of the Society, Mr. R. J. Downes, at 8.15 p.m., and we understand that the Lord Mayor of Dublin and the President of the Royal College of Physicians (Ireland) have notified their intention of being present.

A SCIENTIFIC EXPEDITION TO SOKOTRA will, according to the *Times*, leave England in the course of the next few days. It will be a small but well-organised and well-equipped expedition, and it is intended to visit the almost unexplored island of Sokotra, situated about one hundred and fifty miles east-north-east of Cape Guardafui. The party will consist of Mr. W. R. Ogilvie Grant, of the department of zoology in the British Museum; Dr. H. O. Forbes, the director of the Liverpool Museums; and Mr. Cutmore, taxidermist attached to the latter institution. The Royal Society, the Royal Geographical Society, and the British Association have provided part of the funds for the undertaking, while the trustees of the British Museum and the Museums Committee of the Liverpool Corporation have officially countenanced the project by granting the necessary leave of absence to their officers and otherwise giving it their support. The expedition will sail for Aden, proceeding thence to Sokotra by the Indian Marine guardship "Elphinstone," which, in compliance with a request made by the authorities of the British Museum, has been kindly placed at the disposal of Mr. Grant and Dr. Forbes for the purpose of conveying them to the island and back to Aden on the termination of their stay.

THE MAIN OBJECT OF THE EXPEDITION is to investigate thoroughly the fauna of Sokotra and make large and complete collections in every branch of zoology. In order to work the island thoroughly, the party will probably remain there for at least four months. The botany of Sokotra is fairly well known owing to the visit made to it by Professor Balfour in 1880, when he gave special attention to the flora, but from a zoological standpoint the island is almost unexplored. Sokotra being the largest island in the world of which it can be said that nothing is known of its mammal fauna, while its position off the interesting Somali country, the peculiarity of some of its birds, and the unexpected fact that the only mammal as yet recorded from it is of Indian and Mascarene, not African, affinities, combine to render an investigation of its mammal fauna a work of the highest scientific interest. It is anticipated that the expedition will yield unusually valuable and important results, and greatly enrich the collections of the two museums concerned. Sokotra is 72 miles by 22 miles, and

has a population of about 4000, of Arab descent. It was formally placed under British protection by agreement with the Sultan in 1886, together with the neighbouring Abdal Kute and Bromers Islands.

THE LEICESTER MEDICAL SOCIETY must include more progressive men than average medical practitioners usually are, for a circular letter has been printed intimating that it is the wish of the members of the Society that all prescriptions should be dispensed according to the British Pharmacopœia of 1898, unless otherwise specified. It would be well if other representative medical bodies, and particularly the British Medical Association, would act in a similar manner. In the circular letter referred to, by the way, the "new edition" of the Pharmacopœia is spoken of; that is hardly correct, as the book is not a new edition but an entirely new work and, for the time being, "the" British Pharmacopœia.

AN 'ATLAS OF BACTERIOLOGY' was recently referred to in these pages, as being in the press, and we are now able to announce that it has been published. The book is the joint production of Chas. Slater, M.A., M.B., etc., lecturer on bacteriology at St. George's Hospital Medical School, and Edmund J. Spitta, L.R.C.P., M.R.C.S., the author of the very complete series of articles on photo-micrography now appearing in the *Pharmaceutical Journal*. The 'Atlas' contains one hundred and eleven original photo-micrographs, which exceed in clearness anything of the kind that has yet been published. Excellent photographs have been taken for typical specimens in the first place, and the screen employed in the reproduction process (half-tone) is so exceedingly fine that the network does not in any degree interfere with details. In fact, everyone concerned in the production of the book has done his work exceptionally well, and the Scientific Press, Ltd., which has published the 'Atlas' at the moderate price of 7s. 6d. net, is to be congratulated on being able to produce such a useful addition to the bacteriologist's library so cheaply. There is a brief photographic introduction, in which the method of procedure adopted is explained; then follows a bacteriological introduction, which is an excellent summary of the whole subject. Each organism illustrated is then very carefully and fully described in the explanatory text. Without going into further details, it may safely be said that the 'Atlas' will be found indispensable by every practical bacteriologist. It can be used with advantage as a supplement to any modern text-book of bacteriology, and should specially commend itself to the readers of this Journal.

LADY DISPENSERS have at length become the subject of attention in the *British Medical Journal*, which states that it is possible for ladies to earn a living by acting as dispensers to medical men, hospitals, etc., though the demand for their services at hospitals is not great. That is quite correct, and it might have been truthfully added that the total demand for lady dispensers is very small. Proceeding, the editor of the *B. M. J.* rightly observes that to become a qualified pharmacist it is necessary to pass the Minor examination of the Pharmaceutical Society after passing a preliminary examination, but he misses the mark when he states that a three years' apprenticeship must be served, and that further study in some school of pharmacy "is always required." Whilst pointing out that the Apothecaries' Society, Blackfriars, grants certificates for competency in dispensing upon passing its examination in chemistry, materia medica, pharmacy, and dispensing, it is stated that "this certificate has no legal value," but that "it suffices for some hospital dispenserships." The latter statement is scarcely based on fact.

THE TECHNOLOGICAL EXAMINATIONS conducted under the auspices of the City and Guilds of London Institute are dealt with in a report recently published, which states that the progress in the work of the department shown in previous reports was fully maintained last year. The satisfactory relations established between the Institute and the technical education committees of county councils and various trade societies has been continued, with the result that the number of technical classes registered by the Institute have increased, and the instruction given has been brought into closer touch with industrial requirements. Further progress has been made in organising practical tests in connection with the written examinations in different subjects, and special reference is made in the report to the success attending the efforts to adapt the schemes of different trades and sections of trades. The total number of students in attendance at the classes registered by the Institute in technology and manual training was 34,990, as against 32,566 in the previous year, and the total number of candidates examined in separate subjects was 14,148, as against 12,868. In technology the number of students attending the classes was 32,899, an increase of 2833; the number of classes was 1569, an increase of 82; the number of candidates for examination was 13,062, an increase of 1194; and the number of passes 7553, an increase of 833. The number of centres has decreased from 406 to 369, owing to the closing of smaller centres of examination and to the transfer of the candidates, and in some cases of the students, to schools which are better staffed and equipped for the teaching of technical subjects. There has been a marked increase in the number of candidates from the London polytechnic institutes, and of 2505 candidates who presented themselves 1537 passed, the numbers in the previous year being 1811 examined and 1114 passed.

DR. EWALD GEISSLER, who was for many years editor of the *Pharmaceutische Centralhalle*, died somewhat suddenly, on October 15 last. In his position as a journalist he was held in the highest esteem by German apothekers as an able and laborious promoter of the interests of pharmacy.

MR. ALEXANDER CROSS, M.P., really ought to be more sure of his facts than he appears to have been at an Agricultural Conference recently held at Edinburgh. According to a report in a local paper, he brought forward the question of the restrictions on the sale of sheep dips and insecticides, and "complained that such an article as carbolic acid (*sic*) and other poisons in common use by farmers could only be purchased from members of the Pharmaceutical Society." Naturally, he condemned this assumed monopoly as unjust and as having the effect of raising prices, while he also quite erroneously inferred that the existence of this hypothetical hindrance to the free sale of carbolic acid, etc., circumscribed the opportunities which the farmer had of taking advantage of the knowledge which science might bring to his aid. He asked the Chamber to join in a petition to the Government to remove the restrictions on the sale of such articles of commerce, and the resolution, having been seconded, was agreed to. Apparently, therefore, the honourable gentleman's ignorance was shared by everyone else present on the occasion.

THE PLAGUE has got loose in Vienna, where general uneasiness has been aroused on account of the death of a servant at the Pathological and Anatomical Institution. The man's business was to clean the place, and also to feed the animals required for bacteriological studies connected with the plague in the laboratory of the Institution, where the medical men worked who were sent last year, as delegates of the Austrian Government, to join the

expedition for the scientific observation of the plague in India. The investigators remained for a considerable time in Bombay, and at present are occupied in Vienna in working out their scientific observations, the plague bacilli being used for experimental injections into animals, for the purpose of discovering a serum. It is supposed that the servant, who had frequently to assist with these bacilli, became infected, and, as a matter of fact, after a microscopic examination of the intestines of the patient, micro-organisms were found which resembled the plague bacilli. Stringent precautions were immediately taken. All persons who had been in contact with the deceased were isolated for medical inspection, and the room in which the man died was sealed up by the authorities. In spite of all precautions, however, several persons have since been attacked, and a medical man engaged at the Institution has since succumbed to the same dread disease.

THE SO-CALLED DRUG PEST has engaged the attention of a writer in the *Outlook*, who appears to have been studying Dr. J. Walter Carr's recent address on the influence of fashion on medicine and the taking of dangerous drugs, and remarks that women have earned the reputation of being the greatest offenders in the wholesale taking of injurious and often dangerous drugs. This is particularly so, he contends, amongst that class whose time is taken up in the pursuit of social pleasures. "Women resort to these drugs from over-exhaustion, when the need of a stimulant is felt; many, perhaps, whom nothing would induce to touch either whisky or brandy (not in themselves to be recommended), have recourse to some one or more of these drugs, much more subtle and dangerous in their action, whether it be morphia, antipyrin, cocaine, or some of the hundred-and-one 'cures' which gain favour now and then among the decidedly weaker sex." In a certain section of society, it is alleged, a number of women carry "restoratives" in their *bonbonnières*, and to illustrate this it is stated that some time ago a lady at a fashionable "at home" was heard to offer a friend a tabloid from a small silver box—just as one person might offer a cigarette to another—with the words, "Do have one, dear—they are only cocaine. Personally I find them a necessity, and I do not know how I should get through the day without my 'tabs.'" This is not cited as a common case; but, all the same, it is significant.

A CLASS IN PRACTICAL BACTERIOLOGY is now being held in the Hygienic Laboratory (Ashton Hall), University College, Liverpool, and Mr. Prosper H. Marsden writes to say that he has been requested by Professor Boyce to direct attention to the fact. The meetings are on Monday evenings at 7.45, and the fee is one guinea. These classes are particularly well suited to the requirements of pharmacists who are anxious to obtain a general knowledge of bacteriological processes and methods, and they have been attended by local pharmacists in previous sessions.

THE SALE OF LAUDANUM, as of all other scheduled poisons, should be—and usually is—conducted with circumspection by registered chemists, but if the facts are as stated in a report of an attempted suicide at Grantham, there would appear to have been some lack of discretion exhibited by a chemist in that town. A lad of sixteen was charged with having attempted to commit suicide by taking a quantity of laudanum, and it was stated in evidence that he had been supplied, without question, by a local chemist with two ounces of that preparation. One of the magistrates, a medical man apparently, commented on the indiscriminate way in which the poison had been sold, and most people will agree with him that the existence of such a state of affairs is not very creditable to the chemists concerned.

SELECTED PRACTICAL FORMULÆ.

BY A REGISTERED CHEMIST AND DRUGGIST.

Certain journals connected with the drug trade have from time to time published collections of recipes for the use of chemists and druggists, and I have bought several of them, but have always been disappointed to find that the recipes were of no practical use. Indeed the bulk of them seem to have been devised by people who have never made the preparations. The following formulæ, however, for medicinal and toilet preparations, etc., in common use, I have found thoroughly satisfactory in practice, and I use them regularly in my own pharmacy. It will be noted that all the quantities are given in parts and fluid parts, so that either metric or imperial weights and measures may be employed as desired. The solid ingredients should be weighed and the liquids measured; if therefore the gramme be taken as the unit of weight, the millilitre (C.c.) should be taken as the unit of measure. The ounce (Avoirdupois) and the fluid ounce correspond exactly, whilst for smaller quantities the Troy drachm and fluid drachm approximate sufficiently for the purpose of these recipes, as also do the grain and minim or drop.*

Lavender Water.—Oil of lavender, 2; essence of musk, 1; distilled water, 2; rectified spirit to 20. If put in 2-oz., 3-oz., and 4-oz. white glass panelled bottles these make a nice series to sell at 1s., 1s. 6d. and 2s. Cost: 2s. 9d. per pint (exotic oil at 7s. 6d. per lb.).

NOTE.—This preparation would be improved by the addition of essence of bergamot, otto of rose, and orange flower water, in suitable proportions. The best French oil of lavender should be used.—[Ed. P. J.]

Essence of Musk.—Grain musk, 6; solution of ammonia, 3; distilled water, 200; rectified spirit to 1000. Should be allowed to macerate in a warm place for a month. A good grain musk can be obtained for 100s. per oz., which will make the essence cost about 15s. a pint.

NOTE.—The solution of ammonia is unnecessary in this preparation.—[Ed. P. J.]

Toothache Tincture.—Chloroform (Meth.), 1; creosote, 1; oil of cloves, 1; camphor, 1; solution of cochineal, *q.s.*; rectified spirit to 10. Put up in 2-drachm vials, 6d. Cost: 1s. 7d. for 10 ounces.

NOTE.—Phenol would be a useful addition in this case.—[Ed. P. J.]

Rose Tooth Powder.—Carmine, 60; oil of rose geranium (French), 60; oil of lavender, 60; oil of cloves, 20; powdered orris root, 440; precipitated chalk to 7000. Put up in 2-oz. screw metal top bottles, retail at 9d. Cost: 1s. 2d. per lb.

Camphor Ice.—Spermaceti, 3; white wax, 3; bleached almond oil, 8; powdered camphor, 2. Put up in tin-foil lined boxes to retail for 1d. to 6d. Cost: 1s. 9d. per lb.

* In the case of the first formula given, all the ingredients are liquid; hence, having decided whether minims, fluid drachm, fluid ounces, or millilitres (C.c.) are to be taken, all that is necessary is to measure the specified number of minims, etc., of each ingredient. The third formula includes a solid—camphor—as an ingredient; if ounces are to be taken, weigh an ounce (Avoirdupois) of camphor and measure the specified number of parts of each of the other ingredients as fluid ounces, also making up the bulk to ten fluid ounces. If a smaller quantity of product is required, we may weigh a drachm (Troy) of camphor and measure the parts of the liquid ingredients as fluid drachms. Grains of solids require fluid grains of liquids to ensure strict accuracy, but the difference will mostly be inappreciable if an equal number of minims, or even drops, be taken. For instance, if a pound (7000 grains) be required of the preparation, for which the third formula is given, the quantities of solids should evidently be regarded as grains, but it will probably prove most convenient to measure the essential oils as minims, whilst if smaller quantities are required to be taken, the fluid parts might be regarded as drops. Another approximation suggests itself in connection with the formula for violet powder, for if the “fluid parts” be regarded as drops, and the “parts” as grains, the product might with advantage be made to weigh exactly one ounce.

Diarrhœa Mixture.—Tincture of opium, 1; dilute sulphuric acid, 2; chloroform water to 40. Dose: One tablespoonful every three hours until relieved. Six-ounce bottle sells for 1s.

NOTE.—Tincture of catechu, aromatic powder of chalk, and essence of peppermint might be substituted for the dilute sulphuric acid with advantage.—[Ed. P. J.]

Adults' Cough Mixture.—Chlorodyne (B.P., 1885, form.), 1; ipecacuanha wine, 1; syrup of squills, 4; distilled water to 20; solution of cochineal, *q.s.* Dose: One tablespoonful every four hours. A six-ounce bottle sells for 1s. 3d. Cost: 6d. per pint.

NOTE.—It would be better to reduce the quantity of water, and make the dose one teaspoonful.—[Ed. P. J.]

Children's Cough Mixture.—Sweet spirit of nitre, 1; strong solution of ammonium acetate, 1; ipecacuanha wine, 1; syrup of tolu, 4; dill water to 20; solution of cochineal, *q.s.* Dose: One to two teaspoonfuls, according to age. Put up a “Cherry Pectoral” in 3 and 6 oz. bottles to sell at 9d. and 1s. 3d. Cost: 7d. per pint.

NOTE.—The solution of ammonium acetate should be replaced by ammonium bromide, and some syrup of Virginian prune might well be added.—[Ed. P. J.]

Cold Cream.—White wax, 32; triple rose water, 32; oil of rose geranium (French), 1; almond oil to 64. Mix in the usual manner and put up in 1-oz. pots to retail at 6d. Cost: 1s. 6d. per lb.

Quinine and Iron Tonic.—Citrate of iron and quinine, 1; syrup of orange, 2; chloroform water, to 20. Put up in 6-oz. bottles as “Aromatic Quinine and Iron Tonic,” to retail at 1s. Cost: 8d. per pint.

Violet Powder.—Oil of rose geranium, 1; oil of neroli, 1; powdered orris root, 50; powdered starch, to 400. Put up in 4-oz. round boxes to retail at 6d. Cost: 9d. per lb.

Indigestion Mixture.—Dilute nitro muriatic acid, 1; tincture of nux vomica, 1; concentrated infusion of gentian (1 to 7), 2½; chloroform water, to 20. Dose: One tablespoonful three times a day in a little water after food. A 6-oz. bottle sells for 1s. 3d. Cost: 6d. per pint.

Antiseptic Foot Powder.—Oil of lavender, 3; oil of cloves, 1; powdered boric acid, to 400. Put up in small round tins, with sprinkler tops, to retail at 6d. Cost: 6d. per lb.

Syrup of Figs.—Fluid extract of cascara, 200; tincture of orange, 50; oil of cassia, 1; simple syrup, to 1000. Put up in 2-oz. panelled flats for 1s. Cost: 10d. per pint.

NOTE.—This preparation should contain some syrup of figs, and is better made by mixing that syrup with fluid extract of senna pods, and flavouring with pimento.—[Ed. P. J.]

Corn Solvent.—Salicylic acid, 4; extract of Indian hemp, 1; methylated flexile collodion, to 40. Put up in 2-drachm vials fitted with brush, each in box to retail at 9d. Cost: 4s. per pint.

Carbolic Tooth Powder.—Pure liquid carbolic acid, 12; powdered cuttlefish bone, 24; powdered orris root, 24; carmine, 3; oil of rose geranium, 3; precipitated chalk to 400. Put up in 1½ and 3-oz. flat tins to retail at 4½d. and 7½d. Cost: 1s. per lb.

Sulphur Skin Lotion.—Precipitated sulphur, 1; oxide of zinc, 2; glycerin, 4; rose water, to 40. Put up in 4-oz. flat poisons to retail at 1s. Cost: 1s. per pint.

Bay Rhum.—Oil of *Myrcia acris*, 1; acetic acid, 1; rectified spirit, 20; water, to 40. Put up in 3-oz. panelled white glass flats, retailing at 1s. Cost: 1s. 9d. per pint.

Nursery Hair Lotion.—Borax, 1; concentrated infusion of quassia, 4; rose water, to 20. Put up in 4-oz. flats to retail at 1s. Cost: 9d. per pint.

Effervescing Saline.—Tartaric acid, 30; bicarbonate of soda, 30; dried Epsom salts, 3 chlorate of potash, 1; icing

sugar to 120. Put up in 6-oz. saline bottles to retail at 1s. Cost : 7d. per lb.

NOTE.—The proportion of magnesium sulphate in this formula is much too large; one-tenth to one-fifth the quantity specified would be ample, and the chlorate may, with advantage, be omitted. —[Ed. P. J.]

Erasmus Wilson's Hair Wash.—Almond oil, 5; solution of ammonia, B.P., 5; oil of rosemary, 1; rectified spirit, 16; water, to 40. Put up in 4 and 8-oz. round-shouldered vials retailing at 1s. and 1s. 9d. Cost: 1s. 4d. per pint.

Nutritive Pomade for the Hair.—White wax, 50; spermaceti, 50; ess. of bergamot, 3; oil of lavender, 3; oil of cloves, 1; benzoated lard, to 800. Put up in 2-oz. screw metal bottles retail at 6d. Cost: About 1s. 2d. per lb.

Furniture Cream.—Castile soap, 2; carbonate of potash, 1; yellow wax, 16; turpentine, 60; water, 60. Dissolve the potash and soap in the water by the aid of heat, strain into large jar then melt the yellow wax, take the vessel from the fire and add turpentine. Then mix two solutions and stir well. Put up in 6 and 12-oz. round-shouldered wide bottles at 9d. and 1s. 6d. Cost: 7d. per pint.

Eau de Cologne.—Essence of bergamot, 6; essence of lemon, 3; oil of neroli, 2; oil of rosemary, 2; distilled water, 100; rectified spirit to 1000. Put up in usual 2 and 4-oz. bottles. Sells readily at 10½d. and 1s. 6d. Cost: About 2s. 9d. per pint.

HALIFAX AND DISTRICT CHEMISTS' ASSOCIATION,

A meeting of this Association was held on Thursday, October 20, at the Old Cock Hotel, Halifax.—The chair was taken by Mr. G. M. COBB, President, and there was a good attendance of members. A discussion took place as to the attitude taken by various owners of proprietary articles in reference to the P.A.T.A.—The PRESIDENT proposed—

That no literature of any description be distributed or show-cards exhibited belonging to non-P.A.T.A. firms, and that the members of this Association discourage the sales of such articles until the proprietors thereof see fit to place their goods on the P.A.T.A. list.

—This was seconded by Mr. W. S. THOMPSON, and carried unanimously.—Messrs. Comyns, Tiffany, J. B. Brierley, Gibson, Dixon, Fielding, and the Hon. Secretary, H. C. Brierley, etc., took part in the discussion. It was pointed out that as all the chemists in the district were members of the P.A.T.A., the effect of such a resolution will certainly be felt so far as the drug trade in Halifax was concerned. The Secretary was instructed to send to the leading non-P.A.T.A. proprietors a copy of this resolution, and to request them to join the P.A.T.A. A letter from Messrs. J. and E. Atkinson to Mr. Dixon, of Halifax, was read, in which the firm in question regretted "the cut-throat policy adopted by many traders in these days," and stated that they were not in a position to alter things. Much indignation was expressed by the meeting at the arguments laid down. It was pointed out that another perfumery business, Messrs. John Gosnell and Co., had decided to meet the difficulty by placing their articles on the P.A.T.A., and the members felt that what Messrs. Gosnell could do other perfumery proprietors could also accomplish. A letter was read from the P.A.T.A. condoling with the Halifax Association, and referring to the great loss which they had sustained from the death of Mr. Seely. The Secretary was instructed to write expressing the thanks of the Halifax Association for the sympathy expressed by the P.A.T.A.—The HONORARY SECRETARY read a letter received from the Bradford Association, inviting the Halifax Association to be present at an address to be given by Mr. G. T. W. Newsholme, Vice-President of the Pharmaceutical Society, on pharmaceutical topics, the date being February 21, 1899. Many members expressed a hope that they would be able to be present, and thanked the Bradford Association for their kindness.—The PRESIDENT proposed and the SECRETARY seconded that Mr. Clement

Fielding's name be submitted to the Pharmaceutical Society as a fit and proper person for the post of local secretary now vacant through the death of Mr. H. W. Seely, F.C.S. It was felt by the members that Mr. Fielding would be a great success in that position.—During the winter session meetings of this Association will be held on the first Thursday in the month.

CHEMISTS' ASSISTANTS' ASSOCIATION.

On Thursday, October 20, at a meeting of this Association, held at 73, Newman Street, W., the PRESIDENT, Mr. F. W. Gamble, in the chair, Dr. Charles Symes and Mr. T. A. Ellwood were proposed for election as patrons of the Association; three new members were also nominated.—Mr. H. E. MATTHEWS, the Hon. Secretary, having read the minutes of the previous meeting, the PRESIDENT called upon Mr. T. Morley Taylor to read a paper on

Vegetable Secretions.

Before proceeding with his paper Mr. Taylor offered a word of warning to those members who at any time propose to read papers before the Association. He advised them to refrain from putting off writing their paper until within two or three weeks prior to the date of the meeting at which it should be read. In writing a paper on any subject a man ought to be certain that he can devote the time to it he intends to do, and in order to accomplish that he (Mr. Taylor) found it to be absolutely necessary to allow ample time for the preparation of matter for the paper, otherwise various unforeseen circumstances might occur at the last moment to prevent the satisfactory completion of the work. Unfortunately that had been the case in the present instance, consequently he had only got together an elementary account of the subject he had intended to deal with more fully. Hence his warning to those who might be tempted to do likewise. Mr. Taylor then read his paper, which is printed in full at page 464. It was illustrated by a number of enlarged diagrams, prepared by the author, and exhibited on the wall, also by several sections under the microscope.—Mr. H. E. MATTHEWS proposed that a hearty vote of thanks be accorded to Mr. Taylor for his admirable paper. It was not, as he had given them to understand, an elementary paper, but one which required a deep dive into the subject to obtain the information contained therein. Personally he had enjoyed the paper very much. Mr. Matthews then made a few remarks with respect to the formation of formaldehyde and carbohydrates in plants, stating that he was inclined to be heretical in his opinion on the subject, as it was a question concerning which there was at present insufficient proof. The part played by the calcium salts in plants was another point that required elucidation, it being known that calcium chloride was very fatal to plants.—The PRESIDENT seconded the proposition although, he said, it was not strictly in accordance with the rules to propose a vote of thanks to a member of the Association for any service he might render by way of reading papers. But he thought Mr. Taylor deserved their heartiest thanks for the excellent paper he had brought before them, also for the excellent diagrams with which it was illustrated. With regard to the subject matter of the paper, Mr. Taylor had told him beforehand that it would be merely a *résumé* of information concerning vegetable secretions. It struck him at the time that a *résumé* of the subject would be much more interesting than a paper which went more deeply into the subject. He did not quite agree with Mr. Taylor's definition of secretions and excretions when he said that excretions in plants are useless and secretions are useful. They did not find anything haphazard in nature. Of course it was a nice distinction to draw, to say that the one is useless and the other useful; but he thought it raised a difficult point to say that resins and alkaloids are of no use in the plant.—Mr. TAYLOR said his definition of secretions and excretions was made in the hope that it might lead to some discussion on the subject, because it was a question for discussion.—Mr. MATTHEWS said that the definition of a secretion given by Mr. Taylor was one likely to make them go for him on first thought, but if they went into the matter more deeply, he thought they would be inclined to agree with him.—Mr. TAYLOR having replied to several other points raised by Messrs. Pearson, Gamble, and Matthews, and acknowledged the vote of thanks, the meeting adjourned.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.

This Association opened its fifth winter session on the 19th inst. with a meeting at the Exchange Rooms, Birmingham. The chair was taken by the VICE-PRESIDENT, Mr. J. Selby, who was called upon to take the place of the President, Mr. F. J. Walton, and deliver the opening address. He explained that since his election Mr. Walton had given up the chemists' profession, and had temporarily left the town in order to pursue medical studies. A few days previously he had sent in his resignation, which would be considered at a future meeting. Reviewing the work of the last session Mr. Selby expressed the opinion that members had every reason to congratulate themselves. He reminded them that their Association was one of the first to suggest the formation of

AN ASSISTANTS' UNION.

Such an association had already been formed, with headquarters at London, and during the present session the Birmingham Association would be asked to consider its aims and objects and appoint a local secretary. The Association could not, however, live on the past, and if it was to be made one of the leading associations of the country its motto must be "Forward." Touching upon the programme for the first part of the present session he pointed out that it contained subjects well worthy of their attention and of interest to every one connected with pharmacy. Among those who had promised to assist were Mr. Alcock, Mr. Barclay, Mr. Liversedge, and Mr. Dencer Whittles, all gentlemen of high scientific attainments. He urged the members to attend the meetings regularly. Some assistants he knew were more favourably situated in this respect than others. He spoke in condemnatory terms of those employers who sought to take fourteen business hours out of the day. The system of late hours had been growing year by year, until now in some places the hours of the chemist were outrageous. Legislation on the question would not affect the chemist on account of the peculiar nature of his business, and he therefore saw no hope in this direction. He was, however, led to ask why assistants should want legislation when the matter was entirely in their own hands? Twelve hours a day he considered the outside limit, and he urged assistants to refuse to engage with any man who tried to get more. With sound combination those employers who existed by sapping the health and strength of the young men of to-day would either have to change their principles or cease to exist. He advised assistants first of all to approach their masters in a friendly spirit, intimating their desire to leave business earlier on certain nights in order to attend the meetings of their Association. Mr. Selby next touched upon the question of unnecessary Sunday trading, and said that whilst they were all conscious of the reasonableness of some one being in attendance for urgent cases, such a provision did not make it necessary that a chemist should draw up his blinds, brilliantly light up his shop, and invite any passer-by to purchase scented cachous, perfume, and such articles. The assistants of to-day could, if they chose, exert considerable influence upon the evils he had referred to. Mr. Selby went on to speak of the new Pharmacy Act, pointing out that it made all Minor men eligible for

MEMBERSHIP OF THE PHARMACEUTICAL SOCIETY.

He thought the Society should receive the support of every chemist in the country. All the little prejudices of the past should be entirely swept away, and the Society should be made to represent the entire trade—not a fraction of it, as had been the case hitherto. He advised the members not to be influenced by the grumblers of old, but to think and act for themselves, bearing in mind that the Council of the Pharmaceutical Society would in the future be composed of those who were to-day assistants. If the different assistants' associations throughout the country united to support one or more candidates for the Council success was assured. In conclusion, Mr. Selby appealed to those present to exert themselves in the direction of obtaining new members, and so make the session more successful than any preceding it.—On the motion of Mr. JESSOP, seconded by Mr. THOMAS, a hearty vote of thanks was accorded Mr. Selby for his address.

LANOLIN VACCINE.—W. G. King recommends the use of purified lanolin in the place of the usual glycerin for preserving lymph. This has been well tried in different climates. Carefully prepared lanolin vaccine retains its efficacy from six to nine months, sometimes longer.—*Pharm. Central.*, xxxix., 536.

IRISH PHARMACISTS' ASSISTANTS' ASSOCIATION.

At Dublin, on the 21st inst., the third annual meeting of this Association was held in the Pharmaceutical Society's House, 67, Lower Mount Street, the VICE-PRESIDENT, Mr. Henry Hunt, in the chair. There was a large attendance.—The HON. SECRETARY read the notice convening the meeting and also the minutes of the last meeting, which were adopted. The correspondence included several letters of apology for non-attendance.—The CHAIRMAN said he was glad to see so many present. It was very gratifying to know that there was no lack of interest taken in the work of the Association, and he regarded the attendance that evening as a favourable augury for the success of the ensuing season. In accordance with the terms of the circular convening the meeting, he purposed varying slightly the usual order of procedure, and with the object of giving new members a voice in the Association that evening before the election of new office-bearers, he would be glad if candidates were forthwith proposed for election and balloted for. Two new members were then proposed for membership and declared duly elected. The Chairman now declared all offices in the Association vacant, and vacated the chair, which, on the motion of Mr. JOHNSTON, seconded by Mr. TURNER, was taken by Mr. G. G. Fetherston, who congratulated the Association on its vitality. He referred to the work of the past session, and said the meetings had been very well attended, and were successful in every respect. He deplored the loss of their valued President, Mr. Hardy, but was glad to know that he was doing well in his new sphere of work. He now called upon the Hon. Secretary to read

The Annual Report.

Mr. JOHNSTON said, in presenting to the members the third annual report of the Association, it was pleasing to see that their numbers were far in advance of any previous session. A brief summary of the work of the last session was then given, and it was stated that, so far as the Committee saw, they could offer no suggestions as to how they could improve or increase the interest taken during the past session by the members, and as last year's work had proved so very successful it was thought the same lines might be followed during the ensuing year. The attendance at meetings was next referred to, and a hope expressed that all would endeavour not only to keep up the good average attendance of the previous session, but to increase it. The various Committees were also urged to make every effort to ensure a successful session. The Secretaries wished to express their thanks on behalf of the Association to those outside the ranks of pharmacy for their kindness in assisting the Association. They were also indebted to the country members for their support, inasmuch as they were, unfortunately, prevented through distance from taking an active part in the working of the Association. The payment of subscriptions was next dealt with, and reference made to the suggestion made at the beginning of last session that an employment agency in connection with the Association would prove useful and beneficial to employers and assistants alike. The subject was very freely discussed, and circulars sent out to all employers resident in the city and suburbs, but the replies received were not at all in proportion, some being for and some against the scheme. It was found that an employment agency could only be worked satisfactorily by having an office and a registrar in constant attendance, and this, it was regretted, was beyond the scope of the Association at present, so it was decided to abandon the idea indefinitely. It was with pleasure they acknowledged the kindness received at all times at the hands of the Pharmaceutical Society's President and Council, and they trusted the existing cordial relations between the Society and the Association would long continue. The trade press deserved special thanks, as on former occasions it was always ready to extend its generosity and meet the wishes of the Association in every way, but in the matter of the supply of trade papers it would be advisable, if they could see their way, to include the *Pharmaceutical Journal*. The report concluded with kind references to the President, Mr. Hardy, and to the Committee generally, and was signed by the reader on behalf of himself and his co-Secretary, Mr. Dunwoody.

The Treasurer's Statement of Accounts

showed that the Association started the session of 1897-98 with a credit balance of £11 19s., which, together with the receipts from various sources, including subscriptions, concerts, dance, etc., amounted to £84 odd, out of which the expenses, as enumerated

in detail, came up to £74 odd, leaving a balance in hand of £9 10s. 5d. An explanation was given of the falling off of the credit balance. This was due to the fact that during the session of 1897-98 a large number of wholesale houses had subscribed to the Association, in response to a circular inviting them to do so. This circular had not however been issued during the first session, hence the decrease. The number of subscriptions from members had greatly increased, and it was thought, considering the heavy expenses of the past session, the Association had reason for self-congratulation. The money in hand would be something to meet the immediate expenses of the coming winter.—Mr. O'SULLIVAN moved the adoption of the reports. He referred to the employment agency, and said, being the author of the scheme, he still felt kindly disposed to it. He did not think the difficulty in arranging for an employment registry was so great as represented. The scale of operation need not necessarily be a large one, and perhaps the suggestion might yet be put into practical shape. He hoped the new Committee would take up the question on its merits, and try to meet the wishes of not only himself, but a large section of the members.—Mr. JOHNSTON, in seconding the adoption of the report, concurred with Mr. O'Sullivan as regards the employment agency, but when it was remembered that, out of 120 circulars sent out to the employers, only five had replied—two of them being for, two against the scheme, and the fifth indefinite—it would be seen how great was the difficulty of putting the vacancy register into practice. No doubt a large number of verbal promises to support the agency had been given by the employers, but saying and doing were often two very different things. Personally he would be glad to see an employment office in direct connection with the Association.—A discussion here arose as to the auditing of the Treasurer's report, with the result that, on the suggestion of Mr. WILLIAMS, it was agreed to print the Treasurer's report in future.

Election of Officers.

Mr. JOHNSTON had pleasure in proposing Mr. Henry Hunt to act as President during the ensuing year.—Mr. SAVAGE seconded the motion, which was carried unanimously.—Mr. HUNT thanked the members for the confidence reposed in him, and hoped they would not find it misplaced.—On the motion of Mr. JONES, seconded by Mr. M'CLEAN, Mr. J. Eyrie was elected Vice-President; Messrs. Savage and Jessop were elected Honorary Secretaries, and Mr. W. M. McCarthy consented to act as Honorary Treasurer, in succession to Mr. Turner. The following were appointed a committee of management:—Miss Wyatt, Miss Jessop; Messrs. Williams, Aubrey, O'Sullivan, W. U. Smith, M'Clean, Jones, Maxwell, O'Farrell, Barrett, Bowles, Warren, Nagle, Meyrick, Dunwoody, Watson, Chamberlain, Taylor, and Yoxall. A suggestion to reduce the number forming a quorum was rejected, on the ground that to reduce the existing number (seven) would lend colour to the possible unkind suggestion that the Association was run by a clique.—At this juncture a letter from Mr. H. C. Meyrick, Galway, the founder of the Association, was received, in which the writer conveyed his kind regards to the members and best wishes for the continued prosperity of the Association. Mr. Meyrick's sentiments were hailed with applause.—Mr. WILLIAMS spoke at some length on the condition of pharmacists in Ireland, their pay, prospects and hours of duty. He emphasised the necessity of keeping closely united, as otherwise the thin edge of the wedge of disruption would be let into the crevices occasioned by individual apathy. Mr. Williams' remarks applied to all classes and conditions of the trade, employers, and assistants alike. He suggested a closer bond of unity between the Council and the Association, and ventured to hope in the future that an official recognition of the latter would be given at the Council meetings of the Society. If the assistants could send a representative to the Council to voice their views and vote thereon, it would be a distinct gain to everybody. The Council was the Parliament of pharmacy in Ireland, and seeing that most of those connected with the Association were electors, it seemed not unreasonable to hope that the day would soon come when the Association would have at the Council a chair reserved for its delegate. He urged the formation of an employment agency, and the want in Dublin for a reading-room where the young men of the craft could meet and spend their leisure hours.—Mr. JOHNSTON deemed it right to say that the Association was formed for the elevation of assistants, intellectually and socially, and its relations with questions approaching trade unionism were happily kept at arm's length. The desire was to work hand-in-hand with the employers, and there was no reason why this should

not always continue.—Mr. Hunt having been moved to the chair, votes of thanks were accorded to the outgoing officers, and responded to by Messrs. TURNER and JOHNSTON.—A special vote of thanks was passed to the President and Council of the Pharmaceutical Society for the unvarying kindness experienced by the Association from that body, and a copy of the same was directed to be sent to the Society's Registrar. An additional vote of thanks to Mr. Fetherston for presiding for the third year in succession at the annual meeting was passed to that gentleman, who suitably responded.—At this stage of the meeting Councillor Kelly entered and was received with applause. He addressed a few kindly words of encouragement to the members, and assured the Association of his support on every occasion it was wanted. The meeting then adjourned.

DUBLIN CHEMISTS' FEDERATION.

At Dublin, on the 19th inst., a general meeting of this newly formed Association was held in the Pharmaceutical Society's House, 67, Lower Mount Street, the PRESIDENT, Dr. J. A. Walsh, in the chair. The following were present:—Messrs. J. Smith, D. O'Sullivan, J. Tyrie Turner, R. T. White, J. N. Hardy, J. A. Ray, — Campbell, — Thompson, G. Brown, Dr. J. C. McWalter, E. M. Darcy, F. J. Jackson, J. T. Smallman, etc., etc.—The Hon. SECRETARY, Mr. J. Smith, read the minutes of the last meeting, which were adopted. He also gave a *résumé* of the work done by the Committee since the general body of members last met, and the results were heard with satisfaction. Apologies for non-attendance were received from Messrs. W. F. Wells, Samuel P. Boyd, M.A., J. B. Alister, and from the representatives of Messrs. P. A. Leslie and Co., Bride Street, Gordon's Medical Hall, Ranelagh. All the letters contained promises to support the Federation.—Mr. G. BROWN, Hon. Treasurer, gave an account of the funds in hand, and said he had not yet sent out circulars asking for subscriptions, that being in reality the first meeting of the year. The money in his possession had been subscribed by the members of the Committee.—The PRESIDENT said they had met together to frame rules for

THE PROPER WORKING OF THE FEDERATION.

and to take such steps as might be decided upon to get their brother chemists to help on the Society. In order to save time he had jotted down such rules as had occurred to him as having a bearing on the Society's aim and object, and he would now read the draft prepared by the Committee. Each rule could be fully discussed and altered or otherwise in accordance with the voice of the meeting. The rules were then read as follows:—

- (1) That the Association be called the Dublin Chemists' Federation.
- (2) That its members embrace the wholesale chemists, pharmaceutical chemists, apothecaries, chemists and druggists, and registered druggists of Dublin and surrounding district.
- (3) That the object of the Federation be the consideration and furthering of all matters of trade interest.
- (4) That the Federation act in sympathy with the objects of the Proprietary Articles Trade Association.
- (5) That the annual subscription be 2s. 6d per member.
- (6) That general meetings of the members be held quarterly (the dates to be settled by the Committee).
- (7) Extra-ordinary general meetings may be summoned on the requisition of three members, or by the Committee.
- (8) That the officers consist of a President, Vice-President, Treasurer, Honorary Secretary, and eight members of a Committee, and that these office-bearers be elected at the October general meeting each year.
- (9) That new members be elected at any of the Committee meetings on their expressing a wish to join and paying the current year's subscription.
- (10) That the Honorary Secretary have power to convene a Committee meeting by circular at any time it appears necessary.
- (11) That five members form a quorum for a Committee meeting.
- (12) That at all meetings the Chairman have a casting vote in case of a tie.

—The CHAIRMAN said that in November of last year, when Mr. Glyn-Jones came over to Dublin, a meeting of the trade was held in the Hibernian Hotel, and after discussing the aims and objects of the P.A.T.A., Mr. Glyn-Jones asked them to try and form

A TRADE PROTECTION SOCIETY

as a standing memorial of his visit. He (the speaker) was appointed convener. The object of similar institutions in England seemed to be for festive and literary gatherings, but it was felt that the Dublin Federation would be doing

better if it confined itself to trade matters. It was the matter of trade pure and simple that interested the members at the present time, and he thought that the formation of the Dublin Society would help to strengthen the hands of their friends of the P.A.T.A. in England. In stating that their object was purely a trade one, discretion, of course, would have to be used as to what matters would be included in these terms.—Mr. SMALLMAN said the wording of Rule 3 was sufficiently elastic to suit their purpose.—Mr. HARDY concurred, and said it was desirable to steer clear of the discussion of pharmaceutical politics.—Dr. WALSH said that with regard to membership it would not, in his opinion, be necessary for members of the Dublin Federation to belong necessarily to the parent association, the P.A.T.A. He wanted to get in the new members locally at first, and then if later on they wished to join the Central Association they would be at liberty to do so, but if there was any objection to joining the latter it would in no way interfere with local membership.—In reply to Mr. Hardy, the PRESIDENT said that every chemist was bound by the rules of the P.A.T.A., whether he liked it or not. If a chemist would not join the Federation, and insisted on underselling his goods, the source of the supply would soon be dried up.—Mr. HARDY observed that the intention had been to regard the Federation as the auxiliary of the P.A.T.A. He would like to know the President's mind in respect of the term "auxiliary."—Dr. WALSH explained his feeling in the matter. There was a price-list which was sent to every one in the trade. They would approach manufacturers whose names did not already appear in the list and ask them to insert therein

A LIST OF THE MINIMUM PRICES

at which their goods might be retailed, and if the Association became eventually so strong, it would bring the necessary pressure to bear on the manufacturers generally, with the result that all articles sold by chemists would be duly scheduled on the P.A.T.A. list. As the mouthpiece of a number of chemists, the Federation would get much greater attention than if the question were raised by an individual, however important he might be.—Mr. SMALLMAN: In point of fact it would show them that it would be to their own interest to meet the views of the Federation.—The PRESIDENT said he had purposely omitted from the rules any mention of place and date of meeting, and for the present these particulars could be inserted on the circular convening the meetings. So far as he could judge by inquiry, he found that the second Wednesday in each quarter would be the most suitable for all parties.—In reply to a question by Mr. WHITE, as to whether the meetings would be held in the daytime or in the evening, Dr. WALSH said evening meetings were more satisfactory, as, the work of the day being over, one's whole attention could be given to the meeting without the desire to perhaps rush the business and get back to the shop or office.—Attention was called by Dr. O'SULLIVAN to the vacancy for a vice-president, and the mode of procedure to be followed in making the selection was the subject of some discussion.—The PRESIDENT said the usual way was to send out ballot papers, but in the present instance there was not, he thought, any necessity for so doing.—On the motion of Mr. HARDY, Mr. Samuel P. Boyd, M.A., was unanimously elected vice-president *in absentia*.—Mr. WHITE asked, was it to be understood that the Federation would be bound by any decision a quorum of the Committee might arrive at?—The PRESIDENT answered Yes, within the bounds of reason.—It was resolved, on the motion of Dr. McWALTER, seconded by Mr. WHITE:—

That the members of the Federation bind themselves to push the sale of articles on the P.A.T.A. list, rather than those not appearing thereon.

A copy of this resolution was directed to be sent to a number of wholesale houses named.—A vote of thanks to the Pharmaceutical Society of Ireland for the use of its room was then carried with applause, and the proceedings terminated.

IODOHÆMOL.—This combination of hæmoglobin and iodine contains 16.6 per cent. of iodine, for the most part in the form of a definite chemical compound. It has the same therapeutic action as potassium iodide, to which, however, it is preferable, since it liberates its iodine less rapidly, does not derange the digestion, and is more readily absorbed. It is given in the form of pills thus: Iodohæmol, 10 grammes; sugar, 90 grammes; to make 100. [As these pills contain each 1 gramme of material they are at least three times larger than the largest usually prescribed in this country, a cachet would be a preferable means of administering them.—ED. P. J.]—*Rev. Med. Pharm.*, iv., 261, after *Med. Mod.*

NORTH-EAST LANCASHIRE CHEMISTS' ASSOCIATION.

A special general meeting of the members of this Association was held on Tuesday night at the White Bull Hotel, Blackburn, to receive a report from the delegates to the annual meeting of the Federation of Local Associations, and to discuss resolutions demanding more vigorous action by the Pharmaceutical Council, and discussing the questions of "company pharmacy" and unqualified practitioners. Mr. Councillor CRICKLEY (Blackburn) presided, and there was a good attendance.—Mr. HOLT, who with Mr. Shorrocks represented the Association at the Belfast meeting, presented a long report as to the impressions and ideas gained at the Conference. The first was the imperative necessity for every chemist in the kingdom to support the Pharmaceutical Society, and to join a local association. In legislative matters the Society was forced to admit that it represented only a miserable minority of the trade. Much more unfortunate than the apathy of the Society was the apathy of the chemists of the country, although they did not think that the Society had done all it might have done even with its limited membership; nor did they think that the recently amended Pharmacy Act would lead to any important increase of membership, because it was such a small thing. Among matters requiring attention was the so-called "Widows' Clause" of the Pharmacy Act, which allows trustees of deceased chemists to carry on business. It followed that if trustees could carry on business with no qualification themselves any outsider could do the same. Then as to trading companies, they did not know who the proprietors were, or whether they were qualified or not. Every director of such a company should be a qualified man and have his name on signs and labels. It was necessary to appeal to the qualified chemists who prostituted themselves by acting as cover to limited companies. If they were not amenable to reason they must urge upon the Pharmaceutical Society the necessity of acquiring power—if it had not it already—to

ERASE THE NAMES OF SUCH MEN FROM THE REGISTER.

They had been given to understand that the Pharmaceutical Society was prepared to take action for the curtailment of the privileges of these illegitimate companies if the local associations would agree upon some feasible plan. In conclusion, he appealed to the rank and file of the Association to take a deeper interest in the work of the Association than they had done recently. They had a capital Executive, whose report at the annual meeting would show that they had done "good business" during the year.—Mr. SHORROCK also reported on the Federation meeting. He remarked that he was impressed with the miserably disorganised condition of the trade, or what ought to be called a profession. They had been hoodwinked by an incomplete Act of Parliament, promoted by a body of men whom they erroneously thought were watching over their interests. If they were to fight the great battle of company trading, the Pharmaceutical Society would need more—and many more—members. It had been attacked for not doing its duty, but they must not forget to blame themselves as the rank and file. He personally believed that the Society had done a lot more work than had been made known, but he hoped in future they would hear more of the doings of the Society and of its intentions. One way of getting that information would be to write asking members of the Council to attend the meetings of the Association. As for the so-called "Widows' Clause," that was the gate by which companies entered the trade, but it would be very hard to disqualify a widow with a qualified assistant. As to the qualified chemists engaged with companies, he believed the Pharmaceutical Society could settle the matter itself by disqualifying such men by erasing their names from the Register. If the Society could not do this, he did not think that Parliament would do it for them. He suggested that the Dental and Medical Societies should be asked to help them with the matter. The dental people, he thought, would agree, but he was not quite certain that the medical men were altogether in their favour. Still, he thought if the chemists' case was fairly represented to Parliament and the public, they would obtain the protection they desired.

THE PHARMACEUTICAL COUNCIL AND LEGISLATION.

—Mr. LOMAX (Darwen) moved—

That all local associations be urged to unite in demanding more vigorous action by the Pharmaceutical Council, more information of its intentions, and that these be persistently pressed forward to legislation, and that they invite the assistance and co-operation of the Medical Council.

He could not believe that any professional man would deal with

companies if they only understood the matter properly.—Mr. BROWN (Burnley), who seconded the motion, said a very necessary first step was for chemists to put their own houses in order. Many chemists promoted their errand boys into assistants, and when those young men grew up the only opening left to them was in the companies. He regretted very much that in his own town the Association was so badly supported. There ought to be at least thirty members instead of half-a-dozen.—Mr. HAWORTH (Blackburn) also supported the motion, and suggested that Mr. Brown should be sent as a delegate to Burnley, to bring the chemists into the Association. He thought that if chemists properly backed up the Pharmaceutical Society they would find that that body was by no means moribund. The resolution was carried unanimously.

COMPANY PHARMACY.

Mr. W. WELLS (Blackburn) proposed the following resolution :

This meeting appeals to all chemists in the United Kingdom to discuss the question of "company pharmacy," recognising qualified companies (in such cases urging the proprietors to use their names on labels, etc.), and to pass resolutions declaring that all unqualified practice of pharmacy, either collectively or singly, should be illegal.

In this question he thought chemists had a real grievance. The time was opportune for a supreme effort to remove it. Coroners and members of Parliament had declared that the condition of things was entirely unsatisfactory, and it lay with local associations to instruct the Pharmaceutical Society how it was to be remedied.—Mr. H. HINDLE (Blackburn) seconded the resolution. He urged that "one man one shop," should be aimed at, and if they only put down children's teething powders they would do good.—Mr. JOSEPH HINDLE (Blackburn) supported. It seemed a pity to him that the so-called "Widows' Clause" should have to go, but if they wanted to get rid of company pharmacy it was inevitable. Some speakers had expressed the opinion that they might expect help from the doctors, but he did not think the medical profession had much sympathy with their trade or their aims.—Mr. BROWN thought the indifference of doctors on this point was confined to Lancashire and East Lancashire principally.—The motion was agreed to *nem. con.*

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.

The first general meeting of the session was held at the County Restaurant, on Tuesday, October 25, when the PRESIDENT, Mr. Waddington, delivered

The Annual Address.

After a few preliminary remarks upon the work and success of the Bradford Association he went on to speak of the Pharmaceutical legislation that had been promoted since the year 1802 up to the present time. After dealing with each Bill that had been brought before Parliament, he went on to say that they were constantly told that the Pharmaceutical Society has done nothing, but these instances showed that it has been constantly fighting since the year 1841, and to some extent successfully. It was more easy to prevent bad than to pass good legislation. Ten thousand chemists could make themselves felt as a power in the land, and all should now join and help to shape the legislation of the future, and not stand aloof and criticise men who are devoting time and money to their interest. The legislation of the future must be demanded because education, abilities, and requirements of individuals are increased, and demands greater privileges in order to induce them to take up the business. All legislation in the past has been for the benefit of the public and not for the trade, and if chemists wish anything for the future they must see that the public share the benefit with them, or they would have no chance of obtaining it. Mr. Waddington went on to say that their privileges are as follows:—A title, the sale of poisons on Schedule, and pharmaceutical chemists free from jury service. In his opinion their requirements were increase of Poison Schedule, chemists and druggists to be made equal to pharmaceutical chemists in regard to jury service, the making of company pharmacy illegal, branch shops without qualified managers to be made illegal, and that chemists should have the sole right to dispense doctors' prescriptions. After a few remarks on the Patent Medicines Stamp Act, Mr. Waddington concluded a very interesting address, and after a short debate the meeting terminated.

LETTERS TO THE EDITOR.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

LOYALTY TO THE CRAFT.

Sir,—I have to thank your correspondent "C. P." for his magnanimous admission that company trading is a "wrong principle," for "consciousness of guilt" is said to be "halfway to repentance," and there might have been hope even for "C. P.," who, however, hastens to demonstrate that his is no ordinary case. Well, the habitual inebriate will agree in a general sort of way that sobriety is a fairly good thing. The convicted thief will usually concede that honesty is perhaps the correct policy, criminals of every type have a hazy indefinite notion of what is right and proper, but with them, as with "C. P.," virtues are abstract quantities, only to be entertained when it involves strain on pockets (in particular) or on conscience. Under these circumstances it would be unwise to attach any value to "admissions" that cost nothing. There is nothing of the martyr about "C. P." He is not going to burn at the stake if the sacrifice of a little principle will save him; rather would he fiddle with Nero whilst Rome is consuming. It would be interesting to know why your correspondent's efforts in business on his own account resulted in such disaster. Was he killed by some neighbouring store; was he "out-pharmaced" by his legitimate competitors, or was he the victim of his own incapacity, and did the public find him out? Evidently his friends were not prepared for any further experiments in money-lending, nor do the historic houses seem to have been anxious to regain their lost sheep. Why? Your correspondent coolly tells us that he was asked to occupy living rooms only 4 feet square, and assures us that he could multiply instances of this kind, a remark I am not going to dispute; this one will suffice, I think. Human credulity will stand a good deal, but these *bonâ-fide* statements of "C.P." are a little exacting, surely. Further, his remarks about hours and salaries do not accord with my own and my friends' experience. I know several assistants in this district who are paid £200 per annum, or more. I also know that it is exceedingly difficult to get a really competent and experienced senior for less, and such a person has no need to take less; further, he is in a position to dictate terms as regards hours, no good man need be overworked, and I repeat that the well-qualified, able assistants are masters of the situation; with them rests the future of pharmacy and the whole question of salaries and hours. The fact is, Mr. Editor, in "C. P." we have a sample of the modern store assistant. Incompetent to conduct successfully a pharmacy on his own account, probably married before even qualifying, or at any rate, as in this instance, before being fairly established in business—a preposterous procedure—he finds himself hard pressed and heavily handicapped, and is ultimately "forced to find refuge and a living with the stores," who cannot pick and choose, but must needs have him—a perfectly natural gravitation to a lower level. I quite agree that "the case only wants plainly stating, and it is obvious (very) on which side the truth lies" (I make "C.P." a present of that admission). In conclusion, may I suggest that "C.P." should append his name to his communications, as anonymous letters are seldom worth answering, and are never quite fair. Stone breaking he objects to, let him also forswear stone throwing, especially as practised from behind a wall.

Warrington, October 24, 1898.

J. RYMER YOUNG.

Sir,—Admitting the truth of your correspondent's (C. P., 148/8) remarks in his letter, I feel it due to Mr. Young that your correspondent should have it pointed out that the address was delivered to students, not to those who had been in the business for years and had known where they failed to reach the goal of success. There is no doubt that in the past chemists have treated their assistants unfairly as to pay and hours, and I think by now they have learnt a salutary lesson in that direction, since they offer better terms; and I would hope that for the coming time the

students will ponder well the words of wisdom uttered by Mr. Young and set store by them. If after the report of the last Minor examination those who have passed do not set some value on their qualification they ought, and be above encouraging a system to their utter discomfiture. The number of failures (200), if they were traced I wonder where they would be found? If the spirit of the Pharmacy Act had been carried out and due consideration been paid to the wants of assistants by employers, I do not think that the trade would have been in the hopeless helpless muddle it is in to-day. Selfishness on all hands has proved the ruin.

Torquay, October 21, 1898.

W. J. RAWLING.

Sir,—Had the drug companies not been supplied with qualified assistants for the last twenty-five years, it is quite possible C. P. would have succeeded in getting a living and perhaps handed down an historic business. Our forefathers saw qualification was the best aid to progress. Let the present generation look ahead and act.

October 22, 1898.

G. W. (148/34).

THE DIVISION OF THE MINOR AND MAJOR EXAMINATIONS.

Sir,—There seems to be a growing desire for a division of the Minor examination. There is a division at present—candidates being brought up for examination two or three times at intervals of a week or more. Why these intervals should not be extended to three or six months with beneficial results has not yet been shown. An examination in practical chemistry, botany, and dispensing following a theoretical one in these and other subjects at intervals of not less than six months would go far to abolish the cram system, whereby a candidate is made to contain a headful of badly assorted facts. As the standard of pharmaceutical education is soon to be raised it is important that the Society should provide for a graduated progressive course of study. A splitting up of the Minor exam. would be the best means towards this end. A three years' curriculum, advocated by "Scriven" in your issue of 22nd inst., may be desirable, but it is not practicable at present. Pharmacy could not bear such a strain; besides, "Scriven" does not show how such a curriculum would benefit the trade. If a curriculum would enable the average pharmacist to hold his own with the stores, let us have it to-morrow. But what are the facts of history? Examinations have been made harder and more expensive, and what are the results? One of the results is that the stores are flourishing more and more. They are outbidding the respectable pharmacists in the market of qualified labour. Have assistants diminished in number? If so, the stores are still able to procure the best for the best price. With a curriculum would assistants be likely to set aside such considerations as the shorter hours and larger salaries of the stores for the sake of the dignity and future prospects offered by respectable pharmacists? I am afraid not. Parliament for years to come, if ever, is not likely to deal in a satisfactory manner with the store question. But its solution is simple and in our own hands. Qualified assistants may form a union, fix reasonable hours and salaries, and refuse to qualify the stores, and this method I commend to their consideration.

Edinburgh, October 24, 1898.

W. S. GLASS.

Sir,—“Scriven” in your last issue suggests a compulsory three years' curriculum in order to raise the standard of a qualified pharmacist, as it would exclude many of limited means who to-day are able to enter the trade and pass the examinations. Surely there is no greater error than in the supposition that men of limited means tend to lower the standard of a trade of which they are members, and that money rather than brains should be necessary in order to enter the trade? Are we also in such a state of panic because of company trading that we must raise up an arbitrary and unnecessarily severe standard of examination in order to keep down the numbers of qualified men? Qualified men would no doubt become scarcer, but masters would begin to complain of the difficulty of obtaining assistants, and would cry out for the modification or abolition of the curriculum. A three years' curriculum would most assuredly do away with the present system of apprenticeship, and the qualified man would no longer have a previous practical acquaintance with the routine of a pharmacy. He would be over-educated and too full of theories to be of much use for the general work of a shop. But supposing a three years' curriculum be made compulsory, what is there in the trade or profession of a chemist to entice men to spend so much time and

money in acquiring the necessary qualifications? The standard of a profession or trade cannot be raised by such unnatural means.

London, October 24, 1898.

L. (149/13).

Sir,—I entirely fail to see how the division of the Minor, as advocated by "Scriven," would benefit the craft. Considering that many pass it as now constituted, with but six months' coaching in a good school, a man of very ordinary mental capacity would be successful, taking, say, two subjects per year, provided he had the necessary cash for a three years' curriculum, even if the knowledge required of the subjects be made more thorough than at present; this, I believe, would not raise but lower the standing of the pharmacist, for money does not necessarily mean brains in the vast majority of instances. Having a very shrewd idea as to the identity of "Scriven," I can well understand why he proposes this scheme. Is it not because, after two sessions at the "Square," he still remains one of the "great unqualified," and herein lies his sole hope of ever becoming a chemist and druggist? I am entirely in favour of a compulsory curriculum, but save us from piece-mealing the Minor for the benefit of incompetent would-be pharmacists.

October 21, 1898.

EX-SQUARE MAN (148/23).

THE NEW TEXT-BOOK OF PRACTICAL PHARMACY.

Sir,—As I hope that Lucas's 'Practical Pharmacy,' coupled with the "Students' Pages" of the Journal, will pilot me safely through the intricacies of the 1898 Pharmacopœia, I welcome all aid in the shape of the necessary criticism of a first edition. In addition to those mentioned in last week's Journal, I would like to point out to those in possession of copies of the work a few other rather misleading statements and omissions. On page 143, line 14, the word "liquid" might be inserted before "extracts"; in line 18, an asterisk is missing, and the word "soft" might read "firm"; line 20, "soft" might read "firm"; line 21, the word "powder" or the words "and powdered" might be added after "dried"; line 27, "soft" might read "firm"; line 28, "soft" might read "firm"; line 35, the "55°·4 C." might read "54°·4 C." On page 144, line 2, "firm" might read "soft"; line 11, "firm" might read "soft." Of course any one reading the Pharmacopœia side by side with the new 'Practical Pharmacy,' would at once become aware of these and possibly other necessary corrections. Trusting the latter will soon come to light.

London, October 22, 1898.

WM. C. SPOONER.

Sir,—I think with you that Lucas's 'Pharmacy' contains much useful information, but yet it might have been better corrected, and for the sake of students who may have purchased the book I send notes on a few points that have struck me in perusing it. Page 89, Fig. 100: The valve is on the wrong glass tube in the illustration, although correctly described in the text. Page 174: In the formula for syr. ferri iod., glucose, a sufficiency, is rather indefinite. Page 241: Carbolic gauze with 10 per cent. will only contain about 6 per cent. In addition boric wool, salicylic gauze, boric gauze, although described as 10 per cent., will only contain about 9 per cent. The chapter on granules is not elaborate, information on sterilisation is lacking, and the section on dispensing is sadly deficient from a practical point of view. Page 249: Under ferri quin. cit. the author says dissolve the iron hydroxide and quinine in the citric acid solution, and add ammonia little by little, so as to allow the quinine to re-dissolve in excess of the reagent, but the reagent is never in excess, inasmuch as the finished product is slightly acid. Page 279: He says that mixtures less than 6 ozs. are generally sent out in white glass vials. This is certainly not the rule; less than 3 ozs. would be correct. I do not quite agree with his idea of dispensing bottles, but should say mixtures in green flint flats or ovals, gargles and spray solutions for throat or nose in squares, lotions and liniments for external use in dark-coloured fluted bottles, hexagons or octagons. I might refer to many other deficiencies of the book, but the few I have specified, added to those so discreetly singled out in your review, suffice to show that students using the book must be prepared to criticise as they read.

October 24, 1898.

PHARMACIST (149/21).

THE CHEMISTS' ASSISTANTS' UNION.

Sir,—Kindly allow me, through the medium of your columns, to call the attention of your readers to the C.A.U., as I think it is time there should be some expression of our views through the Society's official organ. The Union is certainly as yet in its

infancy, and, shall I say, in its days of adversity; its moral success, however, is undoubtedly assured, and although it may seem a small beginning, we confidently predict for it a great end. I think that the objects of the Union ought to commend themselves to all the thoughtful members of the trade, employers and employed, based as they are on the principles so forcibly advocated by Mr. Rymer Young, and emphasised in your columns, viz., "Loyalty to the Craft." The difficulties that present themselves in the trade at the present day call for immediate and united action, and we propose banding ourselves together and presenting an unbroken line to fight the common enemy. How some of our brethren can stand unconcerned and look at the sweeping currents which are so disastrous to our mutual interests I cannot understand. To define a policy within the limits of these few lines would be impossible, and in reply to the many inquiries as to "what we are going to do," we can only say that we are most anxious to do all we can for the promotion of our general welfare, but without combination and unity we can do nothing. We therefore ask employers to give us a little encouragement, by sending an expression of their appreciation of our efforts in the direction of minimising existing evils to our mutual advantage. We also respectfully solicit their patronage in a more substantial form—patrons' subscriptions being 10s. 6d. Prominent members of the medical profession have expressed their views strongly in our favour, and Mr. H. Dutch, L.R.C.P., Berkeley Square, has kindly led the way with a subscription of 10s. 6d. A pharmaceutical chemist whose name I will withhold at present has followed suit unsolicited, strongly expressing his approval of our objects. It will be a great encouragement for us to have as many more as possible, as we want to make the Union a financial as well as moral success. Further, we ask employers to assist us by arranging for their assistants to attend our meetings (which are announced from time to time), and those in the provinces to point out to their employés the advantages of such an organisation. By waiting to see whether the Union "will prove a success," and "what we are going to do" we cannot possibly expect to do anything, but if every assistant will make it his own personal duty to join and thereby help to make it a success, we may be able to accomplish a great deal. It is highly probable that we who are taking active steps in the matter will, in the long run, get more kicks than thanks for our efforts, and we should recognise the fact that the five shilling subscription should for the present be sacrificed for the principles at stake. We, however, challenge anyone to deny but that we are actuated by the best of motives for the protection of the honour and best interests of legitimate pharmacy.

Chemists' Assistants' Union, Tottenham
Court Road, W., October 24, 1898.

H. LLOYD,
Hon. Secretary.

VINUM QUININÆ, B.P. 1898.

Sir,—I have been able to examine a deposit found in a 54-gallon batch of the above preparation, and there is no doubt from my experiments that the complaints already recorded are well founded. It does yield a deposit in cold weather. The sediment I received dissolved in diluted HNO₃ and did not respond to sulphate nor chloride, and on further examination was found to be citrate. The intention of the authorities was to introduce a very soluble quinine salt, as in the tinctura quininæ, but then tinctura aurantii is not vinum aurantii, and the citric acid present reacts to produce citrate of quinine, which is precipitated.

Birmingham, October 24, 1898.

F. H. ALCOCK.

VISUAL OPTICS IN THEORY AND PRACTICE.

Sir,—I was somewhat surprised, as one engaged in retail houses where large quantities of visual aids are supplied, to read the article in your last issue upon visual optics in theory and practice. Mr. Laurance's dismal and plaintive remarks insinuate there is difficulty for persons suffering with defective vision getting competent attention from the present knowledge of opticians. He having made the suggestion, perhaps he will be good enough to give the districts where he has gained the impression. I think it will be found he is confounding the trade with the numerous hawker "opticians," whose methods are now well known to the public. His extraordinary assertion that 90 cent. of the glasses in use are haphazardly supplied is easily refuted when it is considered that probably more than 60 per cent. of the glasses in use are supplied to ophthalmic surgeons and hospital directors, who take care, as the trade know, their orders are faithfully carried through, and at very moderate prices. Mr. Laurance's general

remarks being of a purely commonplace nature it does not seem necessary to waste your valuable space in discussing them. but I should like to be allowed to reply to "reasons" B and C, as they seem worthy of attention. B reminds me of the constant wearisome visits of the Hebrew representative of the wholesale vendors, who always puts this forward, calling attention to his sight-testing appliance and circulars, which stated his special crystal lenses prolonged vision, but always pointed out the measure of success depended upon the amount of stock purchased. C, This appears very ungrateful to ophthalmic professors and qualified science writers and teachers who have taught the subject for years, and I should not think the Spectacle Makers' Company will feel proud of their instructor's literary effort when it is found their whole syllabus is based upon text-books of those who have made visual optics the exact science it now is. I only trouble you in the matter because it seems to me that Mr. Laurance's remarks cast a slur upon chemists who have devoted much attention and care to fitting spectacles, and have met with success in every district in London and provincial towns.

London, October 24, 1898.

D. JONES.

PRESCRIBING UP-TO-DATE.

Sir,—The following is a copy of one of our lady doctor's prescriptions:—

R̄ Ferri Sulph.	gr. 1
Strychn. Sulph.	gr. 1/4
Ext. Nucis Vomicae.....	4.

S. : One thrice daily after food.

Oppenheimer Bipalatinoid.

If dispensed, say, in pill form, how many doses would the patient survive?

October 23, 1898.

J. A. F. (148/14).

RECTIFIED SPIRIT, B.P.

Sir,—With regard to Mr. Fletcher's letter of October 12, I should like to point out that reference to any reliable alcohol tables will at once make it clear that the statements concerning spiritus rectificatus in the 1885 Pharmacopœia were not concordant, inasmuch as a spirit containing 84 per cent. by weight of alcohol has a specific gravity of 0.8382. I believe the Excise authorities consider 0.8382 to be the specific gravity of 1885 rectified spirit. Expression of this fact may be found in the alcohol tables given by Allen in his 'Commercial Organic Analysis.' Seeing that spirit of this gravity contains 84 per cent. by weight of alcohol and 88.65 per cent. by volume, the differences given on page 311 of the new Pharmacopœia appear to be quite correct.

Manchester, October 24, 1898.

WILLIAM KIRKBY.

MEDICAGO SATIVA.

Sir,—I am much interested in the remarks of my friend Mr. Holmes. Curiously I never found this plant on any railway embankment near Plymouth, though in Jersey in the eighties I saw it plentifully by the line from St. Heliers to Orgueil Castle, but the habitat where *Medicago sativa* seems permanently located on the Hoe is on a steep declivity on the eastern side of its southern face, sheltered by a low wall to the north and growing luxuriantly in the angle formed by this wall and the edge of a small disused quarry or place where the rock is perpendicular and shelters a snug nook where trees grow. When in Plymouth from 1887 to 1890, I gathered it each year and had certainly obtained it there before, but whether before I left Plymouth for Ireland, in 1873, I could not say from memory. The 'Flora Devonensis,' of J. W. N. Keys, will have it if it then grew there, I sent him habitats for all rare plants I met with in S. Devon and Cornwall from 1858 to 1872, including, 1867, *Acanthus mollis*, naturalised and growing most luxuriantly in and around a former orchard at Rosenithon, near the Manacles, and two miles from Manaccan. The farmhouse and garden had disappeared for many years, and some of the inhabitants were curious to know what the strange plant was! They had asked their various ministers in vain. It grew most vigorously outside the bottom of the former orchard, on ground four feet lower, and the glorious spikes were five feet high. I carried a root and grew it in my garden, carrying it from place to place, and left two plants with my brother, A. P. Balkwill, in Plymouth; in 1887. The brush-like anthers of the didynamous stamens, the three-lobed white corolla bearing them, with its other portion cut away nearly to the bottom, i.e., two of the five coalescing petals abnormally deficient, the three beautiful bracts; two lateral lanceolate acuminate, the central one broadly ovate, scolloped, the veins

forming prominent teeth between, and the woody hook appendages of the placenta bearing the seeds with its wonderful leaves, from which Greek sculptors took the design for the capital of the Corinthian columns, make it peculiarly interesting. It had been known to grow wild there as long as they could remember. Some time after I saw it growing in a garden near Passage, on the River Fal, about four miles from Penryn, and I suppose that from that or some other garden these specimens and those on the Scilly Islands have been derived the seeds, possibly carried by birds.

Nottingham, October 25, 1898.

F. P. BALKWILL.

ANSWERS TO QUERIES.

Special Notice.—Scientific, technical, legal, and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on separate slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms, and the registered number added in each instance should be quoted in any subsequent communication on the same subject.

MINOR FEE.—Everyone who enters for examination for the first time, after July, 1900, must pay the ten-guinea examination and registration fee. [Reply to A. H. P.—18/14.]

MORPHINE SUPPOSITORIES.—Injurious effects may certainly follow their continued use, to say nothing of the risk of the individual acquiring the morphine habit. [Reply to HUGO.—18/7.]

BISMUTH.—Johnson, Matthey and Co., Hatton Garden, London, E.C., are smelters of bismuth. [Reply to B. S. and Co.—18/10.]

OPTICIAN.—We should strongly advise you to have a course of practical tuition. Communicate with Mr. Lionel Laurance, 1, Vernon Place, Bloomsbury Square, London, W.C., on the subject. [Reply to STRABISMUS.—18/15.]

SOLUBLE ESSENCE OF LEMON.—Lemon peel, cut fine, 10 ounces; rectified spirit, 20 fl. oz. Macerate fourteen days, strain, press, add terpenless oil, 1 drachm, and filter bright through powdered pumice stone. [Reply to GALEN.—15/34.]

PARAMECIUM AURELIA.—You will find an excellent account of the process of development in the latest edition, edited by Dallinger, of Carpenter's book on 'The Microscope and its Revelations,' pp. 710-711. The description is illustrated, and seems to accord generally with what you have observed. [Reply to HOLOZOON.—17/24.]

MINOR EXAMINATION.—(1) Candidates who have already presented themselves for examination and failed to pass will be required to pay a fee of three guineas only on any future occasion. (2) If you will refer to the printed regulations, as given in the last Students' Number of the Journal, you will find a list of plants which you may be called upon to recognise. [Reply to STUDENT.—18/1.]

BLUE BLACK INK.—Tannin, 200 grains; gallic acid, 50 grains; ferrous sulphate, 1 ounce; mucilage of acacia, $\frac{1}{2}$ fluid ounce; indigo carmine, 320 grains; carbolic acid, 10 minims; rain water to produce 16 fluid ounces. Dissolve the tannin and the gallic acid in one portion of water, the iron salt in another. Mix, dissolve the indigo carmine in the mixture, then add the mucilage and the phenol with sufficient rain water to make up the required volume. [Reply to H. C.—17/31.]

DUSTING POWDER.—The material sent contains 58 per cent. of silica and 28 per cent. of alumina, with a perceptible trace of iron oxide, and only a trace of magnesia. It is more of the nature of kaolin, with an excess of silica. In its present condition it is certainly not fine enough for dusting purposes, but it can readily be made into an impalpable powder by suitable grinding. When so ground it might serve as a dusting powder similar to Fullers' earth, although the most suitable earths for absorbent and emollient purposes are those in which magnesia is the predominant base. [Reply to W. J.—17/29.]

BOTANICAL.—It is a species of *Chara*, but it cannot be properly determined unless a sample of fruit is sent. [Reply to J. T.—18/5.]

BOOK ON HOME CHEMISTRY.—You will find the information you require in Harrison and Bailey's 'Chemistry for All,' published by Blackie and Son at 1s. 6d. [Reply to PAX VOBISCUM.—17/18.]

PRELIMINARY EXAMINATION.—A complete list was published in the Students' Number of the Journal, published on September 10 last (see page 308). [Reply to J. B. F.—18/12.]

BEASLEY'S 'FORMULARY.'—We understand that Messrs. J. and A. Churchill hope to publish the new edition—the twelfth—of this book, which has been thoroughly revised and brought up to date by Mr. J. Oldham Braithwaite, at the end of next month. [Reply to FORMULÆ.—18/35.]

SEIDLITZ POWDERS.—The term "seidlitz powder" is not given in the B.P. as a synonym for the official "effervescent tartarated soda powder," and it is not clear that there is such a thing as "Seidlitz Powder, B.P." In any case, there is nothing illegal in supplying powders containing more than the usual quantity of tartarated soda, so long as that fact is made clear to the purchaser. [Reply to E. H. W.—18/11.]

NON-ALCOHOLIC ALKALOIDAL TINCTURES.—You will probably find acetic acid to be a satisfactory solvent for the alkaloids in the drugs you name. It has been widely experimented with in America by such prominent pharmacists as Squibb and Remington. See *P. J.* [4] iv., 288, and vi., 131 and 409. The acidity need not in most cases be greater than that of dilute acetic acid. It is hardly correct, however, to call such preparations tinctures. Remington finds that valoid fluid extracts can be prepared from many alkaloidal drugs by the use of acetic acid as a menstruum. [Reply to SPES.—18/8.]

STANDARDISATION OF TINCTURE OF DIGITALIS.—In the present state of chemical and therapeutic knowledge with regard to the digitalis glucosides the value of many of the processes for assaying the leaves is open to question. Since, too, those bodies are present in such small quantities in the tincture, it is preferable to make this from standardised leaves, rather than to attempt to standardise the tincture. Every pharmacist should collect and dry his own digitalis leaves, renewing the stock each year. Those so obtained are generally much more active than the dried leaves of commerce. See *P. J.* [4], v., 62, 283. [Reply to SPES.—18/8.]

SPECIFIC GRAVITY WITH HYDROMETERS.—The "general rule" you ask for is to have the liquid at exactly 60° F. when reading the hydrometer. The different liquids you name, pharmaceutical tinctures, syrups, liquors, etc., vary so greatly in their co-efficients for expansion that there is no rule applicable to all. Of course, with such definite mixtures as alcohol and water, or sugar and water, these co-efficients have been worked out and tables constructed, but these are only applicable to the particular substances to which they relate. It is failing to carefully adjust the temperature to the right degree that often causes discrepancies between the sp. gr. observed on the hydrometer and that obtained by weighing. With a good series of correctly graduated hydrometers it is easy to read specific gravities correctly to the third decimal, and that is generally sufficient for all practical purposes. [Reply to STUDENT.—18/9]

ICE CREAM AND FRUIT ICES.—The basis for this may be made as follows: New milk, 3 pints; best condensed milk, 1 tin; the yolk of 4 eggs. Mix and heat gently to make a custard, then cool and freeze in the usual manner. Flavour with vanilla, orange, lemon, or almond. If you want a specially rich ice cream, use instead of above milk, two pints of raw cream, one pint of new milk. Fruit ices may be made by using fruit jams with the above, and pulping through a sieve before freezing. Preserved pineapples in tins, cut into small pieces and bruised in a mortar, will be found very good. When jams are used the juice of one lemon should be added for every pound of preserve used. A round 7 lb. tin surrounded by alternate layers of ice and salt makes a very good extempore freezer. As the mixture freezes it should be worked down from the sides of the tin with a wooden spoon or spatula, so as to make the mass of uniform consistence. The tin should be whirled round for several minutes at a time to expedite freezing. [Reply to A. W. H.—18/4.]

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

- 4 NOV 98

The following general method is that employed by Adrian and Trillat for the preparation of organic glycerophosphates:—A solution of neutral calcium glycerophosphate is

treated with dilute sulphuric acid until it gives an acid reaction with helianthin; it is then again neutralised with a few drops of the neutral calcium salt. The solution is warmed to throw out the calcium sulphate, and after filtration the alkaloidal base is added in ethereal solution, followed by a large excess of alcohol. This is heated for some minutes and filtered to remove the precipitated calcium glycerophosphate; the filtrate is concentrated at the lowest possible temperature, the residue dried *in vacuo* over sulphuric acid. It is then treated with water and the aqueous solution washed out several times with ether to remove any free base. After this it is again evaporated, and the residue triturated with several successive portions of strong alcohol. The alcoholic solutions are filtered and dried between 50 and 60°. Strong bases such as quinine and cocaine are alone capable of completely replacing the lime in the glycerophosphates. Weaker bases, such as aniline, phenyl-hydrazine, etc., appear to form double salts with the lime compound.—*Nouv. Rem.*, xiv., 434.

The following process of A. Wroblewski, for the preparation of pure diastase is based on the fact that diastase is insoluble in alcohol above 65 per cent., but is dissolved in that below 50 per cent. 3000 grammes of finely crushed malt are macerated for a day with 6 litres of alcohol, 68 per cent. The residue, after strong expression, is again macerated in the same quantity of 45 per cent. alcohol, for twenty-four hours. The liquid is strained, the mass pressed and again macerated in the same menstruum. After again decanting and pressing, the two liquids are mixed, and sufficient alcohol (96 per cent.) added to them, to bring up the alcoholic strength of the mixture to 70 per cent. This is set aside for a day to allow the precipitate to settle; it is then collected, first washed with alcohol, 70 per cent., then dissolved by trituration with 6 litres of alcohol, 45 per cent., filtered and precipitated by the addition of strong alcohol, as before. The precipitate is now dissolved in the smallest possible quantity of water and again thrown down, by the addition of magnesium sulphate to saturation; the precipitate is collected, washed with a small quantity of saturated magnesium sulphate solution, redissolved in the smallest possible quantity of water, and dialysed. The yield of pure diastase is about 2.82 grammes from 3 kilos. of malt.—*Jour. Ph. Chim.* [6], viii., 316.

M. Kubli states that the official test of the German Pharmacopœia for the presence of sodium mon carbonate in sodium bicarbonate is not sufficiently delicate to show 2 per cent. of the impurity. For the indication of alkalinity by means of phenolphthalein in this test, the author substitutes a solution of quinine hydrochloride (0.4 gm. to 100 C.c.). A 6 per cent. solution of the salt is prepared without heat, and is added to an equal volume of the quinine hydrochloride solution. If the bicarbonate is pure no immediate and permanent turbidity is produced. On standing, a cloud appears on the surface of the liquid, due to formation of mon carbonate. If 2 per cent. of that impurity be present, a distinct permanent turbidity is obtained at once.—*Archiv der Pharm.*, 236, 321.

A new combination of tungsten and iodine, the tetra-iodide, WI_4 , has been obtained by E. Defacqz by heating tungsten hexachloride with excess of hydriodic acid to 110° C. On removing the hydrochloric acid formed, and the excess of hydriodic acid, after reaction has ceased, and heating the residue thus obtained *in vacuo* to between 50° and 60° C. until iodine ceases to be liberated, a black crystalline body is obtained, which is the tetra-iodide.—*Comptes rendus*, cxxvii., 511.

A. Wroblewski employs the following method for the preparation of soluble starch. One hundred grammes of rice starch is triturated with a 2 per cent. solution of caustic potash, so as to obtain a fluid mass. This is left for several hours, with occasional agitation. The volume is then gradually made up to 600 or 800 C.c., with more potash solution. The mixture is heated on the water bath until the mass becomes perfectly fluid; it is then boiled on a naked flame for twenty or thirty minutes, filtered, made strongly acid by the addition of acetic acid, and precipitated with an equal volume of 95 per cent. alcohol. The precipitate thus obtained is purified by re-solution and re-precipitation, once with 95 per cent. alcohol and finally with absolute alcohol. It is then washed with alcohol and ether, and dried *in vacuo*. The yield is between 50 and 60 per cent. of the starch employed. Its solubility in water is from 3 to 4 in 100.—*Jour. Ph. Chim.* [6], viii., 314.

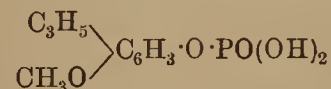
When pure crystalline metallic calcium is heated to dull redness in an atmosphere of nitrogen it combines with that gas with incandescence, forming the nitride Ca_3N_2 . H. Moissan, who has lately prepared this compound, states that when the combination takes place at about 1200° C. the nitride is obtained in minute brown crystals. With absolute alcohol the nitride forms calcium ethylate and ammonia,

$$6C_2H_5HO + Ca_3N_2 = 3(C_2H_5O)_2Ca + 2NH_3,$$

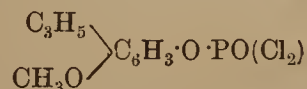
and when treated with water it evolves large volumes of ammonia, and forms calcium hydrate, thus— $Ca_3N_2 + 6H_2O = 2NH_3 + 3Ca(OH)_2$.—*Comptes rendus*, cxxvii., 497.

Liebermann (*Chem. Centralblat.*) again issues a note of warning with regard to the alkaline reaction given by certain glass apparatus. Delicate vegetable colouring agents, such as alizarin and brazilin kept in vessels of this glass would be spoiled, and water boiled in such vessels has a markedly alkaline reaction. The apparatus is elegant in appearance, has a high finish, and does not easily crack.—*Pharm. Zeit.*, xliii., 660.

According to a recently published patent, iso-eugenol may be obtained quantitatively from the acid eugenol phosphoric ester,



which is obtained by heating eugenol with phosphorous oxychloride, and removing the chlorine in the combination



by treatment with water. If this eugenol phosphoric ester be saponified with alcoholic potash, or if its alkaline salts be merely heated to 150 C., the eugenol is converted into iso-eugenol. Iso-eugenol phosphoric ester crystallises with one molecule of water, in which form it melts at 105° to 106° C. The anhydrous acid melts at 133° C.—*Chem. Zeit.* xxii., 714.

IODINE IN THYROID GLANDS.

BY R. S. SWINTON.

The suggestions for the testing of thyroid gland by its indication for iodine, as referred to by Dr. McWalter (*P. J.* [4], vii., 159), at the meeting of the British Pharmaceutical Conference at Belfast, as well as the subsequent correspondence on the subject (*P. J.* [4], vii., 259, 279), and the introduction of several organic compounds of iodine standardised to their iodine value, appears to indicate that there is an impression that the activity of thyroid preparations is proportionate to the amount of iodine in organic combination that they contain.

It seemed, therefore, of sufficient interest to determine the iodine content of well-selected thyroid glands as well as the relative solvent powers of water and the mixed solvent official in the B.P., 1898, especially as Stanford has reported in his paper on "Thyroidin" (*P. J.* [4], vii., 166) that glycerin extraction does not dissolve out the thyroidin.

The first step was to determine the percentage of iodine in the gland itself, adopting the following process:—

Twenty-five fresh glands weighing 104 grammes, finely cut up, were impregnated with a solution containing 0.5 per cent. NaHCO_3 and 0.5 per cent. KNO_3 and then completely charred. The charred mass was now repeatedly exhausted with water and filtered, the filtrate evaporated to 15 C.c., allowed to cool and mixed in separator with 7.5 C.c. concentrated sulphuric acid, the separator meanwhile being kept cool by allowing a stream of cold water to flow over it. The mixture was now thoroughly agitated with 5 C.c. phenol (90 per cent.) then with 25 C.c. saturated bromine water, the separated iodine being removed by repeated agitation with chloroform, the phenol-bromine treatment being repeated till no more iodine separated. The chloroform-iodine solution was now bulked, covered with a layer of water and titrated against N/10 thiosulphate of sodium.

The mean of three determinations of different lots of glands was found to equal 0.0295 per cent. iodine, the different lots varying from 0.028 to 0.031 per cent., thus agreeing with the results obtained by various investigators, who give 0.03 per cent. as the proportion of iodine in the fresh gland.

The amount of iodine in the extract, made according to the British Pharmacopœia directions, was now determined by the same process, and it was found that the iodine equalled 0.0293 per cent., calculated on the fresh glands, thus proving that practically all the organic iodine compound is present in the B.P. extract, this result seemingly contradicting Stanford's statement.

In order to ascertain the proportion of iodine extracted by water, which has been stated to extract only the "iodo-globulin," and not the iodo-thyrin, the same number of glands were now extracted by allowing them to macerate for three days in 200 C.c. cold water. The filtrate from this was evaporated, and, when examined, found to equal 0.0285 gramme iodine, no iodine being found in the residue, so that it seems that an aqueous extract should prove as therapeutically efficient as the gland itself.

I find, on examining the precipitated extract made according to the formula suggested by Edmund White (*P. J.* [3], xxiv., 195), and which, so far as I can learn, is largely used in the leading London hospitals, its extreme value having been proved beyond all doubt by well-authenticated cases of successful treatment, that it contains practically only the minutest proportion of iodine, and not more than about one-fortieth of that originally present in the glands.

I have repeated these experiments several times and have only been able to confirm the result. The doubt, therefore, whether the value of thyroid preparations is in any way directly dependent

upon the amount of iodine in organic combination contained in them is very great, and the doubt is, moreover, strengthened by the results obtained by the Continental investigators, Messrs. Bauman and Oswald (see *P. J.*, [4], vii., 425).

The former has found that myxœdema is most prevalent in districts in which there is deficiency of iodine in the glands of the inhabitants, but the latter has found that, if anything, the deficiency points to a freedom from that particular disease.

It will be interesting, therefore, to have the results of the use of preparations of thyroid gland prepared by precipitation and other processes carefully tabulated, and a comparison made as to their relative activity, in order to determine whether it can in any way be said to be in proportion to iodine value.

My thanks are due to Messrs. Wright, Layman, and Umney, in whose laboratory the above experiments were conducted.

RECENT WORK IN BOTANY.

INFLUENCE OF MINERAL SALTS ON THE GROWTH OF PLANTS.—M. Ch. Dassonville lays down the general law that the mineral solutions most favourable to the growth of plants are those which induce the greatest degree of differentiation. He finds, as the result of a large series of experiments, that salts of potassium and sodium have opposite effects on the tissues, the former retarding the differentiation of the supporting elements, while the latter increase the rigidity of the plant. The effect was tested of the influence of a great variety of mineral salts, in different degrees of concentration, on various cultivated plants, both in water and in the open ground. The first effects of a mineral salt on the development of a plant are frequently in opposition to the final result, the exuberance of growth being due, at least in part, to an accumulation of water.—*Bonnier's Revue Gén. de Botanique*, 1898.

INFLUENCE OF CARBON DIOXIDE ON THE GROWTH OF PLANTS.—The effect on the form and structure of plants of an atmosphere containing a larger proportion of carbon dioxide than atmospheric air is compared by M. Téodorisco with that of an air deprived as far as possible of that gas. He states that the effect of an excess of carbon dioxide is to shorten the hypocotyl or the first internodes, but to lengthen the succeeding internodes, the total result being usually an increase in length of the stem. As a rule, the internodes are larger in diameter, with an increased number of vascular bundles, and a fuller development of xylem, phloem, and cambium in each bundle; the cells of the palisade tissue are more elongated, and the air-chambers larger. The plants chiefly experimented on were *Lupinus albus*, *Phaseolus multiflorus*, *Pisum sativum* and *Faba vulgaris*.—*Comptes rendus Acad. Sci. Paris*, vol. cxxvii., 1898, p. 335.

PROTECTION OF FRUIT AGAINST PARASITIC FUNGI.—Herr A. Tschokke describes the mode in which cultivated fruits—especially species of *Pyrus*, *Malus*, *Sorbus*, *Cydonia*, and *Mespilus*—are protected against the attacks of parasitic fungi, among which the most destructive are *Monilia fructigena*, *Botrytis cinerea*, *Penicillium glaucum*, *P. olivaceum*, *Mucor pyriformis*, and *M. stolonifer*. None of these fungi can penetrate the uninjured cuticle. By the growth of the fruits the stomates by which they enter become very sparsely distributed, and largely converted into lenticels. There is frequently a general or local formation of cork-layers, as in the russet apple. But since it is very rarely that the epiderm is not locally injured, the chief protection against fungi is the chemical nature of the fruit itself, especially the presence of tannic and malic acids in the peripheral layers of cells.—*Landwirthsch. Jahrb. der Schweiz.*, vol. xi., p. 153.

PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL.

WEDNESDAY, NOVEMBER 2, 1898.

Present :

MR. WALTER HILLS, PRESIDENT.

MR. G. T. W. NEWSHOLME, VICE-PRESIDENT.

Messrs. Allen, Atkins, Bateson, Bottle, Carteighe, Corder, Cross, Grose, Savory, Southall, Symes, Warren, and Young.

The minutes of the previous meeting were read and confirmed.

RESIGNATION OF MR. HAMPSON.

The PRESIDENT then said his first duty was to read the following letter which he had received from the Treasurer, Mr. Hampson, which was dated from St. Leonards, October 25.

"Dear Mr. President,—When last I met you and my colleagues on the Council I had no thought that it would be the last occasion I should have of being present with you to take part in the business of the Society. I regret to say that, owing to a severe attack of illness, I find it necessary to retire from the Council. It is quite impossible for me to tell you, sir, how deeply I feel this severance from my friends, for all the members of the Council I venture so to designate. I feel it a privilege to have for so many years taken a part, however small, in the intimate working and administration of the affairs of the Society. The remembrance of those years and the friendship of my friends on the Council will be a treasured inheritance and a continual pleasure. I have, however, one particular cause of regret in saying adieu—that I have not been able to effect the reformation I had so long desired in the administration of the Benevolent Fund of the Society. I cannot resist pleading with those of the Council who have thought with me in the matter to take up the merciful campaign and bring it to a successful issue. I need scarcely say that my interest in the progress and well-being of the Society and in pharmacy remains undiminished. I shall watch the Council proceedings with untiring interest, and welcome every step taken that will give stability and importance to the Pharmaceutical Society.

"I am, dear Mr. President,
"Yours most sincerely,
"ROBERT HAMPSON."

The PRESIDENT said he felt that he was only acting as the mouth-piece of the Council when he said that he received this letter with the most extreme regret. He need hardly add, perhaps, that he had taken steps to ascertain that the letter represented Mr. Hampson's determination, and that Mr. Hampson felt it was quite impossible for him to remain any longer as a member of the Council, bearing in mind the very unsatisfactory condition of his health. Those who had known him for a good many years had been aware that he had suffered very considerably from weakness of body, and they had often admired his pluck in coming there from time to time when they knew that all the time he was suffering very considerably. When he looked around him he saw few who were members of the Council prior to Mr. Hampson's election, and this made it all the more a matter of regret to lose one of those who had been connected with the Council so long. His (the President's) earliest recollection of Mr. Hampson was in connection with the question which was exercising the minds of the Pharmaceutical Society very considerably before he was connected with the Council, and that was the question as to the admission of women as Members and Associates of the Society. They all knew what an interest Mr. Hampson took in that question, and he (the President) was glad to think that he, as a Member of the Society, at the general meeting supported Mr. Hampson's views, and voted for the admission of women. That was one of his earliest recollections of Mr. Hampson. They knew that about the time of the passing of the Act of 1868, matters were somewhat strained between the different individuals connected with their calling, but he would rather speak of Mr. Hampson during the time that he had been associated with him on the Council, which was now something like seventeen years. He was sure they would all agree with him that Mr. Hampson was thoroughly interested in the work of the Society and in the progress of pharmacy. In recent years Mr. Hampson had not spoken at any great length on any burning topic that had come before them, but he had taken an intense interest in every subject that had come under their consideration. He might here, perhaps, say that Mr. Hampson had been a most useful member of their Committees, for after all a great deal of the work of the Society was done in Committee. Mr. Hampson had been especially active on the Benevolent Fund Committee, and also on that very important Committee which met on

the second Wednesday in the month. Mr. Hampson had shown a deep interest in the advancement of education, especially with reference to their School, and in everything connected with the advancement of the interests of the Society which was brought specially before that Committee. He regretted that he was unable to say all that he felt with regard to their friend. He should miss him very much. He had often differed from Mr. Hampson on many points, but that fact had never disturbed in the least the good feeling that had existed between them, because he thought it was impossible to come to loggerheads with a man of Mr. Hampson's temperament. He was thoroughly conscientious in all the views that he adopted, but he was thoroughly liberal too, and could bear with the views of others in opposition to his own. He was a man utterly free from cynicism, and thoroughly conscientious in all that he said and did, and they would miss him very much from the Council. The point to which Mr. Hampson referred in his letter, with reference to the manner in which the annuitants were elected on the Benevolent Fund, was one which had found a response in the hearts of all the members of the Council, and it was only when they came to deal with the matter practically that some of them hesitated about taking the step which he thought everyone round the table would like to take, and which some of them hoped would some day be taken. It was to be hoped that the change of climate which Mr. Hampson contemplated seeking, and more complete rest, would help to build up his health again, that he would be saved from future pain, and that his life might be prolonged. They knew that Mr. Hampson had many other resources besides the interests of the Pharmaceutical Society. They knew that he had literary and artistic tastes, which, they trusted, would be a source of great pleasure and comfort to him for many long years to come. As he had said, he was sorry that he could not more fully express, as he would wish to do, his feelings of deep regret at the loss the Council had sustained in the resignation of Mr. Hampson, the Treasurer. He would, therefore, move :

That the Council accepts, with very sincere regret, the resignation of Mr. Robert Hampson as a member of the Council, and as Treasurer of the Society. This regret is much intensified by the consideration that his resignation is rendered necessary by the unsatisfactory condition of his health. His colleagues sincerely hope that his strength will be renewed and his life long spared with the change of residence and the more complete rest which he contemplates. They desire to place on record their cordial appreciation of his devotion to the best interests of the Society, and especially of the conspicuous services he has rendered as member of the Council for twenty-six years, and for eight years as Treasurer of the Society.

The VICE-PRESIDENT said he had pleasure and, at the same time, regret in seconding the motion—pleasure because by the resolution they paid a deserved tribute to Mr. Hampson, and regret on account of the necessity to accept the resolution. It had been stated that he was never a robust man; in fact, he had said himself that he was never really well, but what they admired was the immense amount of pluck which, notwithstanding his weakness, enabled him to do his duty, not only to the Society but to other people. It was known that early in life Mr. Hampson had met with a severe accident, which had upset him all his life, and yet month by month and week by week he had come to that house to do his duty to the Society. Mr. Hampson had always the welfare of the Society at heart, and particularly the administration of the Benevolent Fund. Probably they did not all agree with Mr. Hampson in his views on this latter matter, but he had sufficient independence of mind to think for himself. It was sometimes observed that delicate health and sickness did tend to make people somewhat irritable, but in Mr. Hampson's case the sickness and suffering that he experienced had quite a refining influence upon him. The members of the Council would agree that they had all benefited by their association with him. They had lost an exceedingly valuable member of the Society, and it was to be hoped that with a change of residence and more complete rest he would be spared for a great number of years to enjoy the retirement which he so richly deserved.

Mr. BOTTLE said he could not let the vote pass without rising to make a few observations with reference to it. He could add nothing to the kind words with which the President and the Vice-President had expressed their regret in the loss sustained by Mr. Hampson's withdrawal from the Council. He could go back to the time when Mr. Hampson and Mr. Scott Brown joined the Council, and remember the ability, zeal, and devotion to the Society of those two men. He had enjoyed the closest friendship with Mr. Hampson for twenty-six years. On Mr. Hampson's earliest entry on the Council, perhaps no two men

differed more than he (Mr. Bottle) and Mr. Hampson, but their differences were always differences of opinion, and not differences of friendship. Mr. Hampson's earliest view was not the introduction of women as Associates and Members of the Society, but as students. But their friend, with his perseverance and ability, succeeded in getting women admitted to the House, and when that was done he felt that he could no longer resist their admission as Associates and Members of the Society. He would not detain the Council longer, but he most sincerely regretted the resignation, and hoped that under the influence of quiet and retirement Mr. Hampson might regain his health and strength and live for many years to come.

Mr. ATKINS said, as one of the oldest friends of Mr. Hampson on the Council, he should be false to his convictions if he did not rise to support the resolution. One of the charms attached to his monthly visit to London had been the friendships he formed there, which would be lifelong, and one of the deepest and longest had been that of Mr. Hampson. He well remembered when he first came on the Council, in days when the sittings were much longer than at present, and when some members were accustomed to very elaborately and oratorically discuss the question, which came forward, asking himself, when he listened to Mr. Hampson, who made no attempt at oratory, how it was that he always produced so deep an impression. It was simply owing to the intensity of his convictions and the sincerity of his opinions. That strongly attracted him to Mr. Hampson, and he found that they had many opinions in common, though there were matters on which they differed, and from that time onward they had kept up a warm and close friendship, which he rejoiced to think would not be severed, although their opportunities of personal intercourse had come to an end. He dare not say more with regard to his own personal loss, but the public loss they had all sustained was very serious. Mr. Hampson brought to the Council a mind well stored he loved art and literature and many other things outside pharmacy and science, and they all felt the influence of that refined and cultured mind at the Council table. While some possessed only the critical faculty, others possessed a constructive power which was even more important, and Mr. Hampson's record was of that kind. Looking back more than a quarter of a century his name was associated with aggressive and progressive measures, and his loss was distinctly a public one. He heartily endorsed every kind expression which had fallen from previous speakers, and sincerely hoped that with leisure and repose, combined with the softer air of the south coast, his health might be so much benefited that his valuable life might be prolonged for many years.

The PRESIDENT said he had received a letter from Mr. Harrison, expressing his regret at not being able to be present, and speaking of Mr. Hampson, he said "his manly courage, his sympathy with the suffering, and his loyalty to the Society have secured for him the love of many of his colleagues and the regret of all." He was quite sure that all would concur in those sentiments.

The resolution was then put and carried unanimously.

ELECTION OF A TREASURER.

The PRESIDENT said the next business was to elect a Treasurer, which would be by ballot in the usual way.

The ballot having been taken,

The PRESIDENT declared that Mr. William Martindale had been duly elected Treasurer of the Society. He might say that it would afford him great pleasure to have Mr. Martindale associated with him for the remainder of his term of office. They all knew that he took a great interest in all that concerned pharmacy, and in fact, though he was now abroad in the neighbourhood of the Mediterranean, he had not forgotten the Society, for he had sent a copy of a new Ordinance regulating the sale of drugs in Gibraltar, which came into force on October 15, and to which he believed reference would be made in an early number of the Journal.

Mr. CARTEIGHE moved that authority be given to the President to sign cheques in the absence from England of the newly appointed Treasurer, Mr. Martindale. On moving this resolution he might be allowed to say how gratified he was that the Council had made this appointment so unanimously. The friends of Mr. Martindale would also feel that it was pleasant to have an opportunity of conferring an honour upon him. Since the death of Mr. Peter Squire, he took it, Mr. Martindale represented the all-round educated pharmacist in the highest sense, in activity and loyalty to the craft, and his desire to be useful, made everyone wish that he might have a bright career before him, and that possibly ere long another and perhaps a higher office might be conferred upon him. He

had known Mr. Martindale probably longer than anyone in the room. They two with Mr. Umney had been associated with everything done in the Society for very many years, even when they were not on the Council, and Mr. Martindale formed one of a small band of men who, like Richard Reynolds and others, had worked hard in days gone by to keep waverers loyal to the Society, and make it strong.

The resolution was seconded and carried unanimously.

Mr. BOTTLE suggested that this resolution should be communicated to Mr. Martindale at the same time as he received notice of his appointment as Treasurer. Otherwise he feared that with his well-known sense of duty to the Society he might cut short his holiday.

The PRESIDENT suggested that the election of a member of Council in the place of Mr. Hampson should be deferred to another meeting.

This was agreed to.

REPORT OF THE FINANCE COMMITTEE.

The report of this Committee was of the usual character, and recommended certain accounts for payment.

The PRESIDENT moved the adoption of the report and recommendations, which, he said, needed no comment, the receipts and payments both being of the usual character at this time of year. He was glad to say, however, that a donation of five guineas to the Benevolent Fund had been received from Mr. Dennis, local secretary for Louth.

The resolution was carried unanimously.

REPORT OF THE BENEVOLENT FUND COMMITTEE.

The report of this Committee included a recommendation of grants to the amount of £76 in the following cases:—

The widow (61) of a Member (1870 to 1889), who has had several previous grants. (London.)

The widow (65) of a Chemist and Druggist who has had a grant annually for several years past, and is practically dependent on the aid given her from the Fund, though she does a little needlework. (Crewe.)

An Associate (1869 to 1897) and subscriber (74) who carried on business in London for fifteen years, and is now unable to do anything. (Ipswich.)

The widow (48) of an Associate, who had three small grants prior to his death in 1866. She has an only daughter earning 4s. a week. (Wrexham.)

The widow (53) of an Associate in Business (1860-97) and subscriber. Applicant carried on her late husband's business for a year, but it did not pay. She has six children, who contribute what they can. (Clifton.)

An Associate in Business (61) from 1871 to 1890 and subscriber to the Fund. He carried on business for twenty-nine years in Camden Town, but had to close, owing to the competition of neighbouring stores. He is out of employment, and has two young children. (London.)

The widow (64) of a Chemist and Druggist, who is in ill health and entirely dependent on her children, who can do but little. (Auchterarder.)

The VICE-PRESIDENT moved the adoption of the report and recommendations, which was at once agreed to.

The VICE-PRESIDENT again rose to ask the assistance of members and friends who had votes or influence in connection with the United Kingdom Beneficent Association, in obtaining a grant for Miss Frances Wells, who was born in 1836, and was the daughter of a chemist who died some years ago. The Secretary had drawn his attention to the case, having already interested himself in the case of a sister of the lady. He did not quite know what the amount of the grant or pension was, but he was sure it was a case in which their friends throughout the country would be pleased to help.

Mr. ATKINS said the grants from the Beneficent Association were small compared with those made from their own Benevolent Fund, for which this lady was not eligible, but the competition for them was enormous. Some time ago his wife was concerned in trying to get a lady elected, and ultimately succeeded, but only after what must be called gigantic efforts. He believed the grant was about £20 a year, and he cordially supported the Vice-President's appeal.

REPORT OF THE LIBRARY, SCHOOL, AND HOUSE COMMITTEE.

The report of this Committee stated that the Librarian had presented his usual report, including the following particulars regarding attendance at the Library:—

	Attendance.	Total.	Highest.	Lowest.	Average.
July	Day	285	22	1	11
	Evening	28	5	0	3
August	Day	74	6	1	3
September	Day	92	12	4	7

Circulation of Books.	Total.	Town.	Country.	Carriage paid.
July	134	71	63	11s. 11d.
August	111	51	60	13s. 10d.
September	113	48	65	12s. 5d.

The Committee recommended that the undermentioned books be purchased :—

For the Library in London :—

Lucas, Practical Pharmacy, 1898.
Aldous, Elementary Course of Physics, 1898.
Hyndman, Radiation, 1898.
Allen, Commercial Organic Analysis, 3rd ed.
Attfield, Chemistry, 17th ed.

For the Library in Edinburgh :—

Lucas, Practical Pharmacy, 1898.
Allen, Commercial Organic Analysis, 3rd ed.
Attfield, Chemistry, 17th ed.
Bernthsen, Organic Chemistry, 2nd ed.

The Curator's report had also been received, and included the following particulars regarding attendance at the Museum :—

	Attendance.	Total.	Highest.	Lowest.	Average.
July	Day	373	28	1	15
	Evening	19	8	1	1
August	Day	52	6	1	2
September	Day	169	25	5	11

Several donations to the Library and Museum had been received (see *P. J.*, October 15, p. 424), and the Committee had directed that the usual letters of thanks be sent to the respective donors. The report of the Committee further stated that the Librarian had presented a report on the meeting of the Librarians' Association at Southport; and he also reported that he had examined the Society's Library and found that no books were missing. The Committee, recommended that, seeing the small number of persons visiting the Museum and Library in the evening during the year 1898, they should be open from 9 to 7, except on Saturday, when the hour of closing should be 2, but that on the occasion of evening meetings they should remain open till 8. The Dean of the School had reported that the School was over-full, and the Committee made certain recommendations as to the use of the Octagon laboratory and some of the laboratories in Galen Place to meet the difficulty. The Dean also reported a lack of apparatus for the physical science lectures, and the Committee recommended the expenditure of £50 on such apparatus. Mr. Carteighe had been re-appointed School visitor.

The PRESIDENT, in moving the adoption of the report, said the Committee had had a record meeting on the last occasion in point of length; therefore it would be easily understood that it was necessary to defer the consideration of some of the items which came before it. Perhaps the most important matter on the present occasion was that with reference to the Library and Museum. For some time the Committee had felt that the facilities offered for the attendance of Members and Associates during the evening hours had not been taken advantage of to the extent that was desired. There were many reasons for this, and it was unnecessary for him to hazard any opinion on the point. There were now many counter attractions, in the shape of associations, to which some of their young friends naturally turned in the evening, no doubt to their advantage. Having regard to the long hours of the staff necessitated by the present arrangements, and having regard to the expense of the lighting and warming of the room entailed, it was felt advisable that they should, at least for a year, have the Museum and Library closed at 7, except on the evening when the Evening Meeting was held. The School was over-full; he did not object to this, but it might become necessary to make some temporary alteration, involving no outlay of money, by which they could accommodate more students, and give a little more room to those working in the Research Laboratory. The Committee had recommended that a sum not exceeding £50 should be expended in the purchase of physical apparatus. The apparatus now at the disposal of their lecturer was somewhat out of date, and the Committee felt that it was highly important in a school which professed to teach its students and not to cram them that they should have proper apparatus, to enable the experiments to be performed by the lecturers.

THE RECOMMENDATIONS FOR THE STORAGE OF POISONS.

Dr. SYMES said as there was no report of the Law and Parliamentary Committee, he would like to put a question. They were

now approaching a new Parliamentary session, and might be called upon at any moment to act or to oppose action on the part of others; therefore, he wished to ask the President whether the time had now arrived for taking any action with respect to adopting the recommendations for the storage of poisons. The matter had been fully discussed in that room some ten years ago, and at that time the Council were not unanimous in the opinion that it was desirable to take action, but to-day he thought the whole Council would support the recommendations which had been made for the keeping, storing and dispensing of poisons. He did not wish to move any resolution on the present occasion. He thought they would all feel that if they had to take any action or oppose any action with reference to Parliamentary matters they would be immensely stronger if they first set their house in order, and fulfilled one of the conditions of their Act by adopting the recommendation that had been made to them. He merely wished to ask if the President thought there would be any hope of the Society passing the necessary regulations, and so give them a greater power than they now had of dealing with any question which would benefit the whole trade in dealing with poisons, or any other subject that might arise.

The PRESIDENT said Dr. Symes had rightly said that there was no report of the Law and Parliamentary Committee. That Committee had sat and considered one or two important matters, but they were not in a position at the present time to report. With reference to the point raised by Dr. Symes, his (the President's) friends knew what his opinion was with reference to poison regulations. He had never had but one opinion on the point, and he had reason to believe with Dr. Symes that their colleagues were pretty well unanimous in the desirability of framing regulations in conformity with the existing recommendations. This being the position of matters, it was highly desirable that their views should be supported by their friends throughout the country. He believed it was competent for any thirty members of the Society to ask for a special meeting to be summoned to consider such a question. The Council of a previous time did suggest that certain recommendations should be made regulations in conformity with the Act of Parliament, but, as they all knew, whatever the intention of the framers of the Act of Parliament was, it had been left for the Society itself to make such regulations. He was not present at the historical meeting to which reference had often been made, though he had often heard of it, but on that occasion the Society would not accept the recommendations as regulations, though he fancied opinions had undergone a change in that respect. With Dr. Symes, he felt most strongly on the matter that their position would be very much better if they could, even at that late hour, set their house in order and, as a Society, pass these regulations, which he for one believed were intended to be made when the Pharmacy Act, 1868, was passed. As Dr. Symes had referred parenthetically to the subject of company trading, he would, if he might be allowed, take this opportunity of saying that he believed this was a subject which it had been suggested should be discussed throughout the country by local associations during the coming winter. He might be allowed to ask that their friends throughout the country should discuss this matter with the greatest thought and consideration, ever bearing in mind what was possible and what was practicable, what they themselves would be able to go to a member of Parliament and advocate, not only in their own interests, but in the interests of the public. Parliament would not legislate merely for pharmacists or for any class of professional or trading people, but the first consideration with every member of Parliament would be what was best for the public. He mentioned this because he had before him in the current number of the *Pharmaceutical Journal* the report of a meeting of the Nottingham and Notts. Chemists' Association, which was a very active Association and doing very good work. That Association had passed a resolution asking the Council to secure the amendment of the Pharmacy Act in the direction of preventing companies doing that which it was illegal for an individual to do. Judging from the remarks of one or two of the gentlemen who were present at that meeting, it was thought by some to be practicable to stop stores carrying on business as chemists and druggists. He (the President) hoped that his friends throughout the country would not feel that he was taking too dictatorial a view in the matter; he only wanted them to consider the question very carefully, and in a way in which they could themselves place it before their own members of Parliament, because after all, if they did at any time suggest a Bill for the con-

sideration of Parliament, someone would have to go down and try and get members to interest themselves in the matter, and their friends throughout the country would have to do the same; therefore it was highly desirable that they should not only pass abstract resolutions, but such resolutions as would have a fair chance of being made practicable in a future draft Bill.

Mr. Cross suggested that the pharmaceutical press should be asked to take notice of the poison recommendations, and of what had been said there that day. They had, of course, in the Calendar a ready reference to these recommendations, which all present felt might with advantage be adopted as compulsory regulations for the storage of poisons. The provisions were so very simple that the rank and file of chemists throughout the country would adopt them; and he felt sure that the statement that they had heard about being tied down by absurd regulations would not be repeated. The suggested regu-

lations were really of such a character that they were even now generally adopted by pharmacists. No doubt all pharmacists did not possess a copy of the Calendar, but those who did not received week by week the *Pharmaceutical Journal* and other papers, and if they were to see the recommendations *in extenso*, it would prepare their minds to submit to regulations of this kind, lest something worse should come upon them.

Mr. SOUTHALL asked if the recommendations could be made compulsory by a vote of the Council.

The PRESIDENT said it would have to be done by a vote of the Society.

APPOINTMENT OF LOCAL SECRETARIES.

The portion of the report of the General Purposes Committee dealing with the appointment of local secretaries having been read,

The PRESIDENT moved that the following appointments be made:—

List of Local Secretaries of the Pharmaceutical Society for 1898-99.

Aberdeen	Strachan, Alexander.	Cromer	Davison, Daniel.	Huddersfield	King, William.
Abingdon	Smith, William F.	Croydon	Clarke, Josiah.	Hull	Bell, Charles Bains.
Altrincham.....	Burgess, A. H.	Cupar	Robertson, Wm. G.	Huntly	Chalmers, George.
Andover	Bienvenu, J.	Darlington	Robinson, James.	Hyde	Wild, Joseph.
Arbroath	Jack, James.	Dartford	Goff, Walter E.	Hythe	Lemmon, Robert Alce.
Ashbourne.....	Wardle, T.	Darwen	Shorrock, Ralph.	Ilfracombe.....	Crang, Walter.
Ashby-de-la-Zouch ..	Bullen, Geo. W.	Derby	Cope, John A.	Ilkley	Worfolk, George W.
Ashford	Ingall, Joseph.	Devonport	Rendle, Richard H.	Inverness	Ogston, Wm.
Ashton-under-Lyne ..	Bostock, John W.	Dolgelly	Williams, Richd. W.	Ipswich	Anness, Samuel Richd.
Aylesbury	Palmer, Edwin T.	Doncaster	Howorth, James.	Jersey	Cole, George.
Ayr	McGregor, Adam.	Douglas (Isle of Man).	Radcliffe, John C.	Jarrow	Rose, J. D., junr.
Banbury	Bartlett, Hubert.	Dover	Bottle, Alexander.	Keith	Pirie, James.
Banff	Alexander, William.	Droitwich	Harris, Stephen.	Kelso	Maxton, Wm. M.
Bangor	Jones, Owen.	Dudley	Gare, Charles Hazard.	Kendal	Severs, Joseph.
Barnsley	Eastwood, Lewis.	Dumfries	Allan, William.	Kidderminster	Smith, Maurice.
Barnstaple ..	Goss, Samuel.	Dundee	Kerr, Charles.	Kilmarnock	Borland, John.
Bath	Appleby, Edward J.	Dunfermline	Gilmour, D.	Kinross	Dow, William.
Bedford	Taylor, James B.	Ealing	Lewis, D. L.	Kintore	Keith, Alfred G.
Belper	Burkinshaw, Wm. T.	Eastbourne	Crook, Herbert.	Kirkcaldy	Storrar, David.
Berwick	Lyle, William.	Eccles	Howie, Wm. Lamond.	Kirkwall (Orkney) ..	Stewart, Duncan.
Birmingham	Thompson, Charles.	Egremont	Ireland, E. J.	Knareborough	Lawrence, William P.
Bishop Auckland	Dobinson, Thomas.	Elgin	Robertson, Alex.	Knutsford	Silvester, Henry T.
Blackburn	Critchley, Thomas.	Ely	Howard, Arthur.	Lancaster	Vince, James.
Blackpool	Laurie, John.	Epping	Rowland, Thomas W.	Leamington	Barrett, Josephus T.
Blandford	Groves, Richard H.	Exeter	Lake, John Hinton.	Leeds	Reynolds, Richard.
Bolton.....	Knott, Percy.	Falkirk	Forgie, Wm.	Leek	Hartley, W. H.
Bootle	Wyatt, Harold, junr.	Faversham.....	Laxon, Matthew.	Leicester	Goodess, Fredk. W.
Boston	Grimble, Albert.	Finchley	Freeman, Fredk. Wm.	Leigh (Lancs.)	Boardman, F. J.
Bournemouth	Hardwick, Stewart.	Flint ..	Jones, Owen W.	Leith	Garvie, Alexander.
Bradford (Yorkshire).	Waddington, Alfred H.	Folkestone.....	Knight, John.	Lewes	Higham, Thomas.
Brecon ..	.....	Forfar	Fowler, George R.	Leytonstone	Bennett, Cornelius.
Brentford	Wood, A.	Frome	Green, Edmund C. F.	Lichfield.....	Perkins, John Jaquest
Bridgnorth	Deighton, Thomas M.	Galashiels	Ross, William.	Lincoln	Birkbeck, J. Thomas.
Bridgwater	Basker, John Anthony.	Glasgow	Currie, William L.	Liverpool	Smith, John.
Bridlington	Purvis, John B.	Gloucester	Minchin, William.	Llanrwst	Jones, Owen.
Brighton	Gwatkin, James Ross.	Goole	Timm, Edmund.	Louth	Dennis, F. Woodrow.
Bristol	Keen, Benjamin.	Grantham	Whysall, William.	Ludlow	Woodhouse, George.
Burnley	Cowgill, Bryan H.	Gravesend	Clarke, R. Feaver.	Luton	Duberley, George S.
Burslem	Oldham, Wm.	Great Grimsby	Cook, Robert.	Maidenhead	Walton, Ralph.
Bury St. Edmunds ..	Clark, Owen A.	Great Yarmouth	Pol, Wm. Sheppard.	Maidstone	Corfe, A. Fred.
Buxton	Wright, Robert.	Greenock	McNaught, Archibald.	Maldon	Crick, George E.
Camborne	Tonking, Charles H.	Guernsey	Nickolls, John B.	Malvern	Mander, Alfred.
Cambridge	Deck, Arthur.	Haddington	Watt, James.]	Manchester, etc.	Kemp, Harry.
Canterbury	Bing, Edwin.	Halifax	Fielding, Clement.	Mansfield	Patterson, Douglas J.
Cardiff	Munday, John.	Harrogate	Davis, R. Hayton.	March ..	Davies, Peter H.
Carlisle	Hallaway, John.	Harrow	Gunn, Samuel John.	Margate	Harvey, Wm. Sutton.
Carmarthen	Lloyd, Walter.	Harwich	Bevan, Charles F.	Market Harborough...]	Maynard, Henry R.
Carnarvon	Jones, John.	Hastings and St. } Leonards.....	Tharle, Charles A.	Merthyr Tydvil	Harris, Evan W.
Carshalton	Carter, Francis.	Hawick	Maben, Thomas.	Middlesborough	Robson, J. Crosby.
Castle Douglas	Veitch, Andrew.	Heckmondwike	Stead, Walter.	Montrose	Davidson, Alexander.
Cheltenham	Barron, William.	Helensburgh	Harvie, George.	Morecambe	Whitehead, Fredk. N.
Chester	Shepherd, Wm. F. J.	Hendon	Goldfinch, George.	Morpeth.....	Schofield, Fredk. E.
Chesterfield	Barfoot, John R. D.	Hereford	Kemp, C. T.	Motherwell	Scott, Robt. A.
Chichester	Long, William Elliott.	Hertford	Durrant, G. R.	Newark	Cherrington, Geo. W.
Chorley	Hill, William.	Hexham	Gibson, John Pattison.	Newcastle-on-Tyne ..	Clague, Thomas M.
Cockermouth	Scott, Walter S.	Hitchin	Ransom, Francis.	Newcastle, Staffs	Poole, Weston.
Colchester	Weddell, Arthur.	Horncastle	Kemp, Herbert W.	Newport (Mon.)	Garrett, Thomas P.
Coldstream	Elliot, William M.	Hornsea	Morrow, Charles.	Newtown ..	Owen, Edward.
Coventry.....	Hinds, James.	Houghton-le-Spring...]	Rowell, Robert H.	Northampton.....	Bingley, John.
Crewe	Dale, J. A.			Northwich	Humphreys, Griffith.

Norwich	Sutton, Francis.	St. Andrews	Kermath, William R.	Taunton	Kirkpatrick, James.
Nottingham	Sergeant, F. Ross.	St. Austell	Binks, Burcham.	Teddington	Stacey, Peter.
Nuneaton	Iliffe, George.	Salisbury	Atkins, Wm. Ralph.	Tiverton	Havill, Paul W.
Oakham	Wellington, James.	Scarborough	Whitfield, George.	Totnes	Morse, Charles H. S.
Oban	Lawrence, Saml.	Sevenoaks	Pain, Edwin.	Tottenham	Tanner, Alfred E.
Oldham	Bates, Hiram.	Sheerness	Sturdy, Jno. R.	Tunbridge Wells	Hobbs, Alfred E.
Oxford	Prior, George Thomas.	Sheffield	Squire, George.	Twickenham	Peake, Henry F.
Paisley	Fraser, Alexander.	Shrewsbury	Cross, William Gowen	Uxbridge	Coles, Arthur.
Peebles	Lindsay, Robert.	Southampton	Dawson, Oliver R.	Ventnor	Littlefield, Wm. H.
Penrith	Cowper, Joseph.	Southport	Righton, James.	Wakefield	Chaplin, John Henry.
Penzance	Symons, Netherton H.	South Shields	Noble, John.	Walsall	Elliott, E. Matthew.
Perth	Ayre, Geo. M.	Spalding	Bell, E. Wightman.	Walthamstow	Saunders, Arthur.
Peterborough	Heanley, Marshall.	Stafford	Averill, John.	Warrington	Greenough, Hugh F.
Peterhead	Tocher, James F.	Stalybridge	Simpson, Allwood.	Warwick	Pratt, Henry.
Petersfield	Edgcler, William B.	Stirling	Raffan, John.	Waterloo	Pearson, William.
Plymouth	Hunt, Freeman W.	Stockport	Orton, Wm. Billing.	Watford	Chater, Edw. Mitchell.
Pontypridd	Arnott, Daniel.	Stockton-on-Tees	Brayshay, Thomas.	Wednesbury	Gittoes, S. James.
Portsmouth, etc.	Brewis, Thomas.	Stoke-on-Trent	Adams, Frank.	West Ham	Barnes, W. R.
Preston	Williamson, F. A.	Stone, Staffs	Jacks, Frederick	Weston-super-Mare ..	Cooper, John.
Ramsgate	Baily, Edward.	Stonehaven	Wood, A. Lyon.	Whitehaven	Kitchin, Archibald.
Reigate	Woodward, Moses M.	Stonehouse (Devon) ..	Maitland, Frank.	Wick	Banks, John.
Rhyl	Davies, Thomas M.	Stourbridge	Selleck, William R.	Wigan	Phillips, Jonathan.
Richmond (Surrey) ..	Parrott, John.	Stowmarket	Gostling, G. Jas.	Winchester	Chaston, Alfred Edw.
Ripon	Senior, William F.	Stranraer	Ker, Richard.	Windsor and Eton ..	Oldham, William.
Rochdale	Highley, William.	Stratford	Holford, Thos. C.	Wolverhampton	Gibson, Frederic John
Romford	Lasham, John W.	Stratford-on-Avon ..	Hawkes, Richard.	Worcester	Turner, Chas. W.
Rothsay	Duncan, William.	Streatham	Shacklock, J. H.	Worthing	Cortis, A. Brownhill.
Runcorn	Weston, John H.	Sunderland	Ranken, Charles.	Wrexham	Caldecott, Clement G.
Ryde	Pellard, Henry Hindes.	Swaffham	Christopherson, Fred.	Yeovil	Wright, Alfred.
Saffron Walden	Gilling, John.	Swansea	Grose, Nicholas M.	York	Sowray, Joseph.
St. Albans	Ekins, Arthur, E.	Tain	Fowler, Donald.		

The PRESIDENT also proposed that in the following districts, from which no replies had been received, the appointments be deferred for a month:—

Aberystwith	Keighley	Ross
Barnet	King's Lynn	Rugby
Barrow-in-Furness	Kingston	St. Helen's
Bodmin	Leominster	Shipley
Burton-on-Trent	Llandudno	Southend, Essex
Chelmsford	Longton	Stroud
Chippenham	Malton	Tamworth
Dartford	Melton Mowbray	Tavistock
Deal	Newton Abbot	Torquay
Enfield	Oswestry	Treherbert
Evesham	Pembroko Dock	Wellington, Somerset
Guildford	Pontefract	Wimbledon
Hartlepool	Reading	Wokingham
Heywood	Richmond, Yorks.	Woodbridge

He said it was with very considerable regret that he noticed the apparent apathy shown in this matter in many districts, though he saw with pleasure that there were indications that in some quarters at least, a little more energy had been displayed, there having been a larger number of votes returned than in former years. Still there were 42 places from which no reply had been received, either to the circular sent to the present local secretary or to the voting cards sent to the members. On previous occasions he had called attention to this matter, when he had said that in some cases there might be reasons for the silence and that it did not necessarily follow that it was the result purely of apathy; but as years went on he was thrown back more and more upon that as the only possible reason. This year the Committee suggested that instead of writing to the local secretaries asking the reason why no reply had been received, the list of places thus in default should be published in the proceedings, and the appointments deferred in order to give the members in those districts an opportunity of indicating whether they had any desire to be represented, and he earnestly hoped that from some places at least a reply would be received. Whilst it was highly desirable that there should be local secretaries throughout the country, it might be better to have none than to have one who was utterly apathetic. The attention now called to the matter, would, he hoped, result in some indication being afforded that these districts really desired to have a representative, and that they would nominate some one for appointment in December. At the same time, he must, on behalf of the Council, tender their best thanks to all the local secretaries, and there were very many who had done good work during the year. They were much indebted to them for their assistance in various ways.

Mr. ATKINS said he could state from personal knowledge that some of the local secretaries were hardly deserving of the thanks

of the Council. He must say he was amazed at some of the names appearing in the second list, particularly one important town in the west, which in former times was very prominent in pharmaceutical matters. There were many places in which the constituencies were small and the interests very limited, and in such cases he believed it would be better, if there were a local secretary at all, that he should be appointed from headquarters, and not on the spot. His conviction was that the evil times which had fallen on pharmacy largely accounted for the present state of affairs, and he knew of more than one place in which pharmacy was being crushed out by that gigantic evil to which reference was frequently made, and some of their best men were losing heart.

Dr. SYMES said he was sure the whole Council felt their indebtedness to those local secretaries who really did good work for the Society, notwithstanding the many difficulties they had to encounter. At the last meeting of the Liverpool Chemists' Association Mr. Smith, the local secretary, read a paper on "The Duties of a Local Secretary," and concluded by asking that he might be allowed to retire. He (Dr. Symes) thought the paper he had read was the best evidence that he should remain, which he kindly consented to do. In the course of next year he hoped there would be a large accession of members, so that there would be a larger number to select from, and he hoped this would result in greater interest being taken in the elections. Mr. Smith suggested that if the circulars and cards were sent out rather later, associations would have a better chance of meeting and discussing the matter. He also thought it would be useful if some official from headquarters could occasionally visit the local secretaries and discuss matters with them; and, further, that once a year the local secretaries from various districts should meet together. He suggested that this should be done at the Conference, which no doubt the Executive of the Conference would be glad to facilitate, but, as he suggested some years ago, a similar opportunity might be afforded every year or every two years at the meeting of the Society in London.

The PRESIDENT having endorsed what had been said as to the value of the services rendered by many of the local secretaries, then put the resolution, which was carried unanimously.

DIVISIONAL SECRETARY FOR EDINBURGH.

The PRESIDENT said with regard to the local secretaries for Scotland, the Council was glad to avail itself of the help of the Executive of the North British Branch, and one of their suggestions was that Mr. John Nesbit, of Portobello, should be appointed divisional secretary for Edinburgh. Many of them knew Mr. Nesbit, and he was sure they would all agree with the resolution which he would move that he be appointed accordingly.

The resolution was agreed to.

RESTORATIONS TO REGISTER.

The names of the following persons who have severally made the required declarations and paid a fee of one guinea, were restored to the Register :—

- Charles Henry Fentiman, 58, Terminus Road, Eastbourne.
- Thomas Brigstocke Humphrey, 1, Arlesford Road, Stockwell, S. W.
- Harry Laing Spink, 337, Kentish Town Road, N. W.

SUPERINTENDENTS OF WRITTEN EXAMINATIONS.

The PRESIDENT moved that superintendents of written examinations be appointed in the following centres, and that appointments be offered to the local secretaries in these centres. There was no alteration in the list.

Aberdeen	Exeter	Newcastle
Birmingham	Glasgow	Northampton
Brighton	Guernsey	Norwich
Bristol	Hull	Nottingham
Cambridge	Inverness	Orkney (Kirkwall)
Canterbury	Isle of Man (Douglas)	Oxford
Cardiff	Jersey	Penzance
Carlisle	Lancaster	Peterborough
Carmarthen	Leeds	Plymouth
Carnarvon	Lincoln	Sheffield
Cheltenham	Liverpool	Shrewsbury
Darlington	London	Southampton
Dundee	Manchester	York
Edinburgh		

The resolution was carried.

REPORT OF EXAMINATIONS.

October, 1898.

Candidates.

	Candidates.		
	Examined.	Passed.	Failed.
England and Wales :—			
Major	18	9	9
Minor	266	66	200
Scotland :—			
Major	2	2	0
Minor	106	42	64
First Examination	241	121	120

Thirty-three certificates were received in lieu of the Society's examination.

MEETING OF THE BOARDS OF EXAMINERS IN 1899.

It was resolved that the Boards of Examiners meet to conduct the oral portion of the Major and qualifying examinations in January, April, July, and October, 1899, or as near to those months as conveniently may be.

CORRESPONDENCE.

The PRESIDENT said he had received a letter from Mr. Ward, of Sheffield, acknowledging the letter of thanks sent him last month. He had also received a letter from Mr. Joseph Ince, in which he asked the Society to accept his private collection of prescriptions arranged for class teaching. On behalf of the Council he had accepted the offer, and they would all agree in thanking Mr. Ince for his thoughtful kindness. He had, further, received a copy of a resolution passed at a meeting of the Chemists' Assistants' Union on October 6, 1898 :—

That the attention of the Pharmaceutical Society be respectfully drawn to the practice of dispensing poisons by unqualified persons in doctors' surgeries, and that they be urged to take every possible step to minimise the evil.

That resolution might be referred to a Committee, but it seemed to refer to a matter which could not be dealt with. If the surgeries referred to were ordinary surgeries in which a medical man's prescriptions were dispensed for his own patients they were exempted from the Pharmacy Acts altogether.

Mr. BOTTLE said it might refer to open surgeries.

The PRESIDENT said the Council was in the habit of dealing with such cases. He thought perhaps it would be better to inform the Union of that fact.

Mr. CARTEIGHE said gentlemen who formed themselves into a union for the purpose of protecting members should, before passing resolutions, ascertain the existing condition of the law before asking for something which was impracticable. He should have thought that every registered assistant at any rate knew perfectly

well that the rights and privileges of medical men and apothecaries were respectively exempted from the provisions of the Pharmacy Acts, so that a doctor could deal in his own surgery as he thought fit. If, however, he kept an open shop, he was bound by the same law as the chemist, and could only have poisons sold or dispensed by a registered assistant. The Society had dealt with numbers of such cases, and recovered penalties.

The SECRETARY said a letter had been received from Mr. Rutherford Hill, containing a resolution passed by the Executive of the North British Branch, on Friday last, in which they placed on record their warmest thanks to the President for his unwearied efforts in getting the Pharmacy Acts Amendment Bill through Parliament. It also stated that the consideration of what steps could be taken to increase the membership in Scotland had been remitted to the General Purposes Committee.

FIRST EXAMINATION.

The following list of centres at which examinations had been held during the past three years, with the number of candidates at each centre, was ordered to be entered on the minutes.

List of Centres and Table of Attendances of Candidates at each Centre.

CENTRES.	1896.		1897.		1898.		Total number of attendances at each centre at 12 examinations.
	Jan., July.	Apr., Oct.	Jan., July.	Apr., Oct.	Jan., July.	Apr., Oct.	
ENGLAND AND WALES.							
Birmingham	85		65		68		218
Brighton	22		14		10		46
Bristol	29		23		17		69
Cambridge	27		12		10		49
Canterbury	10		15		7		32
Cardiff	32		19		38		89
Carlisle	41		54		45		140
Carmarthen	50		35		28		113
Carnarvon	20		15		24		59
Cheltenham	10		15		15		40
Darlington	18		25		31		74
Exeter	22		11		14		47
Hull	36		27		30		93
Lancaster	26		28		27		81
Leeds	84		78		69		231
Lincoln	20		32		26		78
Liverpool	72		80		63		215
London	121		109		121		351
Manchester	133		119		117		374
Newcastle	72		51		50		172
Northampton	13		12		10		35
Norwich	13		15		13		46
Nottingham	47		57		53		157
Oxford	17		7		14		38
Penzance	12		7		11		30
Peterborough	9		14		7		30
Plymouth	14		19		23		56
Sheffield	16		18		24		58
Shrewsbury	25		16		18		59
Southampton	31		26		21		78
York	18		15		14		47
SCOTLAND.							
Aberdeen	69		80		49		198
Dundee	42		47		32		121
Edinburgh	136		126		119		381
Glasgow	106		105		106		317
Inverness	18		12		18		48
	1526		1402		1342		4270

Total number of attendances at 4 examinations.

Douglas, I. of Man	9
Guernsey	6
Jersey	3
Kirkwall	8

REPORT OF THE GENERAL PURPOSES COMMITTEE.

The Council then went into committee to hear and consider the report of this Committee on legal matters.

On resuming, the report and recommendations were adopted, and resolutions passed authorising the Registrar to take proceedings against the parties named therein.

NORTH BRITISH BRANCH.

MEETING OF THE EXECUTIVE.

A meeting of the Executive of the North British Branch was held in the Society's House, 36, York Place, Edinburgh, on Friday, October 28, at 11.30 a.m., Mr. J. LAIDLAW EWING in the chair.

Present: Messrs. Ayre, Boa, Bowman, Coull, Currie, Ewing, Fisher, Haidie, Henry, Johnston, Kermath, Kerr, Lunan, McAdam, McLaren, Mitchell, Moir, Russell, Storrar, and Strachan.

The minutes of last meeting were read and approved.

The Report of the General Purposes Committee was read.

EVENING MEETINGS.

It had been arranged that the winter session of evening meetings should be opened on Wednesday, November 23, 1898, when the inaugural address would be delivered by Dr. Ralph Stockman, Professor of Materia Medica and Therapeutics in the University of Glasgow. Professor Stockman intended to give an address on "Arrow Poisons," a subject which he had specially studied and on which he was a recognised authority. The Committee found insuperable objections to the holding of these meetings on Tuesdays, which was a class night at the Pharmacy Schools, and it had been decided to hold them on the third Wednesday of each month, namely, December 21, January 18, February 15, March 15, and April 19. Several promises of communications had been received, but the Committee would be glad to hear from anyone who had anything to communicate.

VENTILATION OF LABORATORIES.

The Committee had had fitted in the chemical laboratory a 14-inch Blackman fan and electric motor at a cost of £21 15s. The fan had been tested in operation at the October examinations, and proved satisfactory for ventilation. But objection was taken to the noise, and the contractor had undertaken to remove this objection by an alteration in the method of fixing.

On the motion of Mr. KERR, seconded by Mr. McADAM, the report was approved of.

NOMINATION OF EXAMINERS.

The Executive then went into Committee to consider the question of the nomination of examiners for the year 1899. On resuming, the CHAIRMAN declared that, on the motion of Mr. Fisher, seconded by Mr. Johnston, the following resolution was unanimously adopted:—

That Isaac Bayley Balfour (Regius Professor of Botany in the University of Edinburgh), Leonard Dobbin (Lecturer on Chemical Theory and Assistant to the Professor of Chemistry in the University of Edinburgh), Alexander Davidson (Montrose), James Laidlaw Ewing (Edinburgh), James Jack (Arbroath), George Lunan (Edinburgh), Thomas Maben (Hawick), and John Nesbit (Portobello), be nominated for election by the Council as members of the Board of Examiners for Scotland for the year 1899.

THE CONFERENCE DELEGATES.

The CHAIRMAN said he had pleasure in reporting, on behalf of those who attended the Belfast Conference, that they had been most hospitably entertained by their Irish friends and everything possible had been done to promote their comfort. Their Irish brethren seemed to be pleased to see a large attendance from Scotland. The Local Committee deserved very hearty thanks for the excellent way in which the arrangements were carried out.

The VICE-CHAIRMAN concurred in the statement just made. Dr. Symes had particularly mentioned to him his satisfaction at seeing so many friends from Scotland. No less than sixty-three Scotch representatives braved the dangers of the briny deep. They were very fortunate in regard to weather. It rained all the way going, but they were favoured with sunshine all the time they were on Irish soil, and the rain began to fall again the moment they departed. He believed he spoke the sentiments of all the Scottish visitors when he said they had thoroughly enjoyed themselves.

LOCAL SECRETARIES IN SCOTLAND.

The ASSISTANT-SECRETARY stated that the Secretary had again found it necessary to intimate that there had been a failure to nominate local secretaries in several centres in Scotland, many of them being the same centres that were behind last year. It was to be regretted that local chemists did not take the small amount of trouble required to make a suitable nomination. The Executive

considered the matter and instructed the Assistant-Secretary to report their suggestions to the Secretary with a view to having all the centres filled up.

THE GOVERNMENT POISONS BILL.

The VICE-CHAIRMAN said it was a matter of satisfaction to them that the prompt action taken by the Society throughout the country had resulted in the abandonment of the projected Poisons Bill since their last meeting. He had observed that Mr. Cross, M.P., was still on the war-path, and he had apparently induced the Scottish Chamber of Agriculture to pass the other day a resolution on the lines he wished in the direction of free sale of deadly poisons. He had also most unjustifiably misrepresented the Pharmaceutical Society by stating that they were actuated by a desire to secure for the members of the Society a monopoly in the sale of certain poisons which was to be denied to registered chemists who were not members.

The CHAIRMAN said the matter had been fully explained to Mr. Cross, and that gentleman was hopelessly wrong in his facts and assertions.

BENEVOLENT FUND.

The ASSISTANT-SECRETARY directed attention to some recent grants made to aged chemists in Scotland. Mr. Johnston said he hoped Scotchmen would note these cases. He felt that, speaking generally, the returns from Scotland to the Fund were smaller than they ought to be. There could be no doubt that in the disbursement of the Fund Scotland would get her share. He would like to say that in Aberdeen their excellent local secretary, Mr. Strachan, accompanied by another who would be nameless, went round the town and called on every chemist. They were well received everywhere, and the result was, he thought, a fair indication of the good that might be done by a very complete canvass of all the chemists. He thought if what was done in Aberdeen was done all over Scotland they would get a larger amount for this most deserving Fund.

THE NEW PHARMACY ACT.

The VICE-CHAIRMAN said they were all gratified by the fact that since their last meeting what was then the Pharmacy Acts Amendment Bill had been placed on the Statute Book. It was the more pleasing to them because it was the embodiment of a resolution passed by this Executive and forwarded to the Council. The measure was one in which Scottish pharmacists had taken a special interest. He moved:—

That they place on record an expression of their warmest thanks to the President, Mr. Walter Hills, for his unwearied efforts to secure the passing of the Bill. And, further, that the Executive consider what steps may be taken by them to increase the membership of the Society in Scotland, and remit the matter with powers to the General Purposes Committee.

He had just returned his nomination paper to the Secretary, agreeing to fill the office of local secretary for Glasgow for another year, and it would be his endeavour in that capacity to make an earnest effort in the direction of increasing the membership in the western city as well as in the district around. He thought it would be well if all the local secretaries would make a special effort at the present juncture.

Mr. C. F. HENRY seconded the motion, and it was unanimously agreed to.

Mr. HENRY then gave notice that at the next meeting he would move the resolution which he formerly intimated but withdrew, pending the passing of the Pharmacy Acts Amendment Act, namely:—

That in the opinion of this Executive steps should be taken to prevent limited liability companies using and exhibiting the title "chemist" or "druggist," or "chemist and druggist," and that the attention of the Council be called to the increasing use made of such titles by such companies, with the view of their taking action in the matter.

The meeting then closed.

NITRATE OF SILVER FOR TYPHOID.—Arnaudet reports having obtained very good results in twenty-one cases of typhoid by treatment with silver nitrate. One or two pills containing 0.005 to 0.01 grm. taken hourly with 1 grm. quinine sulphate per diem arrest diarrhoea in a short time and lower the fever. The malady is cured in three weeks. This favourable effect the author believes to be due to the antiseptic properties of the silver which are exerted in the lower portions of the rectum, the chief seat of infection.—*Pharm. Centrall.*, xxxix., 341, after *Sem. Med.*, 1898,

"FIRST" EXAMINATION RESULTS.

A meeting of the Board of Examiners for England and Wales was held at 17, Bloomsbury Square, London, on Tuesday, November 1.

Certificates by approved examining bodies were received from the undermentioned in lieu of the Society's examination.

Bishop, Archibald R. ; Shotley Bridge
Dannatt, Norman H. ; Huddersfield
Willecock, Walter W. ; Exeter

The report of the College of Preceptors on the examination held on October 11 was received. 241 candidates had presented themselves for examination, of whom 120 had failed.

The following 121 passed, and the Registrar was authorised to place their names upon the Register of Apprentices and Students:—

Anderson, Thomas Lamb ; Prestonkirk
Archer, Arthur Ernest ; Epworth
Barber, Robert ; Newcastle-on-Tyne
Bateley, Alfred Earnest J. T. ; Blyth
Belton, John Pearson ; Leicester
Booth, Mitchell Kempt ; Aberdeen
Bourne, Thomas Poucher ; Horncastle
Bradbury, Constance ; Ryde
Brierley, Thomas ; Oldham
Browning, Henry Webb ; Plymouth
Burgess, James Ernest ; Eccles
Carmichael, Francis M. ; Kilmichael
Carrington, Harold G. ; Stockport
Casterton, Walter C. ; Market Rasen
Cheetham, Thomas H. ; Sunderland
Cherrington, G. E. ; Newark-on-Trent
Collins, Frederick R. ; Cheltenham
Cooper, William Joseph ; Leicester
Cranshaw, Walter Wilkinson ; Bingley
Crockart, Fred B. ; Blairgowrie
Daniel, Reginald ; Derby
Davis, Frederic T. S. ; Teignmouth
Deane, Annie M. ; Cradley Heath
Dickinson, Edmondson ; Penrith
Docter, John Anderson ; Arbroath
Dodd, Alfred John ; Ripley
Drummond, George Campbell ; Ayr
Dwyer, Walter James ; London
Eymer, Harry ; Stafford
Falcon, John ; Carlisle
Fancourt, William ; Doncaster
Farmer, David F. ; Kirkcaldy
Fawcett, John William ; Northallerton
Finlayson, Christopher ; Inverness
Fisher, James ; Kinghorn
Forrester, Andrew, jun. ; Glasgow
Forrester, Ethel M. G. ; Edinburgh
Fox, Clara Minnie ; Birmingham
Gabb, Leslie ; Birmingham
Gibbins, Richard Ernest ; Derby
Giles, Arthur Alexander ; Aboyne
Gordon, John ; Monkton
Greenwood, Parker Astin ; Preston
Hall, John William ; Middlesbro'
Harper, William ; Montrose
Harrison, Charles ; Workington
Hart, Herbert S. ; Birmingham
Hartley, George ; Market Drayton
Haslam, Edward Marsden ; Blackpool
Henderson, John Ross ; Dollar
Higgs, Alfred L. ; Kingston-on-Thames
Hogg, John Alec ; Kingskettle
Hogg, William ; Selkirk
Holden, Benjamin ; Blackburn
Holt, William ; Blackburn
Hooker, Ernest Richard ; Brighton
Hothersall, Robert Hardy ; Rishton
Howell, Edmund George ; Swansea
Hoyles, George Edward ; Hull
Huck, John Robert ; Darlington
Wyness, Alexander Simpson ; Aberdeen

Huggett, Thomas Henderson ; Deptford
Ivimey, Harold E. W. ; Southampton
Johnson, Stanley Howard ; Lincoln
Johnstone, John ; Coatbridge
Jones, Roger Wilfrid ; Ruabon
Kilby, Herbert Wilfrid ; Luton
Lamb, Alexander ; Aberdeen
Lewis, John Rees ; Ferndale
McCowan, Alexander ; Comrie
McInnes, Angus ; Inverness
McIntosh, Edwin Gosling ; Huntly
Maclean, Roderick ; Selkirk
Martin, John William ; Norwich
Maw, Arthur Trentham ; Nutfield
Mills, James Quarumby ; Rochdale
Mills, Leonard Alfred ; Leicester
Mills, Sydney ; Nuneaton
Morley, Cecil James ; Nottingham
Morris, Ernest Morgan ; Kidwelly
Morrison, John Cuthbert ; Drem
Mowat, John Cumming ; Stonehaven
Nisbet, Peter ; Eyemouth
Noltie, Edward Teasdale ; Forres
Parkinson, Walter ; Southport
Ransome, Harold Reginald ; London
Reid, William George ; Invergordon
Reynolds, Harry ; Coleshill
Richards, Philip David ; Ogmores Vale
Ridley, William John ; Carlisle
Roberts, David ; Talsarnau
Robinson, John S. ; Bishop Auckland
Rowlands, Frederick J. ; Old Deer
Rumsey, James Charles H. ; Dulwich
Russell, James ; Paisley
Sansom, Henry Croucher ; Cosham
Sharp, John ; Aberdeen
Shepherd, John McLagan ; Dundee
Shirreffs, Robert ; Aberdeen
Smith, Alfred Ireland ; Bayswater
Smith, Frederick Lewis ; Coventry
Sutton, Jessie Anno ; Birmingham
Taylor, Robert ; Ecclefechan
Taylor, William Sinclair ; Rostrevor
Thompson, Edwin ; Liverpool
Thorpe, John William ; Barnsley
Tice, Lennox ; Gt. Yarmouth
Trinder, Charles Garnet ; Cirencester
Vincent, Caroline ; Ryde
Wallis, Gilbert Francis ; Edinburgh
Wason, John C. ; Girvan
Watmough, Arthur Charles ; Hull
Watson, Edward ; Seaton Delaval
Welch, Percy Henry ; Market Rasen
Whitehouse, Sydney Paul ; Workington
Widdowson, Charles Clement ; Bulwell
Williams, Sydney ; Llanelly
Wilson, Robert ; Liverpool
Winser, Francis James ; East Grinstead
Wood, Lionel George ; Northwich
Wright, Arthur ; Barnsley

The questions set at this examination were published in the *Pharmaceutical Journal* for October 15, p. 424.

The following is a list of the centres at which the examination was held, showing the number of candidates at each centre, and the result:—

	Candidates.			Candidates.			
	Examined.	Passed.	Failed.	Examined.	Passed.	Failed.	
Aberdeen	14	9	5	Inverness	4	4	0
Birmingham	12	9	3	Lancaster	7	1	6
Brighton	2	1	1	Leeds	9	2	7
Bristol	1	0	1	Lincoln	6	5	1
Cambridge	2	1	1	Liverpool	9	5	4
Cardiff	8	2	6	London	25	10	15
Carlisle	9	6	3	Manchester	20	9	11
Carmarthen	5	3	2	Newcastle-on-Tyne	7	4	3
Carnarvon	3	1	2	Norwich	4	2	2
Cheltenham	4	2	2	Nottingham	17	9	8
Darlington	6	3	3	Penzance	1	0	1
Dundee	7	5	2	Peterborough	1	0	1
Edinburgh	23	11	12	Plymouth	2	1	1
Exeter	3	1	2	Sheffield	4	2	2
Glasgow	13	7	6	Shrewsbury	2	1	1
Hull	4	2	2	Southampton	5	2	3
				York	2	1	1

AN ORDINANCE TO REGULATE THE SALE OF MEDICINES AND DRUGS IN GIBRALTAR.

BE it enacted by His Excellency the GOVERNOR of the City and Garrison of Gibraltar, as follows:—

1. This Ordinance may be cited as "The Pharmacy Ordinance, Gibraltar, 1898."

2. From and after the coming into operation of this Ordinance it shall be unlawful for any person to sell or keep open shop for retailing, dispensing, or compounding any medicine or drug, or any preparation thereof, or to assume any title purporting to describe him as a dispenser of medicines or drugs in Gibraltar, without having been granted a certificate of registration for that purpose by the Governor.

3. A certificate of registration shall not be granted unless the applicant—

- has in Gibraltar, prior to the coming into operation of this Ordinance, carried on for a period of not less than three years the business of a dispenser of medicines or drugs, and is able to satisfy the Governor that he has during that period made up prescriptions of any legally qualified medical practitioner, or
- is qualified to practise medicine or surgery in Gibraltar under "The Medical Ordinance, Gibraltar, 1885," or
- is registered under the Imperial Pharmacy Act, 1868, or
- after due examination has obtained a certificate of competency from a board of examiners appointed by the Governor.

An applicant for examination shall pay into the Treasury a fee of One Pound.

Provided always that no person shall be granted a certificate of registration under this Ordinance who is not a subject of Her Majesty.

4. Every such certificate of registration shall be registered in the manner, and shall be in the form the Governor may, from time to time, prescribe.

5. Any person who shall himself, or by any person in his service or on his behalf, sell or keep open shop for retailing, dispensing or compounding any medicine or drug, or any preparation thereof, or who shall assume or use any title purporting to describe him as a dispenser of medicines or drugs in Gibraltar without having obtained a certificate of registration under this Ordinance shall be liable on summary conviction to a penalty not exceeding Ten Pounds.

6. Every person who has been granted a certificate of registration under this Ordinance shall number consecutively every medical prescription which shall be made up in his establishment, and shall also register in a book, to be called the "Register of

Prescriptions," the number and date of such prescription, the names of the person for whom, and of the medical practitioner by whom the same was prescribed, and shall insert in the Register of Prescriptions a copy of such prescription. Provided that where a medical prescription is initialed, but not signed by a medical practitioner, the registration of such initials shall be deemed a sufficient registration of the name of such practitioner, unless such name can otherwise be ascertained.

The Register of Prescriptions shall be produced whenever required by any person appointed by the Governor or by any Court in the course of any judicial inquiry or investigation.

7. If any person who has been granted a certificate of registration under this Ordinance shall refuse or neglect to produce his Register of Prescriptions when lawfully required to do so, or if, on being produced, such register shall be found to have been improperly or negligently kept, such person shall for the first and every subsequent offence be liable on summary conviction to a penalty not exceeding Twenty Pounds, and for the second and any subsequent offence shall, in addition, be liable to the revocation of his certificate of registration; and if any injury shall occur to any person by the use of any Poison or deleterious medicine or drug sold or dispensed by any such person in consequence of his having neglected the precautions required by this Ordinance, such person shall, for any such offence, be liable to indictment for a misdemeanour, and on conviction shall be punished as other misdemeanours are by law punishable.

8. The several articles named and described in the Schedule A hereto shall be deemed to be poisons within the meaning of this Ordinance, and the Governor may from time to time by notice in the Official Gazette add to such Schedule any article which he may decide ought to be deemed Poison under the Ordinance.

9. No person shall sell any Poison, either by wholesale or retail, unless the box, bottle, vessel, wrapper, or cover in which such poison is contained be distinctly labelled with the name of the article and the word "Poison," and with the name and address of the seller of the poison; and where the poison is in the form of a liquid supplied for external application such bottle or vessel shall be of hexagonal shape and coloured dark blue; and it shall be unlawful to sell any poison of those which are in the First Part of Schedule A hereto, or which may hereafter be added thereto, to any person unknown to the seller, unless introduced by some person known to the seller; and on every sale of any such article the seller shall, before delivery, make, or cause to be made, an entry, in a book to be kept for that purpose, stating, in the form in the Schedule B hereto, the date of the sale, the name and address of the purchaser, the name and quantity of the article sold, and the purpose for which it is stated by the purchaser to be required, to which entry the signature of the purchaser and of the person (if any) who introduced him shall be affixed; and any person selling poison otherwise than is hereby provided shall be liable on summary conviction to a penalty not exceeding Five Pounds for the first offence, and to a penalty not exceeding Ten Pounds for the second or any subsequent offence; and for the purposes of this section the person on whose behalf any sale is made by any apprentice or servant shall be deemed to be the seller; but the provisions of this section shall not apply to any article when forming part of the ingredients of any medicines dispensed on the prescription of any legally qualified medical practitioner, provided such medicine be labelled in the manner aforesaid with the name and address of the seller, and provided also that the prescription be duly entered as required by Section 6 of this Ordinance.

10. A proceeding or conviction for any act punishable under this Ordinance shall not affect any civil remedy to which any person aggrieved by the act may be entitled.

11. This Ordinance shall not apply to the public dispensary maintained at the Colonial Hospital under Session 21 of "The Colonial Hospital Ordinance, Gibraltar, 1889," or to any person employed therein.

12. This Ordinance shall come into operation forthwith.

By Command,

Passed, 15th October, 1898.

H. M. JACKSON.

Colonial Secretary.

SCHEDULE A.

PART 1.

Arsenic, and its preparations.
Aconite, and its preparations.

Alkaloids: all poisonous Vegetable Alkaloids and their Salts.

Atropine, and its preparations.

Cantharides.

Corrosive Sublimite.

Cyanides of Potassium, and all Metallic Cyanides and their preparations,

Emetic Tartar.

Ergot of Rye, and its preparations.

Prussic Acid, and its preparations.

Savin, and its oil.

Strychnine, and its preparations.

Vermin Killers, if preparations of poison the preparations of which are in Part 1 of this Schedule.

PART 2.

Almonds, Essential Oil of (unless deprived of Prussic Acid).

Belladonna, and its preparations.

Cantharides, Tincture and all vesicating liquid preparations of.

Chloroform.

Chloral Hydrate, and its preparations.

Corrosive Sublimite, preparations of.

Morphine, preparations of.

Nux Vomica, and its preparations.

Opium, and its preparations, and preparations of Poppies.

Oxalic Acid.

Precipitate, Red (Red Oxide of Mercury).

Precipitate, White (Ammoniated Mercury).

Vermin Killers (see Part 1). Compounds containing "Poisons" prepared for the destruction of vermin, if not subject to the provisions of Part 1 are in Part 2.

SCHEDULE B.

Date.	Name and address of Purchaser.	Name and quantity of Poison sold.	Purpose for which it is required.	Signature of Purchaser.	Signature of Person introducing Purchaser.

DENTAL NOTES.

SALUBROL IN DENTISTRY.

F. Berger states that salubrol (dimethylene-antipyrine bromide) is preferable for dental work as an anseptic to even a one per mille solution of sublimate, since its action is more prompt. It is moreover a good hæmostatic, but is perfectly free from action on the mucous membrane. It is specially useful in treating cavities after extraction.—*Therap. Woch.*, iv., 1094.

GILT COPPER CROWNS.

Where the expense of a gold crown cannot be incurred, Mahoney substitutes a gilt copper crown, which must, of course, be kept scrupulously clean. The crown is strengthened on the inside with a solder consisting of 2 parts silver and 1 part brass. If sufficient borax is used the mixture may be easily fused.—*Zah. Ref. Org.*, xviii., 1576.

VULCANITE AND VULCANISATION.

Black-looking caoutchouc owes its dark colour before vulcanisation to the admixture of lamp black. White or grey caoutchouc often contains lead. Dental vulcanite has about the following composition: Caoutchouc, 10 parts; sulphur, 6 to 8; cinnabar, 12 to 16. The haste with which the temperature needful for vulcanisation is usually attained is detrimental to the vulcanite, inasmuch as the proper amalgamation of the sulphur and caoutchouc is interfered with. Caoutchouc containing little sulphur takes longer time to vulcanise than caoutchouc which is rich in sulphur.—*Journ. f. Zahnheit.*, xiii., 2, through *Dental Record*, 1898, i., p. 1.

ODOL.

Odol is said to be composed of salol, 3.5; rectified spirit, 90; distilled water, 4; saccharine, 0.2; ol. menth. pip., gtt. 60; ol. anisi stell., ol. fœnicul., aa gtt. 6; ol. caryophyll, gtt. 2; ol. cinnam., gtt. 1. The reports published are all distinctly unfavourable to odol, and great care is recommended in its use.—*Oest. ung. Viertelj Zahnzeit.*, xiv., 137.

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

Chloral Hydras.—The quantitative test for purity is based upon the decomposition of chloral hydrate by caustic alkalies into chloroform and alkali formate.



The 1885 B.P. directed that the chloroform produced should be separated by distillation, collected, and weighed. This method involves two obvious sources of variation in the result, viz., the difficulty of collecting the whole of the volatile chloroform, and its solubility in the supernatant water, which distils with it. The present Pharmacopœia directs that the determination shall be made in another way. A measured quantity of normal soda solution is added, and the quantity in excess of that required by the 4 grammes of chloral hydrate is titrated by normal acid. According to the equation given above, 1 M. Wt. NaOH (39.76) reacts with 1 M. Wt. chloral hydrate (164.15). Each C.c. of normal soda solutions contains 0.03976 gramme NaOH, and will be equivalent to 0.16415 gramme of chloral hydrate. Therefore, the 24 C.c. of soda solution in the official test (30—6) indicate $0.16415 \times 24 = 3.9396$ grammes of chloral hydrate in the 4 grammes taken for analysis, or 98.49 per cent. The iodoform test is intended to detect the presence of chloral alcoholate, one of the intermediate bodies produced in the preparation of chloral. It is an ethyl derivative of chloral hydrate, and when decomposed by alkali, splits off alcohol (compare preceding equation) instead of water.



The alcohol thus produced then reacts with iodine in presence of alkali to produce a crystalline deposit of iodoform.

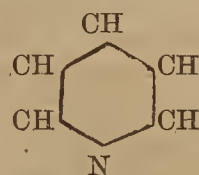
Cinchonæ Rubræ Cortex.—The student is referred to the "Students' Page," vol. 58, p. 336, for an explanation of the process of assay of cinchona bark. It may be noted that although *Cinchona rubra* is still official, and contains a larger proportion of cinchonidine and cinchonine than quinine, yet cinchonidine and cinchonine sulphates are now omitted from the B. P. The proportion of the various alkaloids in a red bark of average quality is about as follows:—Quinine, 1.5 per cent.; cinchonidine, 2.5 per cent.; cinchonine, 1.0 per cent.; amorphous alkaloids, 0.8 per cent.; total, 5.8 per cent.

Cocainæ Hydrochloridum.—Coca leaves contain besides cocaine several other alkaloids nearly related to it; some of these have no local anæsthetic effect and others, while exhibiting anæsthetic properties, have an irritant action. All these bases undergo hydrolysis when heated with hydrochloric acid or alcoholic potash, and by a study of these hydrolytic products a knowledge of the constitution of cocaine and its relation to the allied bases has been obtained. The hydrolysis of cocaine takes place in two stages:—

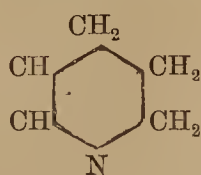
(i.) Cocaine + 1 mol. water = Benzoyl-ecgonine + methyl alcohol.

(ii.) Benzoyl-ecgonine + 1 mol. water = Ecgonine + benzoic acid.

The nitrogen remains in the ecgonine, which is a basic body derived from tetra-hydro-pyridine.



Pyridine.



Tetra-hydro-pyridine.

Ecgonine is methyl-tetrahydro-pyridyl- β -hydroxy-propionic acid.

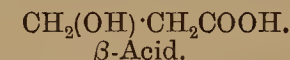
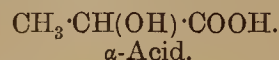
Its constitution will be understood from the following description:—Propionic acid is the next homologue to acetic acid,



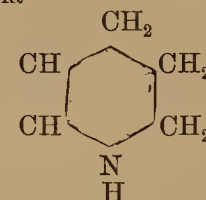
Acetic Acid.


 β α
Propionic Acid.

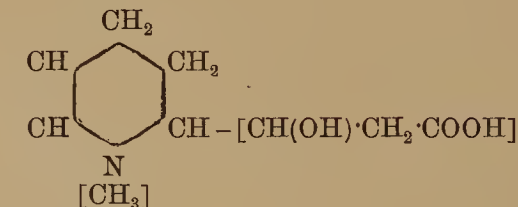
In propionic acid and the higher homologues possessing a carbon chain of three or more carbon atoms the carbon atoms are distinguished by the Greek letters α , β , γ , etc., starting at the one next the carboxyl group. This is done in order to systematise the nomenclature of the derivatives. For instance, there are two isomeric hydroxy-propionic acids, $\text{C}_2\text{H}_4(\text{OH})\text{COOH}$, and these are distinguished as α and β acids, having the following formulæ:—



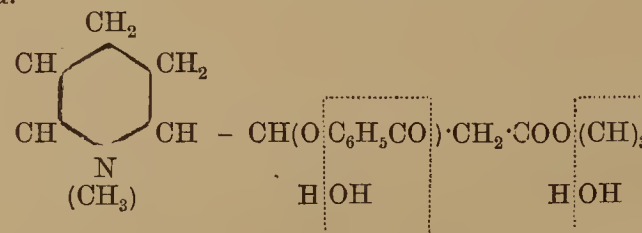
There are several possible formulæ for methyl-tetrahydro-pyridine according to the relative position of the four added hydrogen atoms and the substituting methyl group. The tetra-hydro-pyridine nucleus in ecgonine probably has the constitution expressed by the formula—



and ecgonine itself



Cocaine is then methyl-benzoyl-ecgonine: the hydrogen in the alcoholic hydroxyl of the side chain of the ecgonine being substituted by benzoyl ($\text{C}_6\text{H}_5\text{CO}-$), the acid radicle of benzoic acid (compare acetyl $\text{CH}_3\text{CO}-$ and acetic acid $\text{CH}_3\text{CO}\cdot\text{OH}$), while the hydrogen of the carboxyl group is replaced by methyl. Its constitution and hydrolysis will be easily understood from the next formula, to which two molecules of water are apposed, the dotted lines indicating the manner in which the hydrolytic products are formed.



The other alkaloids of cocaine are similarly constituted derivatives of ecgonine. The two chief accompanying alkaloids are (1) cinnamyl-cocaine, so called because it contains the cinnamyl radicle, $\text{C}_6\text{H}_5\cdot\text{CH}\cdot\text{CH}\cdot\text{CO}$, in place of benzoyl, and consequently yields cinnamic acid instead of benzoic acid on hydrolysis, and (2) cocamine. The last mentioned has also been described as isotropyl-cocaine and truxilline. By hydrolysis it yields an acid called cocaic or isotropic acid, instead of benzoic. The occurrence of these in impure cocaine hydrochloride is shown by the rapid reduction of potassium permanganate and consequent decolorisation when a solution of this salt is added to the cocaine solution. Cocaine forms permanganate of a violet colour, which is somewhat unstable. Cinnamyl-cocaine, cocamine, and amorphous coca alkaloids (like many other alkaloids and organic substances generally) are rapidly oxidised by the permanganate. The test for cocaine in the Pharmacopœia is based upon the following facts:—The alkaloid cocaine is very slightly soluble in water. If we take a solution of the hydrochloride of such a strength that it will yield, on the addition of ammonia, *slightly more* cocaine than the water will retain in solution, then the excess will be deposited slowly in a distinctly crystalline form. In the presence of the impurities mentioned, the crystalline character of the precipitate will be wanting; the precipitate will be sticky, and if much impurity be present the supernatant fluid will be milky instead of clear.

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LONDON: SATURDAY, NOVEMBER 2, 1898.

THE COUNCIL MEETING.

AFTER the minutes of the previous meeting had been read, the PRESIDENT drew attention to an intimation he had received of Mr. HAMPSON's intention to retire from the Council, and he read a letter from Mr. HAMPSON (see p. 483), explaining that his retirement had become necessary in consequence of a severe attack of illness, and expressing his deep regret at being compelled to relinquish the part he has for so many years taken in the working and administration of the Society's affairs and to sever his active association with the friends engaged in that work.

The PRESIDENT added that he was sure he would be acting as the mouth-piece of all in saying that he had received this intimation with extreme regret, and he spoke in warm terms of admiration of the intense interest taken by Mr. HAMPSON in the general work of the Society, the advancement of education and the transaction of Committee work, finally moving that his resignation should be accepted with sincere regret, and an expression of his colleagues' desire to place on record their high appreciation of the services Mr. HAMPSON has rendered during twenty-six years as a Member of Council and Treasurer of the Society.

The motion was seconded by the VICE-PRESIDENT, who expressed pleasure that a deserved tribute had been paid to Mr. HAMPSON, and regret that his resignation was a necessity. Mr. BOTTLE and Mr. ATKINS, speaking in support, referred to the personal characteristics by which Mr. HAMPSON had gained the esteem and friendship of his colleagues, and had acquired considerable influence as a Member of Council. A letter from Mr. HARRISON—who was prevented from being present—conveyed a similar sentiment, and the motion was unanimously agreed to.

A ballot was then taken for the election of Treasurer, and in announcing that Mr. WILLIAM MARTINDALE was duly elected, the PRESIDENT said it would afford him great pleasure to have Mr. MARTINDALE associated with him in that capacity. Mr. CARTEIGHE, in moving that the PRESIDENT be authorised to sign cheques during the absence of Mr. MARTINDALE from England, expressed his gratification that his appointment as Treasurer had been so unanimously supported, and that an honour had been conferred on him which would be pleasing to his friends. Since the death of Mr. PETER SQUIRE the position of representing the all-

round educated pharmacist had been well occupied by Mr. MARTINDALE. Having been associated with him and Mr. UMNEY for many years in connection with the work of the Society, he felt that Mr. MARTINDALE's loyal desire to be active and useful in promoting the interest of the craft made every one wish that he might have a bright career before him, and possibly ere long a higher office conferred upon him.

The election of a Member of Council in place of Mr. HAMPSON was deferred. The Finance Committee report was of a routine nature and was adopted without comment.

The PRESIDENT announced that a donation of five guineas to the Benevolent Fund had been received from Mr. DENNIS, local secretary for Louth, and on the recommendation of the Committee seven grants amounting to seventy-six pounds were ordered to be paid.

The Vice-President mentioned that Miss FRANCES WELLS, the daughter of a deceased chemist, is a candidate for a grant from the United Kingdom Beneficent Association, and he asked the assistance of members who had votes or influence, on her behalf.

The report of the Library, Museum, School, and House Committee recommended that the Museum and Library should be closed at an earlier hour in consequence of the small number of persons visiting them in the evening, and that use should be made of the laboratories in Galen Place to meet the requirements of the School of Pharmacy, consequent on the large number of students. These recommendations were adopted, and it was resolved that physical apparatus for the lectures should be provided to the extent of fifty pounds. Mr. CARTEIGHE was re-appointed School Visitor.

There being no report from the Law and Parliamentary Committee, Dr. SYMES asked whether at the present moment it might not be opportune to move the adoption, as regulations, of the recommendations made some years ago as to the storage of poisons, he thought the position of the Society would be stronger in that case if the Society had to take action with reference to Parliamentary matters.

In reply the PRESIDENT said that his own opinion was, and always had been, in favour of regulations, and he believed his colleagues were now almost unanimous as to the desirability of adopting them. As a special meeting could be summoned at the request of thirty members he thought the question should be considered in that way to ascertain whether opinions had not undergone a change since the time when the proposal of the Council was objected to. He agreed with Dr. SYMES in thinking this desirable, and that the adoption of regulations would very much strengthen the position of the Society.

In connection with Dr. SYMES' incidental reference to the subject of company trading, the PRESIDENT suggested that in the discussion of the subject by local associations it was desirable to consider what would be practicable and possible, not only in the interest of registered chemists but also in the interest of the public, in order to obtain the support of members of Parliament.

Mr. Cross supported the proposition that the desirability of adopting compulsory regulations as to storage of poisons should be pressed upon the consideration of all registered chemists, inasmuch as the regulations were in reality adopted very generally, and they imposed no hardship.

The appointment of local secretaries for the places enumerated at page 486, was then agreed to, and on the motion of the PRESIDENT it was resolved that a list of the

places from which no nominations or replies had been received should be published in the Journal, so that general attention might be directed to the fact that considerable apathy was shown in many places. At the same time he wished, on behalf of the Council, to thank all the local secretaries who had done good work during the past year.

Mr. ATKINS expressed astonishment at some of the instances mentioned in the list, and regarded this inactivity as a sign that pharmacy is being crushed by the gigantic evil, which is causing some of the best men to lose heart.

Dr. SYMES referred to the excellent paper read by Mr. SMITH at the last meeting of the Liverpool Association on the subject of local secretaries as offering several suggestions for improvement that deserved consideration.

Mr. JOHN NESBIT, of Portobello, was appointed divisional secretary for Edinburgh. It was resolved that the appointments of Superintendents of Written Examinations, named in the list at page 488, should be offered to the local secretaries, and that the Boards of Examiners meet to conduct the oral portion of the Major and qualifying examinations in January, April, June, and October, 1899, as nearly as may be convenient.

Among the correspondence mentioned was a letter from Mr. WARD, acknowledging the thanks of the Council for his services as local secretary at Sheffield.

Mr. JOSEPH INCE's presentation of a collection of prescriptions arranged for class teaching was accepted with thanks.

A copy of a resolution passed at a meeting of the Chemists' Assistants' Union, requesting the attention of the Council to the dispensing of poisons by unqualified persons in doctors' surgeries was considered to refer to a matter that could not be dealt with by the Council, Mr. CARTEIGHE remarking on the desirability of ascertaining the conditions existing before asking what is impracticable, as it should be known that the Pharmacy Act exempted the rights and privileges of medical men and apothecaries from the provisions of the Act unless they kept open shop, and he, as well as the PRESIDENT, mentioned that, in such instances, the Society had dealt with infringements of the Act and recovered penalties from offenders.

A resolution passed by the Executive of the North British Branch was received from Mr. RUTHERFORD HILL, expressing thanks to the PRESIDENT for his efforts in getting the Pharmacy Acts Amendment Bill passed, and stating that the consideration of the steps to be taken for increasing the membership of the Society in Scotland had been remitted to the General Purposes Committee.

After the report of the General Purposes Committee had been read and considered, it was adopted, and, in accordance with its recommendations, resolutions were passed authorising the Registrar to take proceedings in various cases of alleged infringement of the Pharmacy Act.

PHARMACY LAW AT GIBRALTAR.

WE are indebted to the courtesy of Mr. J. A. GARIBALDI, of Gibraltar, for forwarding, at the request of Mr. W. MARTINDALE, a copy of the Pharmacy Act which came into force there on October 15 last. It is entitled the Pharmacy Ordinance, Gibraltar, 1898, and is intended to regulate the sale of medicines and drugs. It generally bears evidence of having been drawn up on the lines of the Pharmacy Act, 1868, but in one very important particular it also bears evidence that its provisions have been influenced by the

more enlightened policy, which commonly prevails on the Continent, of making regulation of the practice of pharmacy a comprehensive reality instead of being, as it is with ourselves, limited only to the sale and dispensing of scheduled poisons. That important characteristic is made apparent by the second section relating to the registration of vendors of medicine, which provides that it shall be unlawful for any person to sell or keep open shop for retailing, dispensing, or compounding any medicine or drug or preparation thereof, or to assume any title purporting to describe him as a dispenser of medicines or drugs in Gibraltar without having been granted a certificate of registration for that purpose by the Governor. This provision is in strict accordance with the principle which the Pharmaceutical Society has always endeavoured to obtain legislative recognition of in this country, that as the practice of pharmacy requires special scientific and technical qualification it should be restricted to those who have given evidence of possessing due competence for the performance of the duties attaching to that occupation.

The Ordinance has attached to it a schedule of articles which are to be deemed poisons within its meaning, and by Section 8 the Governor is empowered to add to the Schedule any article which he may decide ought to be deemed a poison. Such decision is absolute and not subject to confirmation by any other authority. The Schedule itself is identical with that of the Pharmacy Act, 1868, and the special provisions of the Ordinance in regard to the sale of articles in the Schedule are for the most part the same as those in Section 17 of the Pharmacy Act, 1868, but the sale of such articles is not restricted to the persons lawfully qualified to sell or keep open shop for retailing, dispensing, or compounding medicines or drugs or their preparations. By this difference from the Pharmacy Act, 1868, the Gibraltar Ordinance establishes a distinction between poisons, in the general acceptance of the term, and most of the articles enumerated in the Schedule, which are drugs or medicines the sale of which would on that account be unlawful for any persons not qualified as the Ordinance requires.

This distinction appears at first sight trivial and it seems to leave the sale of all scheduled poisons open to unqualified persons; but when more carefully considered it appears to be consistent with the principle recognised in Section 2, that legislative restriction of trade in certain articles should be imposed not merely because those articles are poisons, but on the ground that they are drugs or medicinal preparations and therefore come exclusively within the province of persons duly qualified as pharmacists for supplying them. According to that view of the matter, provision for regulating the sale of such articles as oxalic acid or vermin killers, which would in any case be subject to the provisions of Section 9, would not come within the scope of pharmacy law, but would be more properly an affair of police, as in the case of other trades affecting public safety. The want of proper recognition of that important principle is the great defect of the Pharmacy Act, 1868, and though the mistaken attempt to regulate the practice of pharmacy by a "wretched Poisons Act" was a natural result of the conditions prevailing when the Act was passed, the confusion of two entirely distinct objects has been a serious obstacle to progress in the practice of pharmacy. The new light thrown upon this important subject by the Gibraltar Ordinance may be the first step towards the much-needed amendment of pharmacy law which is at the present time a source of dissatisfaction to all it concerns most intimately.

ANNOTATIONS.

THE BRITISH PHARMACOPŒIA, 1898, was the subject selected by Professor Tichborne for his address to the Pharmaceutical Society of Ireland, on the occasion of the opening of the winter session in Dublin. He classified the criticisms on the book that have been published as (1) criticisms on errors discovered, (2) criticisms of divergence of opinion, and (3) hypercriticisms. The first and second, he thinks, should be carefully noted in view of the preparation of future pharmacopœias, but the third he would ignore. Though Professor Tichborne does not claim that the new Pharmacopœia is a perfect book, he regards it, to use his own words, as "an up-to-date work." Dealing with the chief principles adopted in constructing the book, the lecturer explained that the reason why certain articles had been included and others omitted was that such was the decision of the medical practitioners of the country and their representative bodies. He then proceeded to refer at length to the official alcohol strengths, standardised preparations, the regulation of doses, and the adoption of the metric system as an alternative system in weights and measures. The chemical formulæ in the book were also briefly referred to, and in conclusion several points of importance regarding the analysis and purity of drugs were touched upon. Pressure on our space unfortunately prevents the lecture being published in full.

LOYALTY TO THE CRAFT is not, as our correspondence columns show, a subject on which all registered chemists are at one, and it is a great pity that such should be the case. It was not, of course, to be expected that either registered chemists now engaged in bolstering up the system of unqualified company pharmacy, or those who, in the past, contributed to its evolution, should concur with Mr. Rymer Young's strictures, and "C. P.," in his letter published a fortnight ago, probably made out as good a case for the unfortunate class he represents as is possible under the circumstances. The facts he discloses about himself in this week's issue render his eccentricity in supporting his worst business opponents all the more curious. Though he doubts that any chemists' assistants receive the salary mentioned by Mr. Young, such scepticism does not disprove the fact. Doubtless the majority do not receive, or perhaps deserve, so much, but a number do, and many more might be in the same position if "C. P." and others similarly circumstanced would only relinquish their false position. The attitude assumed by Mr. Feaver is perhaps comprehensible in the case of one whose connection with pharmacy "cannot be much further prolonged," but such sentiments as he gives expression to are not likely to do much in the direction of suppressing the evil aimed at in the portion of Mr. Young's address to which exception has been taken. "Live and let live" is a useful maxim, but why should registered chemists let unqualified persons live on them?

AT THE MIDDLESBROUGH HIGH SCHOOL technical classes have been established for chemists' assistants and for medical and dental students, the arrangements having been made with a view to preparing candidates for the Minor examination and the first professional examination of the Royal College of Surgeons. The subjects to be taught are chemistry and physics, botany, materia medica, theoretical and practical pharmacy. The full course, the fee for which is five pounds, will extend over six months, and it is satisfactory to note that the classes in materia medica and pharmacy will be conducted by a pharmacist, Mr. E. C. Bennison. Attendance at the classes will be recognised by the Royal Colleges of Physicians and Surgeons, and medical and dental students will be permitted to join a class in one subject only. The

hours of meeting are not stated in the syllabus sent to us, but the classes would appear to be held in the evening. It is greatly to be hoped that such a favourable opportunity will be freely taken advantage of by pharmaceutical students in and about Middlesbrough and Stockton-on-Tees. The High School, we are informed, is a commodious building with large laboratories—the chemical laboratory being capable of accommodating eighty students at one and the same time, and the physics laboratory having accommodation for fifty students.

THE PREVENTION OF TUBERCULOSIS is seriously engaging attention at present, and Sir William Wilks, President of the Royal College of Physicians, London, Sir William M'Cormac, President of the Royal College of Surgeons, England, and Sir W. H. Broadbent have addressed a letter to the Chairman of the London County Council, on the subject. In this communication it is stated that the attention of the Organising Committee of the National Association for the Prevention of Tuberculosis has been directed to the recommendations of the Public Health Committee of the County Council, with reference to the establishment in London of an administration for the prevention of disease conveyed by milk and meat. As the Association is more particularly interested in the question of the prevention of tuberculosis, and understands that the Committee recommends that the Council should be empowered to take the necessary steps for preventing the sale of tuberculous milk and meat, the opinion is expressed that there is urgent necessity for such measures, and that if the Council takes steps to prevent the sale of tubercle infected milk in London, and to ensure the proper examination of meat by the substitution of public for private slaughter-houses, there is every prospect of reducing the present mortality from tuberculosis, especially among the poor, who more particularly suffer from the effects of milk and meat of dangerous qualities. The County Council is urged, therefore, to recognise the eminent necessity of adopting the recommendations of its Public Health Committee.

THE SALE OF POISONS IN HONG KONG is dealt with in some new bye-laws, now in force, made under the Ordinance which regulates such sales in the Colony. The list of poisons within the meaning of the bye-laws is divided into two parts, which correspond closely with parts 1 and 2 of the British poison schedule. In part 1, however, are added *Datura alba* and its preparations, *Gelsemium elegans* and its preparations, and orpiment; carbolic acid is added to part 2. No poison included in either part of the list is to be sold by retail, unless distinctly labelled with its name, the word "Poison," in both English and Chinese characters, and the name and address of the seller. The sale of poisons included in part 1 is to be formally registered as in Great Britain, and there are special regulations with regard to arsenic and its preparations; thus, the purchaser must be "apparently not less than 16 years of age," and the "occupation," as well as the name and address, of the purchaser must be entered in the poison book.

THE SYNOPSIS OF THE 1898 PHARMACOPŒIA, published at the *Pharmaceutical Journal* Office, 5, Serle Street, W.C., which has had a surprisingly large sale, can no longer be obtained in paper covers, but a limited number bound in cloth can yet be purchased at one shilling each, post free. The fact that this little pocket guide to the processes, formulæ and doses, of the new British Pharmacopœia has run through seven editions in as many months should suffice to prove its value, and such of our readers—particularly students—as have not yet procured copies should hasten to do so. The type having been distributed, no further copies can be printed.

THE LIST OF LOCAL SECRETARIES of the Pharmaceutical Society for the ensuing twelve months is published in this week's Journal, and in connection therewith it seems desirable to direct attention to the fact that the names of a number of towns for which local secretaries might be appointed are missing from the list. That is owing to the fact that the registered chemists in those towns have not taken the trouble to fill up and return the nomination cards sent to them some weeks ago. The number of such towns, a list of which will be found at page 487, is no less than 42. It is much to be regretted that such should be the case, and possibly the mere direction of attention to the omission may cause it to be speedily remedied in most instances.

THE EDITOR OF THE "PRACTITIONER" thinks Mr. Braxton Hicks, who "evidently considers it part of his duty as a coroner to discuss things in general," was slightly at fault in his recent observations on Sir James Crichton Browne's address. That address, it is pointed out, was delivered to chemists and druggists—the legally recognised vendors of poisons, with whom those substances may properly be considered in all their bearings. If the accounts that appeared in the lay press were harmful, that was the fault of the reporters, who chose to select and publish in a mutilated and misleading form a few sentences from the address; and, by directing attention to those garbled reports, Mr. Braxton Hicks must have increased that harmfulness tenfold. If, on the other hand, the matter complained of was harmless, there was no justification for Mr. Braxton Hicks's remarks. Having thus neatly put the coroner out of court, the *Practitioner* remarks that "whatever interpretation may be put upon isolated passages, there can be no doubt that the address to the Pharmaceutical Society, taken as a whole, makes for public safety. It is a plea for greater stringency in the sale of poisons and for that bacteriological research which alone can bring pathogenic microbes under control."

THE CARELESS HANDLING OF POISONS was forcibly illustrated in an incident referred to by Dr. Danford Thomas whilst holding an inquest at the Hampstead Dispensary with reference to the death of a ward servant at the North-Western Fever Hospital, Haverstock Hill, who had died from the effects of nitric acid taken with suicidal intent. Commenting on the fact that it is always easy to get poison, especially carbolic acid, the coroner proceeded to state that, a few days ago, some carbolic acid was ordered for use in his house, and it was sent by the oilman in a vinegar bottle covered with vinegar labels. One of his servants used it to fill the vinegar-cruet, and it was served at table, where the poison was only detected by its odour. It would have been interesting if Dr. Danford Thomas had explained why he allows carbolic acid, when required for use in his house, to be ordered from a tradesman who knows nothing about poisons and their effects, for by so doing he undoubtedly encourages that carelessness which he, as a coroner, objects to when lecturing other people about their shortcomings. It may be suggested, by the way, that as the poisoning of a coroner by carbolic acid might go far to hasten the scheduling of that dangerous fluid as a poison, a distinct opportunity would appear to have been missed in this case.

THE SPECTACLE MAKERS' COMPANY has been engaged for several months past, as is well known to our readers, in perfecting a scheme for the granting of optical diplomas to those who pass an examination, as in this way it is believed that the public interest will be well served, the possession of the diploma insuring that the vendor of spectacles and other aids to the sight will have at least some practical knowledge of optics. The Company appointed

as examiners Professor Silvanus Thompson, Dr. G. Lindsey Johnson, and Mr. G. Paxton, and the first examinations have been held at the Northampton Institute, Clerkenwell, this week, the number of candidates attending being about one hundred and fifty.

THE PHARMACEUTICAL SOCIETY will hold its first evening meeting for the session at 17, Bloomsbury Square, London, on Tuesday evening next, November 8, when the chair will be taken by the President at 8 o'clock precisely, and Professor William Ramsay, D.Sc., F.R.S., will deliver a lecture on "The New Gases of the Atmosphere." The lecture will be illustrated by experiments, and all members and other subscribers of the Society are invited to attend and bring their friends.

THE WESTERN CHEMISTS' ASSOCIATION (OF LONDON) will hold its eighth annual dinner on Wednesday, November 16, at the Café Royal, 68, Regent Street, at 7 p.m. precisely. The retiring President, Mr. J. H. Mathews, will take the chair, and tickets (7s. 6d. each, exclusive of wine) can now be obtained from either of the Hon. Secretaries—Mr. Herbert Cracknell, 17, Craven Road, W., and Mr. W. J. I. Philp, 34, High Street, Notting Hill, W. Application should be made as early as possible, not later than November 14, and instructions forwarded with regard to the arrangement of seats.

THE COUNCIL OF THE PHARMACEUTICAL SOCIETY OF IRELAND some time ago refused to allow a candidate to present himself for the Irish Licence examination, on the ground that he had not served his apprenticeship with an individual pharmaceutical chemist, or a firm of pharmaceutical chemists, but to a joint-stock company. He appears originally to have been apprenticed to his father, who was a member of the firm which subsequently became registered as a joint-stock company, but after nine months had elapsed he was transferred as an apprentice to another member of the firm, whom he served for two years and two months. His apprenticeship was then re-transferred to his father, with whom he served for a further period of nine months, and after the registration of the firm as a company he served the rest of his term of apprenticeship with his father, as a member of that company. An action having been brought against the Council of the Irish Society to decide the matter, the case came on for hearing in the Queen's Bench Division of the High Court of Ireland on Friday, October 28, when the plaintiffs contended that under their regulations the term of four years' apprenticeship should be served to an individual pharmaceutical chemist, and that the regulations were not satisfied by a limited company, to which there could be no apprenticeship. The case of the applicant, on the other hand, was that the regulation about apprenticeship was *ultra vires*, and that the fact of it having been sanctioned by the Privy Council did not preclude the Court from now inquiring as to whether it was *ultra vires* or not; but that even if it were not *ultra vires* the apprenticeship of the applicant was sufficient, all the seven members of the defendant company being qualified pharmaceutical chemists, and all others being excluded from membership by the company's articles. The arguments were adjourned until Tuesday this week, and at their conclusion judgment was deferred.

A NEW PUBLIC LIBRARY FOR WANDSWORTH, which was formally opened by Sir John Lubbock a few days ago, owes its existence in great measure to the generosity of the late Mr. George Nind, pharmaceutical chemist, who bequeathed the sum of two thousand pounds for the purpose. It will be remembered that the Benevolent Fund of the Pharmaceutical Society also benefited under Mr. Nind's will to the extent of two thousand pounds.

EXTRACTS FROM CONSULAR REPORTS.

THE SPONGE FISHERY OF THE BAHAMAS, it has been frequently alleged, would ultimately become a decayed industry, because of the exhaustion of the sponge beds. The record for 1897 shows, however, that the industry is still flourishing. Prices ruled high, and the various kinds exported, weighing 1,228,000 lbs., were valued at £90,000. Over 500 small schooners and a large number of men and boys are engaged during nine months of the year in the sponge fishery. The vessels are usually owned by capitalists, and the proceeds of a voyage are divided into a number of shares, which are distributed in varying proportions between owner, captain, and crew. The voyages, which usually last from six to eight weeks, are frequently very profitable to all parties, small schooners having been known to come into port after a six weeks' voyage with sponges worth from £300 to £400. The sponges are sold by auction in an exchange at Nassau, and are chiefly purchased by agents for firms in New York. The use of dredges or diving apparatus is forbidden by law, consequently the fishery is restricted to those shallow banks where the sponges growing on the bottom can be reached by a long pole furnished with an iron hook. In Mr. Hesketh Bell's (the Acting-Colonial Secretary) opinion, it is probable that at greater depths the yield would be much richer and the sponges of finer texture.

FOR THE CULTIVATION OF CITRUS FRUITS, Mr. Hesketh Bell states that the Bahamas possess hundreds of thousands of acres of land thoroughly suited for the purpose. He is of opinion that young energetic Englishmen with small capital might do much worse than consider those islands as an encouraging locality for the speedy development of a moderate investment. The climatic conditions of the Bahamas and their coralline soil appear to be particularly favourable to the successful cultivation of all citrus fruits, while many of the adversities against which orange planters in Florida and California have to contend are not to be encountered in those islands. Frost is unknown, excessive droughts are rare, insect pests and diseases may be kept within bounds, while the price of land and the rates of labour are much below those current in the Southern States. Dr. Morris, C.M.G., when Assistant Director of the gardens at Kew, visited the colony in 1895, and expressed himself very hopefully concerning the favourable prospects of orange growing in the Bahamas.

CONCENTRATED TURTLE SOUP, Mr. H. Bell thinks, would probably prove a profitable article of commerce for the manufacturer who has enterprise enough to establish a factory in the Bahamas for its preparation. The edible turtle, known as the "green" one, is said to be plentiful in the shallow seas around the Bahama Islands, while turtle meat is sold in the local markets at 3d. per lb.

A MODEST WAGE of about 1s. 3d. per week for breaking eggs and separating the white from the yolk at the first German "duck-egg house" (primitive Chinese for albumin factory), opened at Wuhu on April 21, 1897, proved to be a great temptation to the country lasses from the surrounding district. So keen was the competition for employment that the premises were invaded by about 200 girls, or ten times as many as were required. A second factory was established in September of the same year.

BUT FOR THE ADULTERATION OF CHINESE OPIUM with sesamum-cake and other matter, more native smokers would use it, whereas by this practice they are driven to the foreign drug. Foreign opium is sold in Wuhu for about 8 taels a ball, weighing a little more than 18 ounces; hence 20 taels, which will buy 100 ounces old native and about 140 ounces of new season's native, will only purchase 45 ounces of foreign drug, which is a great consideration to the impecunious Chinese.

THE BRITISH EXPORTS OF CHEMICALS and chemical and medicinal preparation for the month of September amounted in value to £672,238, an increase of £35,860 compared with the same period last year, when the export was valued at £636,378. For the nine months ending September 30, however, there was a decrease of £138,322, the totals being £6,313,356, as against £6,496,678. The imports of chemicals, etc., show a decrease for both periods of £30,319 and £505,937 respectively.

PHARMACEUTICAL SOCIETY OF IRELAND.

The annual meeting for the opening of this Society's schools and the presentation of the gold and silver medals was held at the Society's rooms, 67, Lower Mount Street, on October 3. There was a large attendance of students, and the visitors included the Right Hon. the Lord Mayor, the President of the College of Physicians, the President of the College of Surgeons, Sir George Duffey, Dr. A. H. Jacob, and the Vice-President of the Society (Mr. Beggs). The following members of the Council were also present:—Dr. Walsh, Professor Tichborne, Mr. Wells, Mr. Kelly, Mr. Simpson, and Mr. Michie.—Mr. R. J. DOWNES (President of the Society) occupied the chair.—The REGISTRAR read a letter from Mr. T. Ross (the father of Mr. A. T. Ross, to whom the gold medal for the best answering at the licensing examination had been awarded, but who was unable through illness to be present) acknowledging the receipt of the medal, and expressing thanks for the good wishes of the Council for his son's recovery. There was also an apology for inability to attend from Mr. Mathew Campbell, to whom the silver medal had been awarded for the next best answering.—The PRESIDENT said that an address would be delivered by Professor Tichborne on a subject of special interest to pharmacists. It was a matter of satisfaction that the medical profession was so well represented on that occasion. It was not often they had a new subject of address, and it was one with which no one was more competent to deal with than the lecturer, Dr. Tichborne. It was also appropriate that the citizens should be represented by the Lord Mayor.—Professor TICHBORNE said he had to apologise to those not particularly interested in the subject for its dry character. The British Pharmacopœia was never a very popular book, although the prescriber might look upon it with favour; but even he occasionally rebelled against it. In the new British Pharmacopœia the metric system had been introduced, as far as was compatible with safety. Some very important points had been adopted in the new book; and he ventured to think that all were moves in the right direction. He might say that the book so far had stood the criticisms well. Great changes were not desirable in a pharmacopœia, and those which had been made were on the lines of a necessity or improvement. Professor Stoeder, of Amsterdam, had published an elaborate analysis of the work from a foreigner's point of view, and had made some really good points, but it might all be summed up in his concluding remarks. He said: "In short, this Pharmacopœia of 1898 cannot escape the reproach that it has considered the interests of the practitioner too much, and those of modern science too little, in virtue of which it loses that strictly methodical character which ought not to be wanting in such a standard book in these days." Quite so! observed the lecturer, the Pharmacopœia was written in the interests of the practitioner, and if it has achieved that, well that is its whole function.—The PRESIDENT of the College of Physicians (Dr. William J. Moore), in proposing a vote of thanks to the lecturer, said it gave him great pleasure that on the first occasion that he had appeared before the public since he took over the reins of office from his friend Sir George Duffey at the Royal College of Physicians, he should be attending a meeting of the Pharmaceutical Society of Ireland. That Society sprang into existence and was cradled and spent its infancy within the walls of the Royal College of Physicians, and the friendliest relations had existed between that Society and the College. The immediate object of his remarks was to record in their name a very hearty vote of thanks to the lecturer for his very admirable and lucid address. In the short period of an hour Professor Tichborne had conveyed an enormous amount of the valuable information on the new Pharmacopœia, in the building up of which Dr. Tichborne had himself taken no unworthy part.—The PRESIDENT of the College of Surgeons seconded the motion, which was supported by Dr. WILLIAM SMITH, and adopted by acclamation.—Professor TICHBORNE having returned thanks, the PRESIDENT then asked the Lord Mayor to present the medals, or rather the silver medal. He regretted that the winner of the gold medal was so seriously ill that it had been thought desirable to send it by post some time ago. The winner of the silver medal was somewhere in the north of Ireland, but a deputy was present to receive the medal for him.—The LORD MAYOR having congratulated the Society on its progress, formally presented the medal, after which a cordial vote of thanks (proposed by Mr. BEGGS and seconded by Mr. KELLY) was passed to the Lord Mayor for his presence on the occasion.—The LORD MAYOR having returned thanks, the proceedings terminated.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION.

The winter session of this Association was opened on Thursday, October 27, when Dr. RALPH STOCKMAN, F.R.C.P.E., Professor of *Materia Medica* and Therapeutics in the University of Glasgow, lectured on

The Evolution of Our Pharmacopœia.

The lecture excited much interest and Mr. W. L. CURRIE, the President of the Association, presided over a large audience.—The CHAIRMAN in his opening remarks, said that since they last met matters pharmaceutical had been booming. The Pharmacy Acts Amendment Bill, which had been discussed so long and so earnestly, had become law, and the Poisons Bill, which had been sprung upon them by the Government and had not been received with the acclamation expected, had been dropped. In view of the appearance of the new Pharmacopœia they had been very fortunate in securing the services of Dr. Stockman to open the session.—Professor STOCKMAN said that he had a very small share in the preparation of the present edition of the British Pharmacopœia, and while engaged on that work his attention had been drawn to the fact of his ignorance with regard to all pharmacopœias except our own, and more especially with regard to what he might call the evolution of the modern pharmacopœia out of the more ancient compilations of the same class. He had, therefore, made a slight effort to extend his knowledge in that direction, and he proposed to lay before them a part at least of the result.

The origin of the use of natural substances as remedial agents had given rise to a good deal of speculation. It was probable, however, that primeval man originally acquired some such knowledge and practice as they saw in dogs when they eat grass, and that this knowledge gradually became extended by experience, and resulted ultimately in the large mass of information we now possessed. Amongst the most primitive peoples there was always a certain knowledge of domestic medicine, the practice of which was largely in the hands of women, but very early in the upward development they usually found it transferred to special medicine men, or combined with priestly functions. The earliest written documents they possessed were Egyptian, the most ancient dating from 2700 B.C. These contained formulæ, often complex, for the treatment of various ailments, the drugs being chiefly native plants and a few common mineral substances. Few were potent and they were essentially the same kind of medicines which were found in herbal and other medical treatises down to about 150 years ago. The introduction of incantations as remedial measures—a species of cure which still existed under such names as Christian science, faith healing, and so on—was almost certainly traceable to the priest-physician, while witchcraft as a factor in medicine had been held responsible for the appearance of snakes, toads, vipers, and other repulsive objects in ancient and mediæval *materia medica*. Not to go further back than the Christian era, we found such authors as Celsus (died 50 A.D.), Pliny (died 79 A.D.), Dioscorides (first century), Galen (died 201 A.D.), and others who left behind them a mass of reliable medical information, which was still to some extent an active force. Later came the works of Arabian physicians, which took a prominent position as authorities, the greatest of these being Avicena, who died in 1036, in Persia, and whose works held an authoritative position till the end of the fifteenth century. Avicena's account of nutmeg, he instanced, was practically the same as that given in our most modern text-books, but unfortunately he was not always so reliable.

Since then therapeutics and medicine had progressed, but essentially such works as those closely resembled the great treatises on therapeutics of the present day in the curious mixture of truth, error, and superstition which they contained. There were four outstanding authors, however, whose works dealt specially with matters of interest to pharmacists and who for long were held as authoritative among apothecaries. There were Mesne (died 1015), Nicolas of Salerno (twelfth century), Matthæus Platearius (twelfth century), and Myrepsus (thirteenth century). In the fifteenth and early sixteenth centuries a number of manuals were written specially for apothecaries by different authors, none of whom was of any great note. The first book of the kind to receive the impress of any authority beyond that carried by the author's name was the '*Antidotarium Florentinum*,' published in Florence in 1498, a collection of medical recipes sanctioned by the university or medical college of the city. But the first

pharmacopœia sanctioned by the civil authority, and enjoined to be used under penalties by dispensers and compounders of medicines, was that of the town of Nuremberg published in 1545, and compiled by Valerius Cordus from various sources, but chiefly founded on the practice of Galen. The style and methods of this book had been closely followed down to the present day, and in it were found much the same preparations as in the British Pharmacopœia of to-day and under the same names. As a fair example they might take the *Electuarium Commune*, which was directed to be made as follows:—*R Pulpæ cassiæ, pulpæ tamarindorum, senæ mundatæ, aa ʒii.; rhabarbaru, violarum, anisi, polypodii, aa ʒi.; sacchari albi, ʒii.; liquiritiæ, ʒii.; fritis conterendis et incisicis reliquis, admisceatur syrupus; polypodii, ʒiii.; sem. fœniculi, ʒvi., cum aquæ pluvie, quantitate sufficiente, et sacchari optimi, lb. ii., paratus.* This would make a very agreeable laxative, but it was difficult to understand the value therapeutically of the *species de Gemmis*, made up of pearls, coral, sapphire, granite, and other stones, with sugar, roses, borage, etc.; or the *pulvis contra casum*, consisting of crabs' eyes, mummy, dragon's blood, dried goat's blood, clay and rhubarb. But the whole book is a mixture of good and bad recipes, the former perhaps predominating. The '*Pharmacopœia Augustana*,' published in Augsburg in 1646, a copy of which he showed, was a handsome volume, and was, he said, in some ways one of the most interesting of its time, owing to the minute and paternal directions given to the apothecaries by the editor and by the Town Council, under whose authority it was published. This book contained many good recipes, by means of which an experienced and acute physician could treat well many conditions, but he would have to pick and choose carefully. The Pharmacopœia of Brussels, published in 1671, was another large and handsome volume.

Until 1617, apothecaries and grocers sold medicines, but in that year the former obtained a charter of their own and became a separate guild or corporation. In 1621 the College of Physicians published the first edition of the '*Pharmacopœia Londinensis*,' which was made authoritative in England and Berwick-on-Tweed by an order of the King in Council. For the next hundred years it did not differ much from the very worst Continental ones. In 1668 over 1200 simple medicines were enumerated, and these included the fat of man, lion, and vulture, hair, urine, blood, etc. In 1721 it was greatly simplified, and there was a steady improvement till the last edition was published in 1851. That was still in Latin, but contained only 273 separate drugs, apart from their preparations. Previous to the publication of a pharmacopœia some of the books he had mentioned earlier and Gerard's well-known herbal were in use in England by apothecaries. The first edition of the Dublin Pharmacopœia was published in 1807, the last in 1850. The first authoritative pharmacopœia in Scotland was published by the Royal College of Physicians of Edinburgh in 1699. The first edition, a book about the size of a pocket testament and looking insignificant beside the bulky Continental tomes, was, as he expressed it, a very humble production, badly printed and poorly got up, but dedicated to King William. It enumerated nearly 900 simples, these being the usual mixture of what were now considered to be efficacious or the reverse. The last edition of the Edinburgh Pharmacopœia appeared in English in 1841, and was also a modest volume. Since the first edition the number of efficacious drugs had been reduced from nearly nine hundred to a little over three hundred. This brought them down to the British Pharmacopœia, the first edition of which was published in 1864 by collating those of London, Edinburgh, and Dublin, and the whole history of which and its successors was accurately set forth in the preface to the present edition. Speaking, in conclusion, as to whether the earliest pharmacopœias of this country accurately reflected the state of therapeutics at the time of their publication—the seventeenth and eighteenth centuries—he said at that time the practice of medicine was in a very backward state, and medical teaching still more so. In the '*Arcana Fairfaxiana*,' a manuscript book of domestic medicine and undoubtedly used by members of the well-known Fairfax family in England, they found prescriptions of frogs, goats' dung, and many other disgusting things.

But a still more unpleasant picture of the medical practice of the time was furnished by the '*Pharmacopœia Bateana*,' a collection of the recipes of Dr. Bate, who was physician to two kings of England and the Protector. These were thought to be of such value that the volume was edited with notes by William Salmond, Professor of Physic, dedicated to King William III., and published in London in 1694. Here were

gravely prescribed and commented on such applications as a plaster for internal worms, a poultice of pigeons' dung for the plague, an amulet against the pestilence, alongside more sensible remedies. This was the work of a doctor of medicine, and was described as "exceeding in its benefit and usefulness to mankind all the dispensatories this day extant in what language soever." He was inclined to think, however, that the actual practice of medicine was not in such a backward state as these books would lead one to expect. No doubt such cures were used popularly just as some of them are to the present day, but he doubted if their use was very widespread or encouraged by the bulk of physicians. He had come to that opinion by the perusal of a price list of medicines published in Aberdeen in 1625, and which professed to contain all those in common use. It had a remarkable resemblance to price lists of the present day, though human fat was priced at 12 shillings, Scots, per ounce, mummia of Egypt at 2 shillings, Scots, per drachm, and powder of earthworms. These, however, almost exhausted the list of such substances. He was clearly of opinion that such a trade price list, compiled by a man for the use of his customers, and whose worldly prosperity depended on his supplying them to their satisfaction, more accurately represented the drugs in actual every-day use than any medical compilation made at an age when ancient authors were slavishly followed and tradition held all powerful sway.

Mr. FOSTER in proposing a vote of thanks to Professor Stockman for his most interesting lecture, said it would be impertinent for him to attempt to criticise the lecture, which was the result of deep research and intense enthusiasm and interest in the subject. He expressed the hope that they would soon have him lecturing to them again.—Mr. SUTHERLAND seconded, and the CHAIRMAN also expressed the pleasure he had experienced in listening to the lecture. In Professor Stockman, he said, they had a gentleman who would inculcate into the rising generation of medical men the true method of treating disease, who would teach them how to prescribe drugs, pure and simple, and who would not recognise in any way the medicaments and compounds at present thrust before them, and of which they knew little or nothing.—Professor STOCKMAN said it would ill become him if he did not do what he could to oblige pharmacists anywhere. For many years past he had received great kindnesses at their hands, and curators of their museums, librarians, and so on, had taken great trouble to get him reliable information.

LEEDS CHEMISTS' ASSOCIATION.

The annual meeting of the above Association was held on Wednesday, October 26, in the Committee room of the Leeds Institute, Mr. G. WARD, F.I.C., F.S.C. (Vice-President) in the chair.—Mr. W. D. POLLITT (Hon. Secretary) read the following report:—In presenting the thirtieth

Annual Report

the Council is able to state that the Society has maintained its numerical strength, whilst its usefulness as an educational aid for associates preparing for the Minor examination has not decreased. The Library possesses a good number of up-to-date books and has been regularly supplied with trade journals. At present the building is undergoing structural alterations, which it is hoped will make our room still more comfortable for our purpose. Under the auspices of the Society two social meetings of registered chemists were held during the past session, at which subjects of importance to the trade were discussed. There was a fair attendance, and a very friendly feeling existed, which it is to be hoped will result in creating more interest in our work. In response to the wishes of some of the speakers, an effort was made, in conjunction with the Leeds Technical School, to establish day classes for the study of Pharmaceutical chemistry, but only five students (four elementary and one advanced), indicated their willingness to attend, and therefore the classes were not formed. Perhaps another attempt may be more successful next year. The Council gave its support to the Pharmaceutical Society in the effort to get the Pharmacy Acts Amendment Bill passed, and records with pleasure that the members of Parliament for this city promised their assistance. It is satisfactory to know that the object has been achieved. The Council watched the progress of the Poisonous Substances Bill, and took steps to oppose that measure, which was eventually withdrawn. The Council is in sympathy with the objects of the Proprietary Articles Trade Association, and has signified its willingness to work in conjunction with that Association. The

receipts for the past year were £9 7s. 6d., and the expenditure £10 2s. 9d.—The report and financial statement were adopted on the motion of Mr. R. REYNOLDS, seconded by Mr. G. WARD.—On the motion of Mr. E. YEWDALE, seconded by Mr. WOLFOLK votes of thanks were accorded to the Pharmaceutical Society for the gift of the *Pharmaceutical Journal*, and to the Executive Committee of the British Pharmaceutical Conference for the gift of the 'Year-Book of Pharmacy.'—The officers of the Association were thanked for their services during the past year.—The following were unanimously elected officers and Council for the ensuing year:—President, Mr. E. Yewdall. Vice-President, Mr. G. W. WOLFOLK. Hon. Treasurer, Mr. J. J. ANNING. Hon. Secretary, Mr. W. D. POLLITT. Council, Messrs. J. H. BEACOCK, F. W. BRANSON, F.I.C., W. JOHNSON, R. REYNOLDS, F.I.C., S. TAYLOR, and G. WARD, F.I.C. Auditor, Mr. E. BROWN.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.

The second meeting of this Association for the present winter session was held on October 25 at the Exchange Rooms, Birmingham.—Mr. J. SELBY, Vice-President, in the chair.—Mr. F. H. ALCOCK read a paper on

Bacteria,

which was illustrated in a most interesting way by lantern slides thrown upon the screen by Mr. J. DAVIS. Mr. Alcock dealt with his subject, wide though he admitted it to be, in a very exhaustive manner. He first classified the different bacteria, explained their functions as illustrated by the changes they set up in urine, milk, and saccharine fluids, and showed the part they played in putrefaction. He went on to deal with the formation of nitrites and nitrates in soil, showed the value of these in the economy of nature, spoke of the position of the bacteria in their relation to other plant life, and described their composition and mode of production. Mr. Alcock went on to explain at what temperature these lowly forms of plant life were favourably propagated, showed the temperature at which their power of reproduction was destroyed, and described the action which the atmosphere, currents of electricity, chemical agents, and other forces had upon them. The following types of the different classes were thrown upon the screen:—*Micrococci* (single variety); *Diplococci* (double variety); *Streptococci* (chain or rosary variety); *Micrococci tetragoni*, illustrating a group of Tetrads; *Sarcina lutea*, illustrative of the packet cocci. These were referred to as the chromogenic bacteria. Then followed the dumb-bell shaped cells of the *Bacterium termo*, illustrating the actively motile bacterium with flagella. The various stages of the bacterium which produces wool-sorters' disease, the *Bacillus tuberculosis*, associated with consumption, and the leprosy bacillus were all illustrated and ably described. Several specimens of the spiral variety were exhibited, including that associated with Asiatic cholera, commonly known as the "Comma Bacillus" on account of its microscopic appearance. Several specimens of the common marsh *Spirochaeta* were next thrown upon the screen and described, and the remarkable movements of the Monad with its short cylindrical cells and furnished with its flagellum, were followed with much interest. Vibrios were represented by *Vibrio rugula*, which is said to possess the power of causing fermentation of cellulose. An enormously magnified specimen of *Saccharomyces cerevisiae* was shown, and its life history described, together with the part it plays in the art of brewing. Pictures were also shown of the hyphomycetous fungi and the *Penicillium glaucum*, one of the commonest fungi, and well known to pharmacists as being concerned in the production of lactic acid from saccharine fluids. When Mr. Alcock's paper came to an end there was still a little time to elapse before it was necessary to break up, and the lantern exhibition was proceeded with, a series of views illustrating beautiful microscopic objects, taken from the three kingdoms of nature, being shown. There was the proboscis of the blow-fly, the tongue of the hive bee, the spiracles of the water beetle, the eyes of the ephemeron fly, specimens of the ant and of the male and female flea. Then followed a collection of shells, obtained by H.M.S. "Challenger," some at a depth of 3000 fathoms, a number of sea urchins, and specimens from the vegetable and mineral kingdoms. The animal kingdom, dealt with last, included scales of the gold fish, blood discs of man, the frog, and other animals, and a photograph of the lung of a frog after injection of the blood vessels, the operation showing in a remarkable manner the structure of the organ. After a short discussion Mr. Alcock and Mr. DAVIS were both heartily thanked.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.

The opening meeting of the twenty-first session was held in the Pharmaceutical Society's House, 36, York Place, Edinburgh, on Wednesday, October 26, at 9.15 p.m. Mr. G. H. C. ROWLAND, President, in the chair. There was a large attendance. The minutes of last meeting were read and approved. The SECRETARY read the report of the Prize Committee, from which it appeared that the McLaren prize for excellence in prescriptions, botany, chemistry, and materia medica had been gained by Mr. George Mack, 119, George Street. The prize, value £2 2s. may be invested in any course of instruction for the Minor examination approved of by the Committee. The Bowman botanical prize, value £1 1s., for best knowledge of the practical botany embraced in the excursions and summer meetings of the previous session, had been gained by Mr. J. G. Murdoch, 89, Gilmore Place.—Mr. DAVID McLAREN, the donor, then presented his prize to Mr. Mack in the form of a ticket admitting him to a course of instruction in the Royal Dispensary School of Pharmacy. In the unavoidable absence of Mr. John Bowman, Mr. McLaren also presented the Bowman prize—copies of Green's 'Botany' and Perkin and Kipping's 'Organic Chemistry'—to Mr. Murdoch. Mr. McLaren complimented both prizemen, and expressed a hope that they would be encouraged to apply themselves diligently and reach yet higher attainments.—The CHAIRMAN, in moving a vote of thanks to Mr. McLaren, which was cordially awarded, expressed the Association's deep sense of indebtedness to Messrs. Bowman and McLaren for their generous donations. Before proceeding to address them he mentioned that he had received apologies from Messrs. Bowman, Currie, Forret, Lunan, and Nesbit. He thanked them for the honour of his election. Memories of Flodden must have passed away when he—a foreigner from the southern kingdom—had been elected President of their Association in its twenty-first session. He then proceeded to give a *résumé* of

The Work and Workers of the Association

during the twenty years of its existence. He noted the fact that in 1853 a Pharmaceutical Improvement Association was founded in Edinburgh, and flourished for about eight years. In 1861 another abortive attempt was made to found an association. In 1862 an assistants' association was formed, called the Wilsonian Association, in honour of Professor George Wilson, who occupied the Chair of Chemistry in the Edinburgh University. This Association met weekly until 1871. In 1872 a Young Men's Chemists' and Druggists' Association was formed, but it had a very short existence. The present Association originated in a suggestion at an assistants' dinner in the Windsor Hotel in 1877. This was followed by a letter in the *Pharmaceutical Journal* in the same year, and at a meeting held in the Pharmaceutical Society's Rooms in George Street, early in 1878, the present Association was duly formed and office bearers elected.—Mr. ROWLAND then gave a very interesting account of the work of the Association during the successive years up to the present date. It was shown how great good had resulted from the Association's prize schemes, many of the winners having now attained to high distinction in medicine and in pharmacy. It was also shown that on questions such as the admission of women to the Pharmaceutical Society, a compulsory curriculum for pharmaceutical students, the metric system of weights and measures, the extension of the Preliminary examination, the Association had been not only abreast but often considerably in advance of the general body of pharmacists. It had also been distinguished by the fact that almost all the papers read to the Association had been contributed by members and had dealt largely with original and practical work relating to subjects of pharmaceutical interest. In conclusion he said:—Such is a brief and fragmentary history of the work of this Association. The position it has attained is an ample justification of the efforts made by its founders. I am told it has far exceeded their most sanguine expectations. I again remind you that this Association has now attained its majority and must resolutely address itself to the higher responsibilities belonging to this honourable position. The good work of the past furnishes a platform of advantage from which the work of the coming years ought to be carried on with greater energy and even more conspicuous success than has characterised the splendid record of the days that are

gone. I have been dealing in retrospect; it had been my intention also to say a word about the prospect. But the former has grown to such dimensions in my hands that I dare not presume to detain you any longer. I content myself with saying that the future is in your hands. I am neither a prophet nor the son of a prophet, but nevertheless I venture to anticipate that you will make the future worthy of yourselves and worthy of the heritage that has come down to you, and that the future history of the Association will be one of continued and increasing usefulness and prosperity.—Mr. J. D. SINCLAIR, Vice-President, moved a vote of thanks to the President for his most interesting address.—Mr. J. LAIDLAW EWING, in seconding the vote, heartily congratulated the Association on the successful attainment of its majority. Some of them on the previous evening had the pleasure of hearing a distinguished statesman discoursing on the value of such associations in bringing young men together and producing that sharpening of wit which always results from the contact of mind with mind. There was one point which he (Mr. Ewing) thought that distinguished statesman omitted. He referred to the value of an association like this for chastening self-conceit and engendering that modesty and mutual respect which was so becoming. He had gathered two things from the President's interesting address. One was that those who had filled offices in the Association now occupied high positions in the profession of pharmacy. The other was that during the entire period of their existence they had contributed to the Benevolent Fund of the Pharmaceutical Society. Many hard things were said of the Pharmaceutical Society, and also of the Boards of Examiners, with whose operations the Society was constantly identified. But, after all, he thought there were many good reasons why the Society should be regarded by them with gratitude and goodwill. For one thing they were indebted to the Pharmaceutical Society for a beautiful and comfortable hall in which to hold their meetings. They had also to remember that they were indebted to the Society for the help of the Society's Assistant-Secretary, who had always been distinguished for his sympathy with the hopes and aspirations of young men. He hoped they would have a very successful session, and it would always be a great pleasure to him to do anything in his power to forward the good work of the Association.—Mr. DAVID McLAREN, President of the Trade Association, and the first Vice-President and oldest surviving President of the Association, said he had listened with peculiar interest to the Chairman's description of the many incidents in the history of the Association of which he had a lively recollection. He joined the old Wilsonian Association in 1863, and from that time onwards he had borne a share and taken an interest in all the work among assistants till the present day. He trusted that in the future, as in the past, the Association would flourish and do good work.—The vote of thanks was put to the meeting by the Vice-President, and carried with acclamation, and the President returned thanks.—Mr. D. B. Kidd was elected Assistant-Secretary. The meeting then closed.

NEW REMEDIES.

TERPINOL IN BRONCHIAL DILATATION.—Rabow prescribes terpinol in pills or capsules thus: Terpinol, sodium benzoate, of each 1 gramme; sugar, *q.s.* Divide into 10 pills or capsules, and take one every hour or every second hour. Or, terpinol, 10 centigrammes; olive oil, 30 centigrammes, in a gelatin capsule, to be taken every two hours.—*Bull. Gen. de Therap.*, cxxxvi, after *Centralblatt für Therap.*

OXIDISED CHRYSAROBIN IN SKIN DISEASES.—Unna employs oxidised chrysarobin, obtained by the action of sodium peroxide on chrysarobin suspended in water, in eczema and other cases where the action of ordinary chrysarobin is too irritant. It is applied in the following ointment: oxidised chrysarobin, 2 to 5; vaseline and lanolin, of each 25.—*Bull. Gen. de Therap.*, cxxvi, July 8, 1898.

TRIBENZOYL-GALLIC ACID.—This is a new astringent obtained by shaking an alkaline solution of gallic acid with benzoyl chloride and purifying the resulting product by crystallisation, after boiling with water. The compound is odourless, tasteless, and colourless, it is not decomposed by substances with which it may come into contact in the mouth or stomach. An easy but complete separation of the gallic acid only takes place in the rectum, where all the specific properties of the astringent come effectively into play. The acid melts at 176° C.—*Zeit. d. allg. oest. Apoth. Ver.* li., 859.

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE PHARMACY ACTS.

PHARMACEUTICAL SOCIETY v. THOMAS HIBBERT.

At the Manchester County Court on Tuesday, November 1, before the Deputy Judge, Mr. W. Goldthorpe, the case of the Council of the Pharmaceutical Society against Thomas Hibbert, of 583, Ashton Old Road, Manchester, came on for hearing.

Mr. R. E. L. Vaughan Williams, instructed by Messrs. Flux, Thompson and Flux, appeared for the Society, and defendant appeared in person.

The proceedings were taken to recover two penalties of £5 each, the defendant having on July 8 sold or kept open shop for the retailing or dispensing of poisons and then sold paregoric, also for having on July 15 sold ammoniated mercury or white precipitate, contrary to the Pharmacy Acts.

At the request of His Honour Mr. Vaughan Williams handed up copies of the Acts, and explained that it was very important the public should be protected against the sale of poisons by unqualified persons. He stated that the defendant kept a shop, over which was the name "T. Hibbert, Herbalist," but that it was mainly devoted to the sale of newspapers. He called

Arthur Foulds, who stated that he resided in Manchester, and acting on instructions, he visited the shop of the defendant, over the door of which was the sign, "T. Hibbert, Bookseller and Stationer; Herbalist." This was on July 8, and he asked for some castor oil, and afterwards for sixpennyworth of paregoric. These substances were poured into bottles that he took, and he put on the usual labels for identification. The defendant's wife, who sold it to him, put on one of the bottles a label, on which was the word "paregoric." He handed the bottles over to Mr. Harry Moon. He called at the shop on July 15 and bought an ounce of glycerin, sixpennyworth of paregoric, and a pennyworth of white precipitate powder. He dealt with these as in the previous instance.

The defendant remarked that it was strange to him that his wife sold anything of the sort, because they had not got it in the shop to sell.

In reply to the defendant, witness said he purchased the articles at the shop, 583, Ashton Old Road, himself.

Mr. Harry Moon, clerk to the Registrar of the Pharmaceutical Society, deposed to receiving the various articles above-named and handing them to Mr. Eastes for analysis.

Mr. Ernest J. Eastes, F.I.C., who has had many years' experience as an analyst, deposed to receiving from the last witness the exhibits produced. One bottle contained an ounce and a quarter of fluid, which proved to be paregoric, and contained 2½ grains of opium, a dangerous poison. The white powder he found to be ammoniated mercury, commonly called white precipitate. It was a dangerous poison, and there was also a dangerous quantity, 95 grains.

In reply to the defendant, witness said there was nothing mixed with the paregoric, such as castor oil, glycerin, or anything of that description.

Defendant said he had not sold it, and his wife had not sold it. He had no white precipitate. He had been through his accounts for years and could find no record of it, and had not a bit in his place. He called his wife, who said she never sold the man (meaning Foulds) "a penn'orth of stuff in her life, only the *Evening News* and *Chronicle*. He's the biggest liar in England."

His Honour: Did you know him?

Witness: I know him by sight. He was never in the shop to purchase it.

His Honour recalled Foulds: Do you reside in this part?—No, your Honour, it is very rarely I go in that part.

She says she knows you by sight?—I have only been three times in my life—twice to make a purchase and once to have a look round the place.

Why did you go?—To look round.

At whose instigation did you go the first time?—The Pharmaceutical Society's.

Then you know her?—I know her perfectly well. There are two counters in the shop. The white precipitate she got from a brown bag on a shelf over the kitchen door.

Defendant's Wife: The little bit I had was for my own use.

His Honour: That finishes the case. The Pharmacy Act is one of the most excellent Acts ever passed, and what has been done in this case is necessary to be done. There is only one result; the Act must be enforced.—His Honour then gave judgment for the plaintiff Society for £10, with costs.

DISPENSING PROBLEMS AND NOTES.

EFFERVESCENCE WITH ALUM.

Sir,—I have had occasion to dispense the following prescription and the result was a violent effervescence:—

℞ Sodii Bicarb. ʒii.
Sodii Bibor.
Alum Sulph. aa ʒi.
Liq. Bismuthi ʒii.
Aq. ad ʒviii.
Ft. lotio. Sig.: "ʒss. ad Oi. Aquæ."

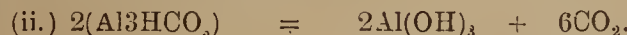
I found, after trying each of the ingredients separately with the sodii bicarb., that it was the alum which caused the effervescence. Is this due to free acid in the alum? The formula $Al_2(SO_4)_3 \cdot K_2SO_4 \cdot 24H_2O$ or $Al_2(SO_4)_3 \cdot (NH_4)_2SO_4 \cdot 24H_2O$, as given by the B.P. for alum, is that of a neutral salt. I cannot see why neutral salts should give an acid reaction with vegetable colours, except that this property bears no definite relation to their constitution.

QUÆRO (18/6).

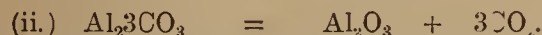
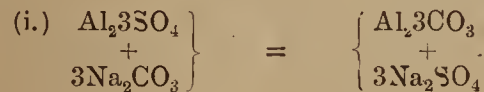
NOTE.—There is no need to assume the presence of free acid in the alum in order to explain the effervescence referred to. In this case it is due to the fact that aluminium being a weak base does not form stable salts with weak acids like carbonic acid. The alkali carbonates and bi-carbonates precipitate aluminium hydroxide from solution of alum because the aluminium carbonate which we might expect to obtain decomposes immediately into the oxide (which is precipitated in the form of hydroxide) and carbon dioxide. This is the cause of the effervescence observed. Taking the formula for aluminium sulphate in place of the formula for alum, in order to render the equation simpler, we may represent the equation thus:—



Aluminium bicarbonate is unknown; we get instead aluminium hydroxide and carbon dioxide—



The reaction with normal sodium carbonate is rather simpler to represent—



The aluminium oxide is not precipitated as such, since it immediately combines with water to form a hydroxide. [ED., P. J.]

A BISMUTH MIXTURE.

Sir,—Kindly say through your columns how the following prescription should be dispensed:—

℞ P. Bismuth. Subnit. ʒij.
P. Tragac. Co. ʒij.
Aq. Cinnamom. ad ʒvi.
M. Ft. mist. Sig.: ʒss. ter die.

I find that on standing a few hours the mixture becomes almost solid in the bottle and cannot be again shaken up into a presentable condition. Squire recommends that ʒiiss. of pulv. tragac. co. should be used for a six-ounce mixture, but I find even that is too much.

STUDENT (18/18).

NOTE.—The bismuth mixture described above is very commonly used, and the proclivities of bismuth salts to form hard deposits, difficult to diffuse by agitation, are well known. Authorities differ as to the relative merits of acacia and tragacanth for suspending the insoluble salt, and some prefer to use no gum at all. Even, however, in the latter case a hard deposit is sometimes formed, so that the difficulty cannot be referred entirely to the gum. A point which must not be overlooked is the slow decomposition which bismuth subnitrate undergoes in contact with water. This results in the formation of a more basic oxy-salt, with liberation of some nitric acid. If the mixture above, after standing some time, be filtered, the filtrate will be found distinctly acid. Our experience rather suggests that if a mixture like the above

be agitated at frequent intervals for some time after making (*i.e.*, until the formation of the more basic salt is nearly completed), the deposit which afterwards forms is not so prone to form a hard, indiffusible mass. In other words, the formation of the hard deposit may be due to the production of a compact mass of the more basic oxynitrate, if the oxynitrate be allowed to remain undisturbed at the bottom of the bottle while the decomposition proceeds. With regard to "Student's" query as to how the above mixture should be dispensed, the bismuth subnitrate and compound tragacanth powder should be well mixed in a mortar, and sufficient water added to form a thin paste. After trituration to a smooth product the paste is washed into the bottle. The quantity of compound tragacanth powder is larger than absolutely necessary—one drachm would be sufficient. [ED., P. J.]

COLORATION WITH TINCTURE OF SENEGA.

Sir,—If tinct. senegæ is treated with nitrous acid and then ammonia added a deep reddish-brown colour is produced. Is there any record of this reaction, and if so, what is the explanation? I first noticed it when dispensing a mixture containing sp. æth. nit., tinct. senegæ, and ammon. carb. If the two first are mixed together and then ammon. carb. added this colour reaction is produced, but if the sp. æth. nit. and ammon. carb. are first mixed and then tinct. senegæ added the colour does not develop. This led me to suppose that the colour was produced by the interaction of free nitrous acid, tinct. senegæ, and ammonia, which was verified by experimenting with the tincture of senega, sodium nitrite, acid. sulph., and ammonia. BARIUM (16/27).

NOTE.—The observations of "Barium" have been verified, but the cause of the coloration is not clear. A possible explanation is that the colour may be due to some reaction in which the methyl salicylate contained in senega is involved, and experiments are being conducted in the hope of elucidating the question. Meanwhile, some of our readers may be able to throw some light upon the subject. [ED., P. J.]

MERCURIC CHLORIDE IN A GARGLE.

Sir,—Would it be advisable to dispense the following prescription as written?—

R. Glycerini Hydrarg. Perchlorid	ʒi.
Glycerini Aluminis et Acid Tannici	ʒi.
Glycerin et Aq. Rosæ	ʒi.

M. Sig: The lotion for gargle; ʒi. to a breakfast-cup of water to be used as a gargle.

The preparation would contain about 13 grains of mercuric chloride in ʒi., and as formulæ for the two articles are in the 'Extra Pharmacopœia' I presumed the first was also meant to be compounded from the formula in the same book. E. G. H. (146/26).

NOTE.—The gargle dispensed according to the prescription from the unofficial formulæ mentioned would be unsafe for use unless unusual precautions were taken. The patient might easily swallow inadvertently a quantity of the gargle containing more than the maximum dose of mercuric chloride. In any case unless the mouth and throat were well rinsed with water immediately after using the gargle a sufficient quantity would be retained to have a very decided general physiological effect, in addition to the local action intended. Assuming the breakfast-cup to hold between 8 and 10 fluid ounces, the diluted gargle would contain somewhere about 1 in 300 of mercuric chloride. This is a much stronger solution than is usually employed as an antiseptic lotion. This case illustrates very clearly the necessity for the exercise of great care in dispensing unofficial formulæ. The prescriber ought in such cases to indicate in the prescription the exact nature of the preparation he desires by a reference to the book or formulary in which its formula is set forth. [ED. P. J.]

SALOL IN PLEURISY.—Jegorof finds that salol in doses of 12 to 42 Gm. is of great service in cases of pleurisy, increasing the diuresis and promoting the absorption of the effusion, without producing any of the ill effects previously observed from alkaline salicylates, such as digestive derangements, palpitation, and dyspnoea, which have been so generally followed in these cases as to lead many authorities to interdict the use of these salts.—*Nouv. Rem.*, xiv., 238, after *Vratch*.

NOTICES TO CORRESPONDENTS.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ADVERTISEMENTS AND ORDERS for copies of the 'PHARMACEUTICAL JOURNAL' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers."

ARTICLES AND REPORTS sent for the Editor's approval should be accompanied by stamped directed envelopes, otherwise no guarantee can be given that they will be returned if not found suitable.

CORRESPONDENTS should write in ink, on one side of the paper only, and must authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

DRAWINGS FOR ILLUSTRATIONS should be executed twice the desired size; clean sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

NAMES AND FORMULÆ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

QUERIES addressed to the Editor will be replied to in the Journal as early as possible after receipt, though not necessarily in the next issue. Replies cannot be sent by post, even though stamped envelopes accompany the queries.

LETTERS TO THE EDITOR.

THE NEW TEXT-BOOK ON PRACTICAL PHARMACY.

Sir,—Lucas's 'Pharmacy' undoubtedly contains a good deal of useful information for students of pharmacy, but, as "Pharmacist" pointed out in last week's Journal, it needs carefully revising. In his table of solubilities the solubility of acidum boricum in water at 60° F. should read 30 instead of 25, that of apomorphinæ hydrochloridum as 50 instead of 70, that of atropinæ sulphas as 1 instead of 0.5, and that of codeinæ phosphas as 4 instead of 2. Atropinæ sulphas is soluble in 10 parts of 90 per cent. alcohol at 60° F., not 3 parts. The solubility data I give are, of course, those in the new Pharmacopœia which, I understand, we must accept as the standard work.

17, Bloomsbury Square, W.C.,
October 28, 1898.

STUDENT (150/25).

NOTES ON ESSENTIAL OILS.

Sir,—I should be obliged if you would find space in your next issue for the following comments which I desire to add to your excellent notes on essential oils (see *ante*, pp. 458, 459) based upon the recently published 'Semi-Annual Report' of Messrs. Schimmel and Co:—

CITRONELLA OIL.—You state that "while adhering to the opinion that the relative value of citronella oil can be determined by acetylation, Messrs. Schimmel and Co. doubt whether 60 per cent. suggested by Umney as a minimum is not too low a standard for oil of good quality." You also state "that from the examination of several samples of Ceylon oil, Messrs. Schimmel conclude that there are two kinds differing in physical characters and in the percentage of geraniol." The method of determining the value of citronella oil by acetylation was suggested by me more than two years ago and the minimum of 60 per cent. given. Subsequently (see *P. J.*, August 14, 1897) in a paper by Swinton and myself the characters of two distinct classes of citronella oil were detailed, and the percentages of acetylisable bodies of the two classes stated to be as high as 90 to 92 per cent. in one case, and very much lower (only about 60 per cent.) in the other case. The oils of high acetylisable value were distilled by Fisher, of Singapore, and Winter, of Galle, Ceylon, the actual names being stated in our communication. The marks of seven out of nine of Schimmel's samples giving the high acetylisable value of 80.9 to 90.6 per cent., although not mentioned in the *Pharmaceutical Journal*, are mentioned in their report, and the marks J. F. and W. respectively appear to indicate that the oils were distilled by the two English firms whose products we examined. Pressure of work occasioned by the issue of the new British Pharmacopœia has prevented us from further work on the body of high boiling point which was separated from the oils having the low acety-

lisable percentage, which was described as a sesquiterpene, but which Messrs. Schimmel suggest may be methyl eugenol.

DILL OIL.—You state that Messrs. Schimmel give determinations to show that English oil has not always the high specific gravity required by the British Pharmacopœia (0.905 to 0.920). The only English sample (No. 10) however they quote has a specific gravity of 0.906. I stated in 1895 (see *P. J.* [3], xxv., 948 and 977) that German dill and caraway oils were frequently partially decarvolised. I adhere to that statement, which has been as true up to practically the present time as nearly three and a half years ago, as the following results of the examination during the last three months of German dill oils show:—

	Sp. gr. at 15° C.	Opt. rotation in a tube of 100 Mm.
1	0.8979	+51°.
2	0.8996	+45°.
3	0.8984	+46°.

Messrs. Schimmel add in their report that Mr. Umney says verbally (*sic*), "the oil distilled from the German fruits has practically the same characters as that distilled from the English fruits provided that no separation of carvol has taken place as in sample No. 3, a practice adopted to some extent on the Continent. We cannot but earnestly request Mr. Umney henceforth to omit such wanton insinuations alleged with a view to discrediting German competition evidently inconvenient to Mr. Umney." Messrs. Schimmel and Co.'s patriotism is praiseworthy, but they may not have as much knowledge of the German caraway and dill oils (other than their own) sent to this country as I have. I would remind Messrs. Schimmel also that in their 'Semi-Annual Report' of October, 1895, subsequent to my paper on the subject to which I have referred, they themselves referred (see page 9) to the decarvolisation of caraway oils, and stated that oils of caraway of lower specific gravity (*viz.*, than 0.908 to 0.910) were inferior because they have been deprived of a portion of the valuable carvol. My sole object in stating at Belfast that the characters of German and English dill fruits were the same was to make it clear that German oil could be employed. Up to the publication of the new British Pharmacopœia, or even till August, 1898, four-fifths of the oil used in this country was distilled from Indian fruits, which the characters of the new British Pharmacopœia excluded. The competition, or rather, I would say, the partial dependence on Germany for supplies is convenient rather than inconvenient, not only to me, but to the pharmacists of this country, as the quantity of dill hitherto cultivated in the British Isles has not been considerable, but I hope that by next season growers will have made us independent altogether of Continental supplies. In any case the trouble should be one of the past, as oil of dill (British Pharmacopœia, 1898) is well defined, and must of necessity be of good quality to comply with the characters and tests of the new work.

LEMON OIL.—You state that Messrs. Schimmel and Co. remark that the data on which Umney and Swinton infer the presence in lemon oil of a hitherto unobserved constituent are inconclusive (see *ante*, pp. 196-370). The extended results on page 370 (*P. J.*, October 1) were not published until Messrs. Schimmel and Co.'s Report doubtless was written, and contained practically all the additional proofs that they seek, both as to the source of geraniol and acetic acid, and fully meet their objections. It would, in my opinion, have been preferable if they had sought to disprove the results contained in our first paper by actual experiment rather than by a somewhat doubtful analogy.

Southwark, London, October 31, 1898.

JOHN C. UMNEY.

LOYALTY TO THE CRAFT.

Sir,—A very old member of the trade, and one whose experience of it cannot be much further prolonged, I would give my opinion of a letter signed by J. Rymer Young, which appears in the *Pharmaceutical Journal* of October 29. The tone adopted by him towards his despised brother is altogether harsh, cruel, and unjustified. What right has he to assume or suggest all those uncharities and probably falsities? What reason has he to doubt the statements of salaries and accommodations? Was there a greater demand on credulity in them than in the £200 which Mr. Rymer Young speaks of? For anything I can see on the surface "C. P." may be at least as worthy a citizen as Mr. Rymer Young, strange as that may sound. I am not in favour of company trading. If it can be met and vanquished in fair and honest open fight, good—go on and prosper. If only by taking away the subsistence of those who give service to it (company trading) I would

say the wish to do so is unblessed and even atrocious. To remove from the list of Members of the Society may be allowable; to delete from the Register of Chemists and Druggists or Pharmaceutical Chemists for such offence is a power our Legislature is not likely to give. I have always advised my sons, apprentices, and assistants to have nothing to do with company trading. That advisory treatment I would join in; the compulsory "per fas aut nefas," never.

Trurc, October 31, 1898.

SAMUEL FEAVER.

Sir,—In Mr. Young's reply to my letter he carefully avoids the point at issue, and as autobiography rather than argument seems to be his *forte*, I will give him a little more detail about myself. First, protesting against his accusation that I am stonethrowing from behind a wall, I have a fairly large acquaintance in the drug trade all over England, and I venture to suppose that my initials may disguise but do not hide my identity. Now, in answer to his three-quarters of a column of innuendo, let me tell him that I was seven and a half years in the historic house referred to (and my experience there is one of the happiest recollections of my life), so that presumably I was not an idle good-for-nothing, and while there successfully filled the offices of Secretary, Vice-President, and President of the C.A.A., so that presumably I was not an absolute fool. I passed my Minor at twenty-three, married at thirty-three. So I think his fancy portrait of me fails considerably. I now turn to the only statement of fact which Mr. Young's letter contains, *viz.*, that he knows several assistants in the neighbourhood of Warrington in the receipt of £200 per annum. If salaries of £200 are at all common, the drug trade is not in the "hopeless, helpless" condition it is the fashion to picture it, and these hysterical appeals for martyrs are only laughable.

November 1, 1898.

C. P. (150/41).

INCONSISTENT CHEMISTS AND DRUGGISTS.

Sir,—In various interviews with members of the craft I find considerable diversity of opinion respecting our Society. Some are merely faultfinders who can only complain of what has not been done rather than what has been effected, yet still hold aloof from joining the only legalised body that possesses any educational or social influence in the calling. Consequently their grumbling is merely a confession of weakness, and after forty years' wandering they are likely to die in the wilderness of oblivion. Whereas, if only from an instinct of self-preservation, to say nothing of loyalty as a united brotherhood, they would merge their differences they would acquire a representative faculty by which means reform might be effected and errors removed, besides securing for themselves and their successors a vastly improved social position. There is another class of discontents who actually ignore any benefit they have derived from the Pharmaceutical Society, which they accuse of self-seeking, and of no benefit to trade interests, exemption from jury service, etc., forgetting that the fact of their being registered as a distinct body will secure this advantage and place them in a better position than the mere seller of drugs, with whom he can always compete as regards quality and value compared with low prices. Before the foundation of the Pharmaceutical Society there was not in the market a single powder or extract but was shamefully sophisticated or substituted. This, on the authority of one of the fathers of English pharmacy, the late Mr. Thomas Herring; now we have not only protection from wholesale fraud, but penalties can be enforced for infraction of the law. Then, again, the standardisation of weights and measures. Formerly these were in reality unknown quantities. I remember that during my apprenticeship we used a 16-oz. cylindrical pint measure for several years. One day, however, it was discovered by accident that the said measure registered less than 15 ozs. A minim measure was examined, it was 20 minims in excess; such important details need no remark. There is, however, one feature that cannot be ignored by the most obdurate, namely, the existence of a Benevolent Fund, to the benefits of which every individual, whether a member of the Pharmaceutical Society or not, is open to participate. Half-a-crown per annum (about a halfpenny a week) entitles the subscriber to a vote, besides adding to the ability of the Committee to meet the heavy demands on their resources. Surely no one would wish for an absolutely gratuitous advantage, and, however, depressed in circumstances, would find so small a sum, or even obtain it from a relative or friend somewhat better off in the world.

October 27, 1898.

SIRIUS (150/3).

VISUAL OPTICS IN THEORY AND PRACTICE.

Sir,—The letter on the above subject in your last issue does, I suppose, call for some reply from me, as my article, which this letter presumes to criticise, appeared in your columns. I will at once state that there is one point, and one only, upon which I am in entire accord with the writer, and that is that it does not seem necessary to waste your valuable space with his discussions of my remarks. The letter, I might mention, bears a most remarkable resemblance to similar ones I have seen in another (not drug) trade journal. Mr. D. Jones is not a clever man, for he shows too plainly that the critic's cloak conceals the brief which he holds on behalf of those who find it inconvenient that retail opticians should be optically educated. In every sentence he has written he pleads the cause of these interested ones. Mr. Jones in so many words writes that retail dealers in optics do not need greater facilities for education than the past has afforded, and I will make bold to put into plain English that which he had only courage enough to hint at, namely, to advise chemists not to study optics under Mr. Lionel Laurance, because if they do the effect of their knowledge of the subject will run counter to the interests of a certain class of people connected with the trade. Shallow as it is, I will use Mr. Jones's letter to add a grain of weight to my observations on the present condition of the optical industry. Let it be for a moment conceded that what Mr. D. Jones says be true. How bad must be this condition if "60 per cent. of the glasses in use are supplied to ophthalmic surgeons and hospital directors, who take care their orders are faithfully carried through, and at very moderate prices." Or, if there be wholesale houses of the kind mentioned in the letter, it is only because there is an optically uneducated retail trade, for an optically educated retail trade would be the death-blow to such houses and their methods. My idea of what the trade should be is then very different from that of Mr. D. Jones. The retail optician should have a knowledge of visual optics, such that he need not be looked after by anyone, and such that he admittedly be capable of dispensing visual aids on his own responsibility. Mr. Jones seems to charge me with ingratitude to certain ophthalmic professors and qualified science teachers who have for years, according to Mr. Jones, taught the subject of visual optics to, and done so much for the British pharmacists who deal in optical goods, and he appears to be grieved because I am ungrateful to these creations of his vivid imagination. Even if they existed, except in the brain of this one illusionist, they do not appear to have taught much to him or to anyone else in the trade. I need hardly comment on the last sentence of Mr. D. Jones's letter, as no intelligent or honest member of the pharmaceutical trade can possibly have taken umbrage at my remarks.

London, October 31, 1898.

LIONEL LAURANCE.

A PLEA FOR PHARMACEUTICAL CHEMISTS.

Sir,—It has struck me for years as an anomaly that while the chemist and druggist who had passed the Minor could only be elected an Associate of the Pharmaceutical Society, the old-fashioned grocer and sundryman who made up, with infinite pains and difficulty, a simple prescription perhaps once or twice a year, and called himself a chemist and druggist, and as such got his name inserted in the Register as having been in business before 1868, could be elected a Member. It simply came to this. If a man advertised himself as A.P.S. you knew that he had passed the Minor, but if a man advertised himself as M.P.S. you did not know, without further information, whether he was a pharmaceutical chemist by examination or some old grocer, seedsman, and general dealer, who had made up a prescription or two and described himself as a chemist and druggist before 1868. Consequently (without further information) the A.P.S. was the better credential of the two. I always thought it an injustice that some men I know who have never been examined should be eligible to be elected Members, while I, having passed the Minor, could only be an Associate. Happily this state of affairs has now come to an end, and all of us who pay the subscription can now become Members, but still, I think the Major men have a right to demand the title of Fellow, or something to distinguish them as superior to us "Minor stars," for the public do not, will not, and are never likely to distinguish between a pharmaceutical chemist and a Member of the Pharmaceutical Society.

113, Stirling Street, Grimsby.
November 2, 1898.

W. D. MASON, A.P.S.

ANSWERS TO QUERIES.

Special Notice.—Scientific, technical, legal, and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on different slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms, and the registered number added in each instance should be quoted in any subsequent communication on the same subject.

URINE ANALYSIS.—Allen's 'Chemistry of Urine' (Churchill, 7s. 6d.), is the best work on the subject. [Reply to W. C. B.—18/3.]

BOTANICAL.—The name of the plant is *Chloris perfoliata*. [Reply to L. R.—18/20.]

LIBRARY AND MUSEUM.—The hours are 9 a.m. to 9 p.m., except on Saturdays, when they close at 2 p.m. [Reply to PHUSIS.—18/16.]

OIL OF STAVESACRE.—It would be advisable not to apply it to broken surfaces. [Reply to W. J. S.—18/25.]

PRESCRIPTION.—There is nothing sufficiently unusual in the prescription of which you send a copy to justify the printing of your letter. [Reply to M. G.—151/5.]

THE 1898 PHARMACOPŒIA.—Yes, the candidate's knowledge of what is special in the work will be tested by the Board of Examiners in January next. [Reply to A. R. J.—18/17.]

SPECIMEN OF DRUG.—It is the rhizome of *Dioscorea villosa*, known as wild yam, colic root, or rheumatism root. The habitat of the plant is the United States. [Reply to R. B.—18/22.]

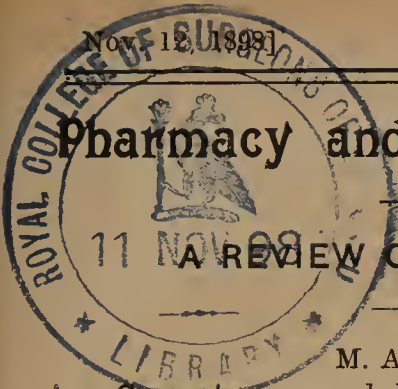
RESTORING COLOUR OF WINE.—You cannot restore the colour by any justifiable method. The best plan will be to make another batch with a very dark coloured wine, and mix that with the deodorised preparation. [Reply to A. J. R. S.—150/44.]

APPLICATION FOR INNER SURFACE OF BICYCLE TYRE.—Probably a solution of gutta-percha in chloroform and benzene, made rather thin, would be the best thing to try. Let it dry thoroughly, and then rub well over with French chalk before putting in the other case. [Reply to H. B.—17/34.]

WHITENING LARD.—Good lard should need no whitening. If properly prepared and rendered it is quite white, the presence of any colour indicating either imperfect washing or overheating. Possibly digestion with granular animal charcoal and filtration, while warm, through a column of the same substance would remove the colour. [Reply to D. J.—18/24.]

GERMAN PRESCRIPTION.—The second item is Spiritus Serpylli, a German preparation made by macerating for 24 hours 1 part of the coarsely cut root of *Thymus serpyllum* with 3 parts by weight each of 90 per cent. alcohol and water, then distilling off 4 parts by weight. The product should be of s.g. 0.895 to 0.905. [Reply to QUID EST.—18/26.]

ACTION OF SALTS ON VEGETABLE COLOURS.—The question you raise is rather complicated, and can only be fully discussed in connection with the subject of the state of bodies in solution generally. It is well known that aqueous solutions of salts derived from strong bases and weak acids, and *vice versa*, do not exhibit a neutral reaction towards certain indicators. This may be easily verified by experiment with litmus paper upon solutions of potassium carbonate and acetate on the one hand, which have an alkaline reaction, and the sulphates of aluminium and copper, which, although neutral in composition, redden litmus paper. Those desirous of pursuing the subjects should consult Ostwald's book on 'Solutions.' You are therefore right in your assumption that the reaction of salts towards indicators is not entirely dependent upon equivalency in the acid and basic radicles. [Reply to QUERO.—18/6.]



Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Creosote Pills. M. Agosti, an Italian pharmacist, has recommended for the preparation of creosote pills the addition of an equal weight of water and enough liquorice to form a pill mass. M. Delhaxhe has tried the formula and obtained pills which do not ooze with creosote, and at the same time readily disintegrate in water slightly acidulated with hydrochloric acid. He finds, however, that the reduction of the water to one-half improves the formula, which is here appended :—

Creosote.....	0.10	gramme.
Water	0.05	”
Powdered Liquorice Root	0.20	”

—*Répertoire*, x., 438.

Australian Poisonous Plants. Mr. J. H. Maiden directs attention to the poisonous properties of *Eremophila maculata*, F. v. M., when eaten by stock. Under the name of “Wedgera” the blacks are said to use the leaves as a blister when suffering from a cold.

He also publishes two cases of poisoning of pigs through eating the berries of white cedar fruits.—*Agricult. Gaz. of New South Wales*.

Composition of Human Milk. Ch. Michel publishes the results of recent analyses of woman’s milk. Samples were taken morning, noon, and night, mixed and then examined. From the study of the data derived from seventy-two analyses, he found that it was possible to draw a wide distinction between the milk of women recently *accouchées* and those who had passed that stage, a period varying between two and twelve months. Thus the milk of the former was notably richer in nitrogen compounds, extractive matter and mineral salts, whilst it was poorer in fat (*beurre*) and in lactose.—*Répertoire*, x., 452.

Insect Powders. *Chrysanthemum roseum*, Adam (*Pyrethrum roseum*, Bieb.), with rosy flowers, a native of the Caucasus, and *Chrysanthemum cinerariaefolium*, Visiani (*Pyrethrum cinerariaefolium*, Trev.), with white flowers, a native of Dalmatia. The inhabitants of Asiatic countries south of the Caucasus kept secret all details connected with the production and source of this drug until early in this century an Armenian merchant learned that the powder was obtained from the dried and pulverised flower-heads of certain species of *Pyrethrum* growing in the mountain region of what is now known as the Russian province of Transcaucasia. The history of the Dalmatian species of *Pyrethrum* still remains a mystery. There is reason to believe that the Caucasian species is not cultivated, whilst the Dalmatian plant is generally considered to be cultivated, though no definite information can be obtained on this point, owing to the jealous watch which the inhabitants keep in order to guard their valuable monopoly. The fourth report of the U. S. Entomological Commission, 1885, pp. 164-180, gives some particulars of the manufacture of the powder. The flower-heads should be gathered during fine weather, when they are about to open, or when fertilisation takes place, as the essential oil that gives the insecticide properties reaches at this time its greatest development. When the blossoming has ceased the stalks may be cut within four inches of the ground and utilised, being ground and mixed with the

flowers in the proportion of one-third of their weight. Care must be taken not to expose the flowers to the moisture or the sun’s rays, or still less to artificial heat. They should be dried under cover and pulverised. The efficacy of the product is proportional to the degree of comminution to which it has been brought. The powder should be kept in perfectly tight glass vessels or tin boxes. It is a specific, according to the *Botanical Magazine*, p. 6781, in the case of aphides, house flies, and mosquitoes (or gnats), and if used with bellows is effectual in killing the common insects that infest plants in houses. The powder may be burnt in the treatment of rooms, wardrobes, and greenhouses. The alcoholic extract diluted with water, the simple aqueous solution or decoction are other forms in which it may be used. The disadvantages of insect powder are chiefly its transient effect, and the necessity for actual contact with insects when used in the open air. Further, it has no effect on insects’ eggs or hard chrysalises, on beetles with hard elytra, and on the vast class of hemiptera (true bugs), whilst hairy caterpillars and spiders of all kinds are proof against it.—*Kew Bulletin*, cxliii., 297, et seq.

Glycerin Suppositories and Pessaries. M. Crinon has endeavoured to devise a perfect formula for the preparation of glycerin suppositories and pessaries (*ovules*). He finds that *grénétine*, the form of gelatin most highly esteemed for the purpose, is in reality not so good as that which is known in commerce as “*colle gélatine cagnet extra*.” The latter gives with glycerin a product which is absolutely colourless, and more transparent and more soluble than that derived from the former. The method adopted differs from that of the British Pharmacopœia in one or two particulars. The gelatin is first deprived of adherent powder by rubbing it under water with the fingers. It is then dried and weighed. To prepare suppositories the proportions are as follow :—

Gelatin, washed and dried	10	grammes
Water	20	”
Glycerin, at 30° C.	50	”

For pessaries the proportion of water is 50 per cent. higher, 30 grammes being used instead of 20, as a less rigid body is desired. In both cases, when the gelatin has taken up the required amount of water, it is transferred to the glycerin, in which it rapidly dissolves. The moulds are oiled with liquid paraffin, and the mixture sets perfectly in an hour. It is claimed for this method that, by the avoidance of directly heating the gelatin, the latter does not lose its cohesiveness. When a soluble substance has to be incorporated distilled water is used, one-third being reserved to dissolve it, and the solution is added to the moistened gelatin just before pouring into moulds. The preparation of gelatin-glycerin pessaries and suppositories containing tannin cannot be effected in the usual ways. If the tannin be dissolved in the water and added to the liquid basis a magma immediately forms, which cannot be poured into moulds, except by raising the temperature; when all the water is evaporated the mixture becomes limped, especially on the addition of a trace of nitric acid, but at the expense of a part of the tannin, which is converted into gallic and pyrogallic acids. Moreover, the product acquires a deep coloration. If, on the other hand, the tannin be dissolved in the glycerin, a product containing 1.3 to 1.6 per cent. of tannin may be obtained, but it quickly becomes less soluble. Satisfactory results are achieved by soaking the gelatin in a solution of tannin in such proportions that each 15-gramme pessary shall contain 50 centigrammes of tannin, and melt in water at 35° C., giving with ferric salts the usual tannin reaction. It is thought that the tannin, absorbed slowly and in small quantities by the gelatin, the latter being in large excess, yields with it a soluble combination.—*Répertoire*, x., 433.

DIGITOXIN AND DIGITALIN.

Kiliani publishes some further results of his investigation of these glucosides (*Berichte*, xxxi., 2454), from which he concludes that the formula $C_{22}H_{32}O_4$, already assigned to digitoxigenin as the most probable, certainly represents its composition, and that the previous uncertainty as to whether the formula of digitoxose should be $C_9H_{18}O_6$ or $C_6H_{12}O_4$ is now quite removed in favour of the latter formula.

Carefully conducted experiments showed that no other sugar but digitoxose is produced in the splitting up of digitoxin, and consequently the composition of that glucoside may with certainty be represented by the formula $C_{34}H_{54}O_{11}$, instead of $C_{31}H_{50}O_{10}$. The very characteristic blue coloration produced on mixing digitoxose with ferruginous acetic acid and concentrated sulphuric acid, distinguishes that sugar from arabinose, rhamnose, dextrose, galactose, lævulose, and sorbose, none of which give the least indication of a similar coloration. Kiliani considers that this peculiarity of digitoxose may be due to its having a cyclic constitution. He also considers that in the splitting up of digitoxin two molecules of digitoxose are produced according to the equation—

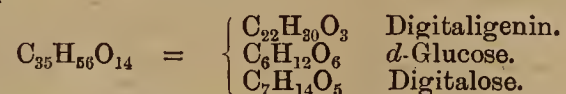


Anhydro-digitoxigenin, produced by the action of concentrated hydrochloric acid upon digitoxigenin, even at the ordinary temperature, is a crystallisable substance having a composition represented by the formula $C_{22}H_{30}O_3$ and it is probably produced from digitoxigenin by the abstraction of a molecule of water, as no simultaneous formation of sugar aldehyde or ketone could be detected. When oxidised with chromic acid, it yields a crystallisable product which has the characters of a ketone—toxigenone—which is sparingly soluble in alcohol or acetic acid, and its composition may be represented by the formulæ $C_{20}H_{26}O_3$ or $C_{19}H_{24}O_3$.

Molecular weight determinations lead to the conclusion that the formula $C_{16}H_{22}O_2$ for digitaligenin must be changed to $C_{22}H_{30}O_3$, or $C_{23}H_{32}O_3$, but in that respect analytical data require to be used with great caution, and to be controlled by other results.

Digitalose, $C_7H_{14}O_5$, the sugar produced together with digitaligenin by the splitting up of digitalin, has not been obtained in the crystalline form, but by treatment with bromine, *d*-gluconic acid and a crystallisable lactone, $C_7H_{12}O_5$, of digitalonic acid, $C_7H_{14}O_6$, were obtained, and thence the inference was drawn that digitalin yields *d*-glucose together with digitalose, a peculiar sugar having the composition $C_7H_{14}O_5$.

This altered view of the composition of digitaligenin necessitates alteration of the formula for digitalin. The analytical data obtained by Kiliani and Schmiedeberg agree well with $(C_5H_8O_2)_x$, and taking $x = 7$, the formula would be $C_{35}H_{56}O_{14}$, so that the splitting up of digitalin might be represented by the equation—



By oxidation of digitaligenin with chromic acid a crystalline product was obtained, together with resinous substances, and it appeared to be the toxigenone above described, though the quantity was too small for identification. If its identity with that substance can be established by further investigation an important step would be made in the knowledge of digitalis glucosides.

Last year Adrian put forward the statement that German digitoxin is identical with the "digitaline cristallisée" of Nativelle, but he did not give any experimental evidence in support of his opinion (*Nouv. Rem.*, 13, 78). Kiliani disputed

that view, pointing out that the analytical data published by Nativelle were not even remotely applicable to digitoxin, and at the same time he expressed some doubt as to the individuality of the French preparation. That circumstance has probably been the chief reason for the appointment of a commission by the Société de Thérapeutique to investigate the question. Kiliani had long before been engaged in the same inquiry, and though still unable to decide positively, he has now published some data which may be of assistance. In the first place examination of "digitaline cristallisée," prepared by Adrian and Co., has convinced him of its chemical individuality. By the splitting up of that preparation he has obtained products which are apparently the same as those yielded, in the same way, by digitoxin. The identity of the sugar product with digitoxose has been ascertained with certainty, and though some uncertainty remains as to the digitoxigenin and the anhydro-digitoxigenin, the very close relationship of the French preparation to the digitoxin of Schmiedeberg (Merck) cannot longer be doubted. The principal points of difference were as follow:—

1. French digitalin, as well as anhydro-digitoxigenin prepared from it, showed a somewhat higher amount of carbon than the corresponding German products.

2. A chloroform solution of French digitalin leaves, on evaporation, a transparent amorphous residue like varnish, which does not become crystalline until methyl alcohol is added to it, while a similar solution of digitoxin yields at once a distinctly crystalline residue.

3. Digitoxin can be split up at the ordinary temperature by a mixture of concentrated hydrochloric acid (2 parts) with 50 per cent. alcohol (8 parts), while the French product requires the temperature to be raised to 40° C.

4. So far as the crystalline form admits of measurement, there seems to be a difference.

For the final settlement of the point the preparation of definitely measurable crystals would be requisite, and in undertaking to carry that out in regard to digitoxin, Kiliani expresses a hope that the corresponding work may be carried out in regard to "digitaline cristallisée" by the French commission.

SELECTED PRACTICAL FORMULÆ.

HECTOGRAPH BASIS.

Shredded gelatin, 170, is mixed with water, 400, and allowed to stand until soft and swollen; glycerin, 1410, is now added, and the mixture heated on the water bath with continual stirring until it ceases to lose weight. While still warm it is poured into the frames.—*Zeit. d. allg. oest. Apoth. Ver.*, lii., 360.

HONEY CREAM.

Spermaceti, 60 grammes, is digested with nut oil, 480 grammes, and gamboge, 3.75 grammes, for 20 minutes on the water bath. Verbena oil, 10 drops, cassia oil, 20 drops, bergamot oil, 3 drops, rose oil, 3 drops, are then added. The mixture is filled into warm pots.—*Zeit. d. allg. oest. Apoth. Ver.*, lii., 360, after *Apoth. Ztg.*

FLUID DEPILATORY.

Tincture of iodine, 3; oil of turpentine, 6; castor oil, 8; alcohol (90 per cent.), 48; collodion, 100. Paint once per diem for three or four days.—*Zeit. d. allg. oest. Apoth. Ver.*, lii., 360.

PILOCARPINE HAIRWASH.

Tincture of jaborandi and of cantharides, of each 28 fl. pts.; eau de Cologne, 28 fl. pts.; ess. bouquet, 12 fl. pts.; distilled water to produce 480 fl. pts.

THE PHARMACEUTICAL SOCIETY AND ITS PRESIDENTS.

JOHN WILLIAMS.—1876-79.

MR. THOMAS HYDE HILLS was succeeded in the presidential chair in 1876 by John Williams, a worthy representative of the scientific side of pharmacy, in whom were also combined business capacity and perseverance. His published papers are marked by the practical application of chemical knowledge in the art of preparing medicines; as an instance may be mentioned those relating to salicylic acid and allied bodies. In another series he proposed to utilise the viscosity of glycerin to retain volatile substances, such as hydrocyanic acid and ethyl nitrite in solution. He was one of the first students in the Society's School, and as an indication of his future career, he gained the first prize in practical pharmacy in 1844. We are told that his knowledge of various branches of science in geology, entomology, numismatics, and physical science was astonishingly complete. He would rather amuse a visitor to his laboratory by the simplicity of his manner, and above all, he had the heartiest spirit of good-fellowship with everyone with whom he came in contact.

John Williams was born on March 9, 1824, and as a youth he entered the service of Mr. Morson, with whom he remained until he joined Mr. Hopkin to establish a firm long known in pharmacy. He was elected to the Council in 1870, to fill the vacancy caused by the retirement of Henry Bowman Brady; subsequently he became Treasurer and, later, President. In 1883, he was elected President of the British Pharmaceutical Conference. His firm became especially noted for the supply of fine chemicals, and he published many papers on chemical and pharmaceutical subjects.

The building which served as the business premises of Messrs. Hopkin and Williams was once the chapel in Hatton Garden rendered celebrated by the eloquence of Edward Irving. That was not the only time chemistry has invaded the precincts of theology; Professor Redwood did the same close by Red Lion Square. During the ministry of the great Scottish divine, the chapel was frequented by the Court and the aristocracy, and the Sunday services were regularly chronicled in the *Times* paper among the fashionable announcements. Mr. Williams died, March 3, 1889, having nearly completed his 65th year.

During his term of office, the Council of the Society was able to protect the interests of the trade in many ways. A Medical Act Amendment Bill, introduced by Dr. Lush and Sir Trevor Lawrence in 1877, contained provisions which would have affected chemists and druggists injuriously, but representations from the Council resulted in their removal from the Bill. Steps were also taken, in connection with the Dental Practitioners Bill, to secure registration for chemists who practised dentistry, and when

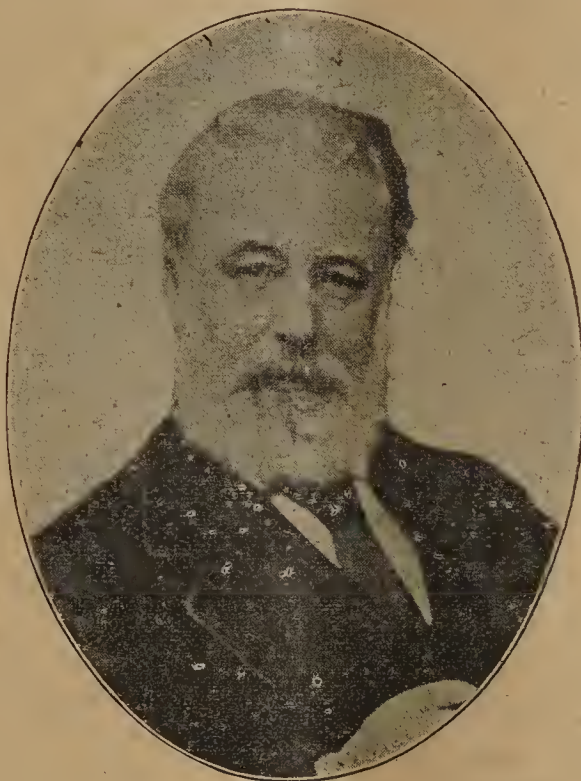
registered chemists were being threatened by the Medical Defence Association, the Society's solicitor was instructed to put himself in communication with the solicitor of the Society of Apothecaries, and a satisfactory result was arrived at.

Of still greater importance, however, was the attempt made by the Council of the Society to define the position of joint-stock companies in relation to the Pharmacy Acts. In February, 1878, it was reported to the Council that a grocer named Mackness, of Tottenham Court Road, who had been illegally carrying on the business of a chemist and druggist, under the style of the London and Provincial Supply Association, had paid a penalty for a breach of Section 15 of the Pharmacy Act, and subsequently sold his business to the London and Provincial Supply Association,

Limited. A month later proceedings were taken both against Mackness and against the Association for alleged breaches of Section 17 of the Pharmacy Act, 1868. With regard to the case against Mackness, it was held by the magistrate that the penalty he had previously paid under Section 15 covered the offence now charged under Section 17. One case against the Association for alleged insufficient labelling was dismissed, but the defendant company was convicted in a second case, notwithstanding that it was contended for the defence that a corporate body was not a "person" within the meaning of the Act.

In May following the hearing of these cases an action was brought against the London and Provincial Supply Association under Section 15, but though the sale of poisons by the defendant company was proved and admitted, judgment was given in its favour by the County Court Judge, on the ground that what had been done on behalf of the company was not unlawful so long

as the business was conducted by a duly qualified chemist and druggist. Reference was made to the fact that it was lawful for the executors of a registered chemist to continue the business if conducted by a duly qualified assistant, and the Judge expressed the opinion that this was a similar case, inasmuch as no offence would have been committed by the chemist in charge had he sold the articles for himself. It could not be contended, he said, that an offence had been committed simply because the profit made went into the pockets of unqualified persons, as that obviously was not within the mischief intended to be remedied by the Act. This decision was appealed against, the case being carried to the Court of Queen's Bench, which decided that the County Court Judge was wrong; the Appeal Court, on the other hand, reversed the Queen's Bench judgment, holding that the word "person" in Section 15 does not include a corporation, and as the House of Lords subsequently dismissed the further appeal by the Society, joint-stock companies have since been regarded as definitely exempted from the penalties imposed by Section 15 of the Pharmacy Act of 1868.



JOHN WILLIAMS.

THOMAS GREENISH.—1880-82.

Meanwhile, however, Mr. Williams had been succeeded as President by Mr. G. W. Sandford, who once more assumed the reins for a brief space, and he in turn had given place to Mr. Thomas Greenish, who yet, happily, survives. He is one who has seen many lands and peoples, and has not been content to study pharmacy at home. In 1841, he was assistant at Godfrey and Cooke's in Conduit street, of which establishment he is at this moment sole representative and proprietor. He has communicated various papers to pharmaceutical literature, the first being one on "Infusion of Horseradish"; and he is known in connection with the pharmacy of the phosphates. Mr. Greenish has also devoted himself to microscopic observation, and has made himself an authority in a special department of that science; indeed, he was one of the first to advocate the study of the microscope as bearing on pharmaceutical research. In 1871, Mr. Greenish was elected a member of Council, and he succeeded Sandford as President in 1880. He is probably better known to Continental pharmacists than any other English member of the craft, and his appearance at a foreign conference meets with instant recognition. It was during his presidency that the International Congress was held in London. His vacations have been spent in Hamburg, Rome, Paris, St. Petersburg, and Vienna; he has also visited New York, Philadelphia, and continued his journeyings as far west as Chicago, and thus he has become personally acquainted with many distinguished *confrères*, and accepted as a representative of British pharmacy.

One of the first steps taken after Mr. Sandford's re-election in those troublous times was to appoint a Pharmacy Act Amendment Committee. Another was the admittance of women as members of the Society. Useful work was also done in watching Bills in their progress through Parliament, the result showing, as Sandford expressed it, in his last address as President, the necessity of maintaining for the Society such a character as will enable it to assert itself before the Legislature when occasion may require. An occasion for such self-assertion on the part of the Society presented itself only too soon, for little more than two months later the House of Lords decided that corporations are not affected by Section 15 of the Pharmacy Act of 1868. Towards the end of the year 1880 the labours of the Pharmacy Act Amendment Committee resulted in the production of a draft Bill, one clause of which provided that the word "person" in Section 12 of the Pharmacy Act, 1852, and in Section 15 of the Pharmacy Act, 1868, should include corporate bodies. The idea of the draft Bill, which was submitted to the Lord President of the Council, was to render the restrictions on the practice of pharmacy and on the sale of poisons more definite.

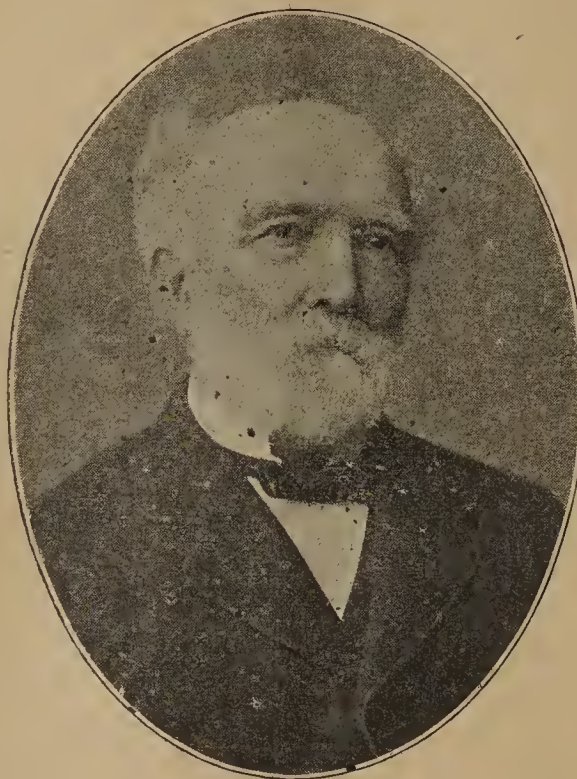
Communications had been addressed to the Society by the Privy Council, directing attention to the public danger arising from the indiscriminate distribution of poisons and other poisonous drugs in the shape of so-called "patent" medicines, and asking whether the Society had arrived at any conclusion as to the desirability of legislation on the subject. The draft Bill was the reply to that

question, as it included a clause with regard to the labelling of stamped medicines containing poisons.

As a matter of fact the Bill, unfortunately, never progressed beyond the draft stage. The Lord President of the Council declined to take charge of it, and though he agreed to receive a deputation from the Council on the subject, valuable time was lost in waiting for further communications from the Privy Council that never came, and it was at last decided not to press the matter further. Meanwhile another Government department had approached the Society with regard to the sale of poisons, the Home Secretary having requested the President to bring the subject before the Council, and report whether it had any suggestions to make for the amendment of the law relating thereto. Suggestions were accordingly made in a letter forwarded by Mr. Greenish and, after the Home Secretary had received a deputation from the Council on the subject, another written statement of suggestions was sent for his further consideration.

Perhaps the most notable event of Mr. Greenish's term of office was the meeting in the Society's house of the fifth International Pharmaceutical Congress, the attendance at which was both large and representative. A commission of pharmacists was appointed by the Congress to prepare an International Pharmacopœia, but so far that commission has hardly justified its existence, and the International Pharmacopœia is yet in the womb of the future. A more practical step was taken in placing on record the opinion of the Congress that "it is the duty of all pharmacists to urge that, in the future revision of any national pharmacopœia, it is necessary that there should be a permanent committee or commission comprising among its members the largest possible number of pharmacists." But even that resolution has not yet borne fruit in this country, and altogether the Congress would appear to have been useful only in so far as it afforded an opportunity for the representative pharmacists of the world to become personally acquainted with each other.

It is worthy of note that, in his address to the members at the last Annual Meeting of the Society over which he presided, Mr. Greenish referred to the deep and general discontent which appeared at that time to prevail throughout the country with regard to the condition of the trade of chemist and druggist. He attributed the trouble that existed, in great measure, to excessive competition resulting from the fact that young men of deficient education were continually being hired into an overcrowded trade. Instead of being educated pupils, articled to a principal to learn a trade, they were admitted from a low social scale, with deficient early education and at small premiums, mainly for the sake of their manual labour. "The desire to obtain cheap labour," he said, "is greater than is consistent with a due regard to the advancement of pharmacy. The majority are utterly ignorant of the character of the examinations they must become qualified to pass, and also the expense that must necessarily be incurred in acquiring the requisite education." Subsequent experience has only tended to prove the truth of those words.



THOMAS GREENISH.

PHARMACOPŒIAL ANOMALIES.

BY EDWIN DOWZARD, F.C.S.

No doubt the revisers of the Pharmacopœia have made many valuable and useful additions to the methods for the examination of crude drugs, pharmaceutical preparations and chemicals, the aim seems to have been to abolish rule of thumb and to eradicate that phrase "about." There are, however, several inconsistencies which it would be well to point out.

In the preface to the 1898 B.P. the following words occur: "The amount (? quantity) in cubic centimetres of a volumetric solution which will react with a stated amount (? quantity) of a solid or liquid substance, instead of being extended to the two or three places of decimals which theory (? accuracy) would require, is given only to the degree of accuracy which may easily be observed on an ordinary burette. In short, the procedure in these and other chemical operations is now left to the skill and judgment of workers who are assumed to be duly trained."

This paragraph seems to indicate that the pharmacopœial testing should be performed by experienced analysts, and yet an ordinary burette is considered to be the instrument analysts are in the habit of using. So far as I am aware this is not the case. Standardised burettes, divided into tenths, which can easily be read to 0.025 C.c., are extensively used by first-class analysts. And again, the above paragraph would indicate that the figures given are to the nearest decimal place. It will be seen further on that in several instances this is not the case.

HYDROCHLORIC ACID.—The B.P. describes this acid as containing 31.79 per cent. by weight of hydrogen chloride, and it says that "Each gramme should require 8.7 cubic centimetres of the volumetric solution of sodium hydroxide."

$$0.03619 \times 8.7 = 0.31485 \text{ or } 31.485 \text{ per cent. HCl.}$$

There is a difference of 0.305 per cent. between this result and the percentage specified by the B.P. It would be more correct to substitute 8.8 for 8.7 C.c.

B.P. figure	31.790 per cent.
8.8 C.c.	31.847 "
8.7 C.c.	31.485 "

the error would then only be 0.057 per cent. in excess of the specified percentage.

HYDROCYANIC ACID (dilute).—The B.P. describes this acid as containing 2 per cent. by weight of hydrogen cyanide:—

"Each gramme should require 3.7 cubic centimetres of the volumetric solution of silver nitrate."

$$\begin{aligned} \text{But if 1 C.c. N/10 AgNO}_3 &= 0.00537 \text{ gram. HCN} \\ 3.7 + 0.00537 &= 0.0198 \text{ or } 1.9869 \text{ per cent.} \end{aligned}$$

LACTIC ACID.—The B.P. describes this acid as containing 75 per cent. of hydrogen lactate:—

"Each gramme should require 8.3 cubic centimetres of the volumetric solution of sodium hydroxide."

$$\begin{aligned} 0.08937 + 8.3 &= 0.74177 \text{ or } 74.177 \text{ per cent.} \\ 0.08937 + 8.4 &= 0.7507 \text{ or } 75.070 \text{ per cent.} \end{aligned}$$

In the case of nitric acid, the B.P. specifies that it shall contain 70 per cent. by weight of hydrogen nitrate, and adds that "each gramme should require 11.1 cubic-centimetres of the volumetric solution of sodium hydroxide."

$$\begin{aligned} 0.06258 \times 11.1 &= 0.6946 \text{ or } 69.46 \text{ per cent. HNO}_3. \\ 0.06258 \times 11.2 &= 0.7008 \text{ or } 70.08 \text{ per cent. HNO}_3. \end{aligned}$$

It will be seen from the above that the more correct figure is 11.2.

The above are not the only inconsistencies of the 1898 B.P., but just a sample. The discrepancies involved are certainly not great, but they would not be tolerated in a modern text-book on volumetric analysis.

No analyst would think of using exactly one gramme of bitartrate of potash.

If a sub-multiple of the molecular weight of the substance to be tested is taken, the actual percentage of bitartrate may be arrived at by simply multiplying the number of cubic centimetres used by 2, 4, 6, as the case may be, for instance. If 9.3375 grammes of bitartrate of potash (corresponding to half the molecular weight of bitartrate of potassium) required 48.75 cubic centimetres of the volumetric solution of sodium hydroxide, the sample would contain—

$$48.75 \times 2 = 97.5 \text{ per cent. bitartrate.}$$

The most convenient instructions would have been those which allowed the percentage to be read from the burette directly or by a simple multiplication.

A few cases are given below showing the means by which the revisers of the 1898 B.P. might have avoided erroneous statements:—

HYDROCHLORIC ACID, mol. wt. 36.19.—3.619 grammes should require nearly 31.8 cubic centimetres of the volumetric solution of sodium hydroxide.

B.P. description	31.790 per cent. HCl.
B.P. method	31.485 " "
Correct method	31.800 " "

LACTIC ACID, mol. wt. 89.37.—4.4685 grammes should require 37.5 cubic centimetres of the volumetric solution of sodium hydroxide.

$$37.5 \times 2 = 75.0 \text{ per cent. lactic acid.}$$

B.P. description	75.000 per cent. lactic acid.
B.P. method	74.177 " "
Correct method	75.000 " "

RECENT WORK IN BOTANY.

ARSENIC IN PLANTS.—Herr J. Stoklasa has investigated the occurrence of arsenic in the vegetable kingdom, and its poisonous effect on plants. He states that arsenious and arsenic acids are both highly poisonous, even in excessively minute quantities, and that the statement that arsenic acid may replace phosphoric is incorrect. Arsenic is, however, a very widely-diffused element, especially in association with sulphuric acid. In superphosphates it may even be present to the extent of 0.3 per cent., but its presence in the form of $\text{As}(\text{OH})_3$ or of $\text{AsO}(\text{OH})_3$ is not injurious to vegetation unless it exceeds 0.4 per cent.—*Zeitschr. f. landwirthsch. Vers. in Oesterreich*, 1898, p. 154.

FUNCTION OF IRON IN PLANTS.—Herr J. Stoklasa confirms the statement of Molisch, that iron is not, as has been stated, a necessary constituent of chlorophyll. He finds, however, in bulbs of *Allium cepa* and seeds of *Pisum sativum* a substance containing iron, and identical in composition with animal hæmatogen. The same substance was found also in *Mucor mucedo*, *Boletus edulis*, and *Bacterium megaterium*. Its function appears to be to take part in the formation of the cell-nucleus in young organs; and the author believes iron to be, like phosphorus, an essential constituent of the nucleus.—*Comptes rendus Acad. Sci. Paris*, cxxviii., 1898, p. 282.

FORMATION OF DIASTASE BY FUNGI.—Herr J. Katz has carried out a series of experiments on *Penicillium glaucum* and *Aspergillus niger*, from which he concludes that these fungi have the power of forming diastase, the presence of starch not being absolutely necessary for this process. The presence of grape or cane sugar checks the formation of diastase, but the sugar is inverted. In the case of cane sugar 1.5 per cent. prevents its formation, while of milk sugar as much as 10 per cent. is required. *Bacillus megaterium* exhibits very similar phenomena. The continual removal of the diastase as formed promotes the production of fresh quantities.—*Pringsheim's Jahrb. f. wiss. Bot.*, vol. xxxi., 1898, p. 599.

PHARMACEUTICAL SOCIETY.

—◆— EVENING MEETING IN LONDON.

The first evening meeting of the session was held on Tuesday, the 8th inst., when the chair was taken at eight o'clock by Mr. WALTER HILLS, President of the Society. The lecture hall was unusually crowded. He at once called on Professor Ramsay, F.R.S., whom he was proud to say was an honorary member of the Society, to give his promised lecture

On the Gases Present in the Atmosphere.

Professor RAMSAY, referring to the statement often made that science was international, and that there was no patriotism about it, said nevertheless it was a curious fact that all the discoveries in connection with the atmospheric air had been made by Britons. He then gave a brief *résumé* of the work done by early investigators, Boyle, John Mayo, Hales, Black, Rutherford, Scheele (to whom the credit of discovering oxygen was due, though he was anticipated in publication by Priestley), and Cavendish, pointing out that the latter in his investigations on nitrogen found a small residue, which seemed incapable of combining with oxygen even in the presence of caustic soda and when electric sparks were passed through it; the proportion he put at not more than 1/120th. After briefly referring to the researches of Boussingault and Schonbein on the air, principally in connection with the small dusty particles found in it, he came to the experiments of Lord Rayleigh, beginning in 1893, the object being to ascertain exactly the densities of the various gases as compared with hydrogen. Early in 1894 Lord Rayleigh wrote to *Nature*, announcing what appeared to him to be an anomaly, namely, that whilst atmospheric nitrogen was a little over fourteen times as heavy as hydrogen, nitrogen prepared from ammonia or from other chemical compounds was slightly lighter, the difference being about 1 in 230. No explanation was forthcoming at the time, but Lord Rayleigh talked the matter over with several of his friends, including the lecturer, who had some time before suggested to him, at his request, a method of preparing nitrogen by passing a mixture of air and ammonia over red-hot copper, when the oxygen united with the hydrogen of the ammonia, and the nitrogen from both the air and the ammonia passed on. He suggested to Lord Rayleigh that probably atmospheric nitrogen was not as pure as it was supposed to be, and directed his attention to Cavendish's experiments and the residue he had found when combining nitrogen with oxygen. Lord Rayleigh did not at first attach much weight to the suggestion, and thought it more likely that different compounds contained different kinds of nitrogen. These conversations led to their both making further investigations, Mr. Percy Williams, who was then a student in the University College laboratory, making some of the first experiments on the absorption of nitrogen by metallic magnesium, when it was soon found that the nitrogen thus obtained, or rather the last residue unabsorbed, was a little over sixteen times the weight of hydrogen, and before long, working on larger quantities, they obtained nitrogen nearly nineteen times as heavy as hydrogen. Mr. Williams then had to give up the work in order to prepare for and pass his examination, and he (Professor Ramsay) had to continue the investigation by himself. On August 18 in that year an announcement was made at Oxford of the discovery of this gas. Meantime Lord Rayleigh had not been idle, and repeating Cavendish's experiments with more perfect apparatus, he obtained a residue which could not be made to combine with oxygen by any means whatever. They then came to the conclusion that it must be a new gas, and the name argon was chosen for it, because it was not found possible to make it combine with any other element. It existed in the atmosphere to the extent of 0.8 per cent., a very considerable proportion being about twenty-five times as much as the quantity of carbonic acid usually present, and it was only reasonable to suppose that if it would combine at all, some of its compounds would have been discovered long ago. It had been tried with every conceivable substance, but no combination could be effected. The name argon was therefore chosen, signifying indifference, or incapacity for combination. On January 31, 1895, an account of these experiments was given to the Royal Society, and next morning he had a letter from Prof. Meyers referring to some experiments by Dr. Hildebrand of the United States Geological Survey, in which he got a considerable quantity of nitrogen from a rare

mineral called cleveite. He had heard of those experiments, but had forgotten them, but thereupon he obtained some of this mineral—all there was in London—and got nitrogen from it, though some air got mixed with it, and it was set aside for a time. In March some of it was put into a tube and its spectrum examined, when they were struck with the appearance of a bright yellow single line, which further examination showed not to correspond with the double yellow line of sodium. Having heard that a bright yellow line had been observed in the spectrum of the chromosphere by a French astronomer, which had been further investigated by Lockyer and Frankland, who had given the gas which produced it the name of helium, they calculated the wave length of this bright yellow line, and found it exactly corresponded, and therefore concluded that they had actually obtained from argon terrestrial helium. After purifying helium and argon it was found that argon weighed nearly twenty times as much as hydrogen (19.94), and helium practically twice as much. In the case of most gases, such as oxygen, nitrogen, or chlorine, their weights compared with hydrogen represented their atomic weights; but in the case of mercury, though its atomic weight was 200, the density of its vapour was not 200, but only 100 times that of hydrogen, and the conclusion drawn was that the molecule of mercury was mon-atomic, whilst each molecule of oxygen, hydrogen, nitrogen, and so on, contained two atoms. When the temperature of a gas was raised it expanded, and if it could not expand the pressure rose, but in the case of mercury vapour the pressure rose much more rapidly than in the case of oxygen or nitrogen, the explanation being that the heat communicated to these latter gases not only caused the molecules to move more rapidly in the chamber in which they were confined, but also created an inter-molecular movement of oscillation or vibration, but in the case of mon-atomic gases this could not take place, and therefore the pressure was increased. This was found to be the case with argon and helium, and the conclusion, therefore, was that the molecule of each contained only one atom, not two, as in the case of oxygen and hydrogen. The density of argon being 20, therefore its atomic weight would be not 20, but 40, as compared with hydrogen, following the analogy of mercury, and the atomic weight of helium on the same principle must be about 4. Reference was then made to the arrangement of the elements according to their atomic weights by the late Mr. John Newlands, who found that they fell into certain groups which he termed octaves, as after each set of seven a similar series seemed to recur, but with certain lacunæ here and there in the regular order of the series, and, curiously enough, helium and argon seemed to fit into this arrangement and fill two of the gaps. Following up this idea, there ought to be another element between helium and argon. If the atomic weight of helium were taken as 2 and argon as 20, the intermediate place—11—was already occupied by boron; but if they were taken as 4 and 40, as he had suggested, there was room for an element with an atomic weight of 20, and probably another further up the scale. They thereupon set about searching for an element with an atomic weight of 20, and first of all it was thought advisable to search further in the source of helium, because its spectrum rather indicated that it was not a simple gas but a mixture. Professor Norman Collie and himself spent the best part of one summer in fractionally diffusing argon through a clay tobacco pipe, but the passage of the gas was so slow that the experiments became very tedious, and only four diffusions were accomplished, the result being that the gas which passed first had a density of 19.8, and the last portion of 20.2, but they did not regard these experiments as conclusive. They then went on to helium, which they divided into two portions, one heavier than the other, but the spectrum of each was the same, and they could not regard either as absolutely pure. Later on Dr. Travers and himself resumed the investigation, and stuck to it for four months, the upshot being to prove that the heavier portion of the helium had a little argon mixed with it. Then the idea suggested itself that possibly the nitrogen of the air had still another gas mixed with it, and he and Dr. Travers started on another experiment, making large quantities of argon, which was carefully collected, as was also the residue (Professor Ramsay here described the method of preparation by means of nitrite of magnesium). By this time Dr. Hampson, who was working for Brin's Oxygen Company, had devised an ingenious apparatus by which large quantities of liquid air and liquid oxygen could be readily obtained; and getting a considerable supply of these liquefied gases they began to play with it in various ways. Their intention was to liquefy argon and then fractionally distil it, and eventually by this means they suc-

ceeded in obtaining a very small quantity of residue which, when all the oxygen mixed with it had been removed, showed a distinct spectrum, and to this they gave the name of krypton.

The lecturer here showed the method which had been found most convenient for preparing small quantities of argon, passing the nitrogen of the air through a tube containing a mixture of powdered magnesium and lime, which was heated by a gas flame, thus producing metallic calcium, which rapidly absorbed the nitrogen, leaving the argon as a residue. The argon thus produced was afterwards passed into a vacuum tube, and its characteristic spectrum shown. He also exhibited the original argon tube, which still contained the gas, its spectrum shown by means of direct vision spectroscopes, which were handed round. The spectrum of helium was shown in the same way. The temperature at which argon liquefied was found to be -184°C ., somewhat below that at which oxygen boiled, so that there was no difficulty in working with it. Argon formed a colourless liquid in which white specks floated. The first portion which boiled off had a new spectrum, and a density of 17; the last portion a density of 22.5, which they supposed to be due to krypton, so that, obviously, argon was a mixture, though its purity was equal to 99 per cent. The later portion had been subjected to the same method of purification—cold compression and subsequent evaporation—but there was still a residue which could not be made to liquefy. This was found to have a density of 9.76, and it looked as if it were the missing link of which they were in search. After much trouble in finding a name for it as they had had in conducting the experiments, they called it neon, or the new one. It had been further investigated and its spectrum photographed, when it was found that one of its lines coincided with the yellow line of helium, which proved that it contained that gas. The problem then was how to separate two uncondensable gases from each other. It could be done by diffusion, but the process would be so tedious as to be really impracticable. Dr. Travers then suggested liquefying some oxygen and neon together, and then boiling off the oxygen, which would probably take with it more helium than neon. This was tried very satisfactorily, and the neon which remained had practically the density they were looking for, viz., 10.1. That was again fractionated with oxygen and the heavier portion rejected, and the density was then found to be a little on the wrong side of 10. So it varied, a little heavier, or a little lighter, according to the proportion of helium or argon associated with it, and there could be little doubt that, if it could be obtained perfectly pure, it would occupy just the right position between helium and argon.

Krypton had not been much worked with as yet, but its spectrum, and also that of neon, contained a large number of red, orange, and yellow lines, which rendered it very beautiful, and also some in the green. The heaviest component of the air had a density of about 32.5, and there was a gap for an element between bromine and rubidium, having a density of about 41, and an atomic weight of from 80 to 82.5. This it was proposed to term xenon. There still remained another element to be discovered to make the series complete, coming between iodine and caesium, which would probably be a liquid, but up to the present there was no indication where it should be looked for. In conclusion Professor Ramsay said that though these gases had apparently no commercial importance, and probably no pharmaceutical interest, their discovery was of the highest scientific value from the confirmation they afforded to the atomic theory. 1/100th part of the atmosphere was argon, and if its combination with other elements were possible, some compound would almost certainly have been found. The demonstration of its existence, therefore, if not of any practical use, fulfilled a very important purpose in putting in order the ideas of the chemist.

The PRESIDENT proposed a hearty vote of thanks to Professor Ramsay for his brilliant and interesting lecture, which was carried by acclamation.

CITRIC ACID IN WHOOPING COUGH.—A 10 per cent. solution of citric acid in simple syrup is stated by M. Tilho to be a useful remedy in the treatment of pertussis. It is employed locally by swabbing the periglottic region of the larynx. It also proves to be an efficient prophylaxis against infection. He has succeeded in preventing the disease in many children living with others infected by this means, or merely by the administration of small quantities of citric acid lemonade.—*Boston Med. Journ. Surg.*, cxxxviii., June 30, 1898, 626.

DONATIONS TO THE LIBRARY AND MUSEUM.

At a meeting of the Library, Museum, School and House Committee, on Wednesday, November 9, the Librarian and Curator presented the following reports of donations:—

To the Library (London).

University of Durham:—Calendar, 1898-99.
 Royal College of Surgeons of England:—Calendar, 1898.
 City of London College:—Calendar, 1898-99.
 University College, Nottingham:—Calendar, 1898-99.
 Mason College, Birmingham:—Calendar, 1898-99.
 Pennsylvania Pharmaceutical Association:—Proceedings, 1898.
 Mr. W. W. Will, London:—Prescription Reading, 1898.
 Mr. W. D. Mason, Grimsby:—Defective Eyesight, 2nd edition, 1898. Two copies.
 Professor G. Lagerheim, Stockholm:—Sagina Normaniana, 1898; Mycologische Studien, 1898; Botaniken och det botaniska Institut, 1898; Rosenberg, Ueber die Verwendung von Prodigiosin, 1898.

To the Library (Edinburgh).

Mr. E. W. Lucas, London:—Practical Pharmacy, 1898.
 Mr. W. D. Mason, Grimsby:—Defective Eyesight, 1898.

To the Museum (London).

Sir E. Frankland, K.C.B., F.R.S., Reigate:—Specimens of the four poisonous active principles of *Urechites suberecta*.
 The Director, Royal Gardens, Kew:—Specimen of Longan fruits (*Nephelium longana*), as used in Shanghai for making a febrifuge drink.
 Messrs. Hodgkinson, Clarke, and Ward:—Specimen of opaque bdellium.
 Messrs. Burroughs and Wellcome:—A strophanthus pod and six specimens of strophanthus seeds.

To the Herbarium.

Dr. E. B. Ormerod, Queensland:—Specimens of *Solanum chenopodium*.
 Dr. C. Symes, Liverpool:—Living plant of the Japanese chilli.

CHEMICAL SOCIETY.

A meeting was held on Thursday, November 3, at 8 p.m., at which Professor DEWAR, F.R.S., presided. There was a fair attendance at this, the first meeting after the summer vacation. The minutes of the last meeting were read and confirmed, and after some of the newly-elected Fellows had signed the Register and formally shaken hands with the President, Professor DUNSTAN read out the certificates of the candidates for election. This paved the way for the business of the evening.—The PRESIDENT announced that he considered it his duty to express the regret and sorrow which all present in some degree must feel at the loss by death of John Alexander Newlands, one of the most distinguished Fellows of the Chemical Society. He wished to convey to the family of their late friend the sincere condolence of the members. It had been very generally held that the countrymen of Newlands had been tardy in recognising his great genius and his services to science in being one of the first to have an idea of a natural classification of the elementary bodies. Indeed, for many years the Chemical Society had failed to pay honour to so great a discoverer. These circumstances were due not so much to lack of appreciation as to a desire to foster practical research and give it precedence before mere theories. Far greater satisfaction, however, must have been Newlands' when he saw the elaboration and expansion of the theories which he at first tentatively propounded. In concluding his brief but eloquent and fitting tribute, the President threw out the suggestion that a large portrait of Mr. Newlands should be placed in the room to serve as a lasting memorial.—Referring to the large number of papers before the meeting (22), Professor DEWAR remarked that it would be impossible, in view of a subsequent committee meeting, to get through even one-half of them. Many would, therefore, be taken as read.—Dr. Scott was then asked to read a paper by George Dean, B.A., on

A Determination of the Equivalent of Cyanogen.

The investigation was undertaken in order to indirectly arrive at the atomic weight of nitrogen. This was done volumetrically, using pure materials and finding the equivalent of potassium bromide to silver cyanide. As a result the figure 14.066 was obtained, as against Stas's determination of the atomic weight of nitrogen as 14.044. One peculiarity of the process was mentioned, in that on adding one drop of the silver solution during titration it took nearly a week for the cloudy precipitate to subside.—Professor DEWAR, who alone discussed the paper, spoke in terms of highest praise of the work which was embodied in it. Himself and Dr. Scott were the first to adopt that indirect method of atomic weight determination, and had determined the atomic weight of manganese. He showed how from work

done in this direction by Stas, the atomic weight of carbon appears to be 11.981. He then called for a vote of thanks to the author for his valuable communication, and requested Dr. Sydney Young, F.R.S., to read a series of papers on

The American Hydrocarbons,

by himself, and also in conjunction with F. E. Francis, B.Sc., Ph.D., and D. H. Jackson, M.A. These dealt with the composition of American petroleum; the separation from it of normal and iso-heptane; the boiling points and specific gravities of mixtures of benzene and normal hexane; and the action of fuming nitric acid on the paraffins and other hydrocarbons. The impurities mixed with the hydrocarbons were removed by treatment with a mixture of nitric and sulphuric acids, and subsequent fractional distillation. It was found that American petroleum differs from the Russian and Galician varieties. The same hydrocarbons are present, but the American brand contains a larger relative amount of paraffins, the Russian having a larger proportion of naphthenes and aromatic compounds, while the Galician stands nearly midway in this respect. The investigations brought to light the interesting fact that the isoparaffins are readily acted on by fuming nitric acid. A curious point was revealed in that, on collecting the petroleum in fractions, benzene came over at 65° instead of at its boiling point (about 80° C.). The explanation for this anomaly may be that, though benzene and hexane are miscible in all proportions, yet they may behave as partly immiscible liquids in these circumstances, and have abnormal vapour pressure. Toluene behaves in a similar manner, distilling at 95° instead of 111° C. The American and Russian petroleums have many points of resemblance, *e.g.*, the ratio of the quantities of distillate for equal increments of temperature is constant.—This was followed by a paper by W. J. POPE on

A Composite Sodium Chlorate Crystal in which the Twin Law is not followed.

—The meeting concluded with two papers by T. M. LOWRY, B.Sc., on

Stereo-Isomerism of Chloro- and Bromo-Nitro-Camphor, and Camphoryloxime.

The remainder of the papers were taken as read, including a note on "The Action of Light on Platinum, Gold, and Silver Chlorides," by E. SONSTADT, and a paper on "Methane-trisulphonic Acid," by E. H. BAGNALL, B.Sc.

POISON: ITS LEGAL DEFINITION AND SALE.*

BY F. H. FREERICKS.

Legislation for pharmacy is at this time receiving general attention from those interested in its advancement, the result of which is evident in several recently enacted or amended pharmacy laws. While these improvements have been limited, as a rule, to requiring better evidence of knowledge and a higher standard of education from applicants for registration, the work of the American Pharmaceutical Association during the last few years indicates how deeply concerned the active and progressive men in pharmacy are regarding its improvement along other lines.

In determining the fitness of applicants desiring to practise pharmacy, the authorities are restricted to examinations, either oral, written or practical, but after the fitness of the licentiate has been established, the next most important function of the law is the regulation of the dispensing and sale of poisons.

The great interest manifested throughout the country in the efforts of the Committee on Legislation has resulted in a general and widespread desire to improve upon the poison and label laws.

Clearly and definitely it was proven by the splendidly formulated report of this committee last year that nowhere can there be found a clear and concise definition of the word "poison," positive enough to base a law upon. If it were possible to concisely state what shall constitute a poison, it would be a comparatively easy matter to frame effective laws regulating the sale of such substances.

But since it is impossible, or at least impracticable, to place upon

the word "poison" a construction sufficiently broad to be used without hardship and sufficiently limited to be safe, it is evident that if the life and health of the public are not to be grossly endangered, a positive and unequivocal definition of what shall constitute a poison must be promulgated from some authoritative source. The question next arising is, who can best assume the authority to give this definition? In the writer's opinion the proper authority for this purpose is the Revision Committee of the United States Pharmacopœia. The definition of this committee would at least be national in character and its provisions would be binding the country over.

State legislation, however much to be lauded, is insufficient; efforts in that direction, while no doubt often inaugurated by able pharmacists, are subject to the desires and changes of uninformed members of legislative bodies.

If the United States Pharmacopœia classifies substances to be recognised as poisons, the proper legislation will be within reach in the next few years, as all legislative bodies recognise the Pharmacopœia as an authority safely to be followed. The foundation for a law, just and applicable to all, will be furnished and legislatures will be prompt to act in accordance therewith and to finish that for which the Pharmacopœia can offer a basis, by defining what should constitute a poison, with proper laws regulating its sale.

Much has been said for and little against the proposition of the adoption of maximum doses in the next issue of the Pharmacopœia. The opinion now prevails that this will be done and, no doubt, such addition will prove of great advantage to physicians and pharmacists alike. If this can be done, why cannot the Pharmacopœia also state what drugs shall be considered as of dangerous character, based upon the maximum doses in which they may be administered? It can be argued that in the past it has been the distinct desire of the Committee of Revision to recognise only such substances as are of sufficient remedial value to deserve space in the Pharmacopœia and that there are a great many substances of poisonous character which have not been found deserving of such distinction. While this is no doubt true, it must be acknowledged that the Committee have no need of precedents in order to add to or omit from its scope of usefulness and if they deem it proper or necessary to separately or collectively define what shall constitute a poison, it certainly lies within their province to do so, whether all substances coming within that ruling are, or have been, otherwise officially recognised or not.

In order to determine more clearly the sense of the preceding lines and to illustrate the idea set forth therein, a rough classification such as the Pharmacopœia might adopt is appended below.

Class A.

Hydrocyanic acid, compounds of antimony, arsenic, mercury (except calomel), silver cyanide and sulphocyanide, nitrobenzin, oils of tansy, croton, pennyroyal, and savin. Phosphides, phosphorus, wood alcohol, cocaine, chloral, apomorphia, aconite, belladonna, cotton root bark, conium, cantharides, cannabis indica, colchicum, digitalis, duboisia, ergot, fish berries, gelsemium, black and white hellebore, hyoscyamus, ignatia, nux vomica, opium, poison oak, pilocarpus, physostigma, strophanthus, stramonium, veratrum viride, elaterium and their active principles.

All other drugs and chemicals the maximum dose of which is one decigramme or less, as given in standard works on pharmacy.

Class B.

Acids: carbolic, hydrochloric, nitric, nitrohydrochloric (conc.), phosphoric, oxalic, picric, sulphuric. Aqua ammonia all strengths. Compounds of barium, copper, cobalt, and soluble compounds of lead and zinc. Potassium and sodium hydrates. Bromine, iodine, bitter almonds, creosote, chloroform, ether, essential oils of mustard and bitter almond. The term compound as applied in Classes A and B refers to chemical combinations.

While such an arrangement and definition of all that shall be considered as of poisonous character is not perfect, the writer contends that it is an improvement and leaves room for severe criticism only in making a dividing line for all such not specifically mentioned as those the maximum doses of which are 0.1 Gm. or less. It must be admitted, as a matter of course, that there are some active principles and synthetic compounds, the dose of which is more than 0.1 Gm, that would possibly be considered as dangerous, but, on the other hand, these are such that if the limit line would be put 0.2 or 0.5, some of most harmless nature would be included.

* Read before the American Pharmaceutical Association at Baltimore.

NOTICES OF BOOKS.

GILL'S 'CHEMISTRY FOR SCHOOLS' is a well-known elementary text-book, and the tenth edition, revised and enlarged by D. Hamilton Jackson, B.Sc., Ph.D. (London: Edward Stanford. Price 4s. 6d.) is certain to maintain the reputation of the work. The book has long been a favourite with students preparing for the London University Matriculation Examination, but it contains much more information than is strictly required for that purpose, and it serves as an excellent introduction to the practical study of chemistry. "Its object is to supply a direct means of training the mind in habits of correct observation of facts and of accurate reasoning from facts to generalisations; in other words, to cultivate scientific habits of thought." The authors could have set no better object before them, and it must be acknowledged that it is fully attained.

'FIRST STAGE INORGANIC CHEMISTRY (PRACTICAL),' by Frederick Beddow, D.Sc., Ph.D. (London: W. B. Clive. Price 1s.), as its name implies, is adapted to the requirements of the Science and Art Department. It deals exclusively with simple experimental work, including the preparation of some common elements and compounds, simple quantitative experiments, and elementary systematic analysis. The book should serve as an excellent guide for beginners.

MITCHELL'S 'QUANTITATIVE EXERCISES,' Parts I. and II. (Reading: National Publishing and Supply Association, Ltd. Price 1s. each net), have now reached their second edition, as they well deserved to do. Sundry corrections and additions have been made by the author to Part I., and improvements introduced in the method of carrying out several of the experiments. The second part has been revised and enlarged by the insertion of a course of qualitative analysis, additional exercises in volumetric analysis for pharmaceutical students, and some typical preparations. The section on qualitative analysis is interleaved with blank paper for notes. Both these books can be cordially recommended to beginners in the study of quantitative chemical work.

BRIGGS AND BRYAN'S 'MIDDLE ALGEBRA' (London: W. B. Clive. Price 3s. 6d.), based on Professor Radhakrishnan's book, is adapted to the standard of examinations of intermediate difficulty, such as the intermediate examinations in science and art of the London University, and it will therefore meet a definite want. A knowledge of the more elementary properties of quadratic equations and progressions is assumed on the part of students using the book, and the Indian work has been subjected to numerous alterations and modifications to meet the needs of English students.

'SECOND STAGE MATHEMATICS,' by William Briggs, M.A., LL.B. (London: W. B. Clive. Price 3s. 6d.), includes Euclid, Books 2, 3 and 4, with miscellaneous exercises and riders thereon; algebra as far as the theory of quadratic equations, and trigonometry to the logarithmic solution of oblique angled triangles. For its special purpose the work contains all that the student requires, put as clearly and concisely as possible, and this useful addition to the Organised Science Series will be found just the thing for pharmaceutical students who have an elementary knowledge of Euclid and algebra, and wish, as they ought, to proceed further in the study of mathematics.

'THE QUALITATIVE EXAMINATION OF POWDERED VEGETABLE DRUGS,' by Professor H. Kraemar, is a reprint from the *American Journal of Pharmacy*, of a lengthy paper given in abstract at the Baltimore meeting of the American Pharmaceutical Association. The author gives a scheme for the determination of unknown powdered drugs, confining himself, of course, to American drugs and their adulterations. So little has as yet been published in the form of definite tables or analytical charts on this subject that the details are well worthy of perusal by every pharmacist and analyst who wishes to keep up to date with recent histological investigations of drugs. Professor Kraemar gives a primary division of powders according to colour. Subsequent divisions depend on the presence or absence of fibro-vascular tissues, the presence of crystals, secretion hairs or reservoirs, reserve starch, inulin, pollen grains, and tannin masses. Animal and mineral powders are recognised by burning, and by solubility or insolubility in water, also by various chemical tests. The importance of testing powdered drugs is apparently to be recognised in the next United States Pharmacopœia, and it is evidently intended that the education of pharmaceutical chemists in the United States shall keep pace with the times.

COMPANY TRADING.

At the official reception of the new Lord Mayor of London, at the Law Courts, on Wednesday, the Lord Chief Justice spoke at length on company frauds and the necessity of further regulating company trading by special legislation. He said:—I take this opportunity—which I think is suitable for the purpose—to call your attention to another class of fraud which is rampant in this community, fraud of a most dangerous kind, widespread in its operation, touching all classes, involving great pecuniary loss to the community, loss largely borne by those who are least able to bear it. And, even much more important than this, fraud which is working insidiously to undermine and corrupt that high sense of public morality which it ought to be the common object of all interested in the good of the community to maintain, fraud blunting the sharp edge of honour and besmirching honourable names. I need not tell you I am alluding to the frauds practised in abuse of the law relating to the formation of companies with limited liability. That law has effected much good. Its object was to enable that to be done by honest co-operation of the many which could not be done by the unaided efforts and resources of one or a few. But it has been, I am sorry to say, in many cases—of course a minority, and I hope a small minority of cases, but still a minority deserving and demanding public attention—prostituted by the greed of unscrupulous persons in the hurry to obtain great wealth without being willing to put forth for its acquirement honest toil and honest endeavour. This fraud, like the mythological character, Proteus, has assumed many and various aspects and disguises; and the problem, which is not yet solved, as I conceive and as experience shows, by existing legislation, is to reconcile the useful operation of the Companies Acts with such machinery, as will minimise, if it cannot wholly prevent, the evils to the nature and extent of which I have referred. . . . I have heard it said that it is impossible to make the law more stringent, because it will frighten away from the direction of public boards honourable and honest men. I do not say that consideration is to be disregarded. Far from it; but I do not believe that any honourable and honest man who desires, according to his conscience, to discharge the trust which is imposed upon him would suffer by greater stringency of the law to give effect to the two objects to which I have referred.

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.

Confectio Sulphuris.—The replacement of part of the syrup by glycerin will prevent this confection becoming dry. The 1885 confection when stored in an ordinary covered jar very soon formed a dry crust on the surface, due to the crystallisation of the sugar through loss of water.

Decocta.—Thirteen decoctions were official in the 1885 B.P., but only three have been retained in the present Pharmacopœia. Of the ten omitted three were made from drugs not now official, viz., Iceland moss, pearl barley, and oak bark. The decoctions of poppy, pareira, sarsaparilla (simple), and taraxacum have fallen into disuse, while the decoction of broom is omitted and an infusion of the same drug introduced. The compound decoction of sarsaparilla may also be regarded as replaced by the concentrated compound solution of sarsaparilla, which follows the old compound decoction very closely in composition, although the sarsaparilla is exhausted by infusion in place of decoction. The only decoction whose disappearance from the Pharmacopœia may be regretted is that of cinchona. Although this decoction was unsatisfactory from a pharmaceutical point of view, yet it was extensively used, for the reasons given in the Students' Page, April 24, 1897.

Emplastra.—The only important changes in this group of preparations are the omission of chalybeate, galbanum, and brown soap plasters—all three little used—and the substitution of the standardised liquid extract of belladonna for the old alcoholic extract in making belladonna plaster. This should be a great improvement, because the 1885 belladonna plaster was undoubtedly variable in its action. Other changes of lesser importance are the purification of ammoniacum for ammoniacum and mercury plaster, the omission of expressed oil of nutmeg in pitch plaster and warming plaster, reduction in the strength of menthol plaster, and the substitution of hard soap for curd soap in resin and soap plasters.

Extracta.—This group of galenical preparations has been subjected to very considerable alterations. No less than seventeen extracts, official in the B.P. 1885, have been omitted, while five new ones have been added. Of the "green" extracts only two are now retained, viz., belladonna and hyoscyamus, and the term "viride" is added to their Latin names. In the case of belladonna this addition serves the useful purpose of distinguishing more clearly the green extract from the alcoholic extract of the same drug. In dispensing prescriptions written before the issue of the present Pharmacopœia it must be carefully remembered that the term *Extractum Belladonnæ* refers only to the green extract. In the processes for preparing extracts re-percolation has been widely adopted. The principle of this is to divide the drug to be treated into several portions—usually three or four. One portion is percolated with the menstruum, and the percolate from this is passed through the second portion. The second percolate is passed through the third portion, and so on. By this means we can exhaust the drug with a smaller quantity of menstruum than is practically possible by a single percolation. This economises the menstruum—an important consideration in the case of alcohol—and less evaporation is required to reduce the percolated fluid to the required bulk or consistence.

Milk sugar is used as a diluent in several cases, the object of the dilution being to produce uniformity in the potency of the extract produced.

Belladonna Extracts.—The alteration in the name of the green extract has been already referred to. The green extract is not standardised, and will probably be less used than the other preparations of belladonna, which are all made from the new standardised liquid extract. The liquid extract is prepared by re-percolating belladonna root divided into four portions. The fourth percolate is collected until from 32 parts by weight of root $12\frac{1}{2}$ fluid parts of strong percolate are obtained. Note that the percolation is *not* continued until the belladonna is exhausted. The object of stopping the collection of the percolate at this point is to ensure that the liquor already obtained shall *exceed* in alkaloidal strength the requirements of the finished extract, viz., 0.75 part of alkaloid in 100 fluid parts. After the assay, this strong percolate is brought to the required strength by the addition of more alcohol. With regard to the alcoholic fluid remaining in the belladonna marc, the official directions say nothing. Obviously

the manufacturer may either recover the alcohol by distillation or express the liquid. In the latter case, since the expressed liquor will contain a considerable quantity of belladonna alkaloids, it may be used with advantage to commence the percolation when the next quantity of liquid extract is made. The reasons for stopping the percolation at the point indicated, instead of continuing until the belladonna is exhausted, are: First, the comparative cost of belladonna root and alcohol; secondly, the concentration of the weak percolate obtainable by complete exhaustion, beside necessitating loss of alcohol, would result in a product of varying alcoholic strength. This follows from the difference between the boiling points of alcohol and water; hence if much concentration were necessary, the residue would be comparatively weak in alcohol. This would lead to corresponding variations in the final product, since resin, colouring matter, etc., soluble only in strong alcohol, would be deposited as the alcoholic strength decreased.

To assay the strong percolate a small portion is well diluted with water and, after addition of ammonia to liberate the alkaloids, shaken with chloroform. The dilution is necessary because chloroform mixes in all proportions with strong alcohol; moreover, belladonna alkaloids are freely soluble in strong alcohol, so that they are only extracted with difficulty from even moderately strong alcohol by means of chloroform. The separated chloroform containing the alkaloids is next shaken with dilute sulphuric acid, by which they are converted into sulphates. These sulphates being only slightly soluble in chloroform, pass, therefore, almost entirely into the aqueous layer, in which they are freely soluble, and after a second agitation with acidulated water are practically all removed. The acid liquor is next agitated with chloroform to remove colouring matter, the alkaloidal sulphates remaining in the aqueous portion. This chloroform is rejected. When the acid liquor is, however, made alkaline with ammonia and shaken with more chloroform the conditions of solubility are reversed. The free alkaloid so produced is much more soluble in chloroform than water, and hence passes almost entirely into the chloroformic layer. By repeated agitation with fresh chloroform the extraction is rendered practically complete. The chloroform is then to be shaken with a small quantity of weak ammonia water, presumably with the intention of removing a small quantity of aqueous saline liquor adhering to the chloroform through incomplete separation after the preceding agitation. The chloroform solution thus purified is then evaporated in a water bath and the residue dried and weighed. If the assay process has been properly conducted this residue will consist of the mixed alkaloids of belladonna associated with a very small quantity of non-alkaloidal matter not separated by the repeated shaking out with the immiscible solvents. In order to check any possible gross error in this respect the alkaloidal residue is dissolved in excess of hydrochloric acid and titrated back with soda solution. As the quantity of material dealt with is very small, decinormal acid and centinormal soda are employed in order to get the results as accurate as possible. The calculations are based upon the fact that atropine and hyoscyamine, which should constitute almost the entire amount of the alkaloidal residue, are *monobasic* and isomeric. One molecular weight of these alkaloids ($C_{17}H_{23}NO_3 = 287.05$) will therefore combine with one M. Wt. of hydrochloric acid ($HCl = 36.19$.)

1 litre normal HCl solution contains 36.19 grammes HCl.

∴ 1 C.c. " " " " 0.03619 " "

∴ 1 C.c. N/100 " " " " 0.0003619 " "

Now 36.19 grammes HCl = 287.05 grammes $C_{17}H_{23}NO_3$.

∴ 0.0003619 " " = 0.0028705 " "

From this it is seen that 1 C.c. N/100 HCl will neutralise 0.00287 gramme of atropine or hyoscyamine. In the official process 10 C.c. N/10 HCl are used to dissolve the residue. A portion of the acid combines with the alkaloids to form neutral hydrochlorides, and the excess of acid is then determined by N/100 NaOH. If no alkaloids were present 100 C.c. N/100 NaOH would be required, since 10 C.c. N/10 HCl = 100 C.c. N/100 NaOH. The difference between 100 and the number of C.c. N/100 NaOH actually used represents, therefore, the number of C.c. N/100 HCl which have been required to combine with the alkaloids. Since each C.c. N/100 HCl is equivalent to 0.00287 gramme of atropine or hyoscyamine (*vide supra*) we can, therefore, calculate the weight of alkaloid in the chloroform residue. The weight of this residue should not differ by more than a few milligrammes from the weight calculated by the titration method.

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PHARMACEUTICAL PROBLEMS OF TO-DAY.

THE time is rapidly approaching when the registered chemists of Great Britain must decide whether they desire that any steps should be taken in the public interest, during the coming session of Parliament, to secure further legislative action with regard to pharmaceutical matters. If so, it becomes essential that they should devote careful consideration to the question—What is at the same time desirable and feasible? During the past session powers have been obtained to place membership of the Pharmaceutical Society upon a more democratic basis than at any previous period in the history of the body, and as a result it is rendered possible for the trade to exert its influence more directly and with a greater prospect of success than ever before. The new Bye-laws drafted in accordance with the Pharmacy Acts Amendment Act have been confirmed and approved by the Privy Council, so that no obstacle remains in the way of any registered chemist becoming a member of the Society with the same privileges as any other member. A very large accession of new members is urgently called for, since prior to any further steps being taken in the direction of securing the reform of the practice of pharmacy, unanimous agreement, as to any line of action to be taken, is imperiously called for. Beyond that, in anticipation of the Legislature being asked to do anything more in the direction of regulating the practice of pharmacy, it is obviously above all else necessary that registered chemists should agree among themselves what they are going to ask for. The Council of the Pharmaceutical Society cannot be expected to draft any measure except as representative of the members of the Society, and it will be useless for the Council to proceed with such a measure unless it has the sympathy and active support of the great majority of the trade, for it would be hopeless to expect to achieve any satisfactory result if opposition were threatened from within the ranks.

Assuming then that it is quite out of the question to approach Parliament with proposals for any reform that

cannot be fairly justified in the interests of the public safety, and that unanimity of purpose is essential, the problem remains to single out from what seems desirable such things as are feasible. In the former category the first place must be reserved for that which the Pharmaceutical Society endeavoured unsuccessfully to secure more than thirty years ago—restriction of the sale of medicinal drugs or preparations and of the compounding of medicines to registered chemists, as well as the enforcement of statutory qualification in the case of all persons engaged in that business. Such conditions obtain in Ireland, where a distinction is very carefully drawn between persons who are legally entitled to compound prescriptions and those who are merely licensed to retail poisons, and it obtains in other countries where the practice of pharmacy occupies its proper position. By some, it is considered to be extremely doubtful whether any restriction of that kind could now be secured in Great Britain, however much it might be to the public advantage, but in any case those are the objects to aim at. Another desirable provision, which would be amply justified in the interests of the public safety, would be the general exemption of registered chemists from jury service. That again, however, might be much more difficult to secure than is apparent at first sight, for the number of educated men at present exempted from service on juries is so great that the Legislature is extremely chary of extending what it is inclined to regard as an important privilege.

Another point for consideration is the restriction to be imposed on the sale of poisonous substances. In connection with the dispensing or sale of such articles for medicinal purposes, there should be no question as to the desirability of restricting that business to persons who, by their training and special qualification, are alone competent to handle such substances with safety to the public, but how much further than that it is desirable to go, if at all, remains to be considered. Then the question of "covering" is of extreme importance. The medical and legal professions do not tolerate anything of the kind, they possess ample disciplinary powers to prevent unqualified persons profiting by the employment of the holder of a recognised medical or legal qualification as a "cover" of unqualified persons. Unfortunately, the only representative body in pharmacy possesses no such disciplinary powers, and the Privy Council, which alone can direct a person's name to be removed from the Register of Chemists and Druggists, has naturally shown little inclination to exercise authority in a matter lying so much beyond the scope of its capacity. Lastly, arising out of this question of "covering," comes the problem of trading by corporate bodies. Should Parliament be asked to make the word "person" in Section 15 of the Pharmacy Act, 1868, include a corporate body?—or must it, in the public interest, suffice to endeavour to obtain powers merely to regulate company trading and to secure special registration of all qualified managers and assistants employed by corporate bodies? Registered chemists should weigh all these problems carefully, local associations should discuss them, and no time ought to be lost in arriving at a consensus of opinion on the important matters involved. But to repeat what was said at the outset, if anything is to be done practical unanimity must be secured, all internal opposition should be neutralised, and due regard must be paid to what is practicable under existing circumstances.

ANNOTATIONS.

THE NEW BYE-LAWS.—We are authorised by the President to say that a communication has been received from the Privy Council office confirming and approving the new Bye-laws of the Pharmaceutical Society, which have been drafted in accordance with the Pharmacy Acts Amendment Act. A long-standing obstacle to membership of the Society is thus removed, as the new regulations admit of all registered chemists and druggists now becoming associated together on a footing of perfect equality within the Society. In view of that possibility and of the very general demand for further amendment of the Pharmacy Act, there should be an immediate accession of members, and before the opening of the Parliamentary session the Society should represent in that capacity not less than eight or ten thousand registered chemists. As bearing upon this matter, readers are referred to the letter by Mr. James Reid, of Dumfries, at page 522. As that writer observes, it is absurd that registered chemists should fear an appeal to Parliament because a few interested persons talk wildly about the evils of monopoly. No idea of monopoly is, or ought to be, involved in the question of further regulating the practice of pharmacy. Registered chemists, as represented by the Pharmaceutical Society, have made many sacrifices in the past to fit themselves for their peculiar duties and to elevate the status of their craft: all has been done in the public interest, for the public benefits with every advance in pharmacy, just as it benefits by every advance in medicine, in science, or in any other department of human activity.

SWEET SPIRIT OF NITRE, according to Dr. Bernard Dyer, was really official in the British Pharmacopœia of 1885, though, unfortunately, not mentioned in that publication, and wicked chemists and druggists have taken advantage of the latter fact to supply the public with an inferior article, sheltering themselves behind the plea that unless spirit of nitrous ether were asked for they were not obliged to sell a preparation of any recognised definite strength. This nefarious practice, we are told, has been fostered by certain manufacturers and wholesale druggists, who have specified in their trade lists articles of different strengths at different prices. But now virtue is triumphant, the difficulty of the (?analyst's) position having been recognised and the term "sweet spirit of nitre" given in the new British Pharmacopœia as a synonym for spirit of nitrous ether. Thus is history made by public analysts. Of course, Dr. Dyer could hardly be expected to know that sweet spirit of nitre and spirit of nitrous ether have always been understood to be two totally different things, and that the chemist's customer who required sweet spirit of nitre has been apt to protest when offered spirit of nitrous ether at a higher price. The fact that the Pharmacopœia confuses different preparations by its misapplication of synonyms proves little beyond the fact that the compilers of pharmacopœias are not always infallible.

IN THE REPORT BY DR. DYER, upon which the foregoing note is based, he informs the Leicester County Council that a collection of samples of sweet spirit of nitre had been made in order to ascertain how far the official article is now being supplied. The result of the investigation was, on the whole, satisfactory and, in the analyst's opinion, it speaks well for the honour and integrity of the chemists of Leicestershire as a body that, out of fifty-one samples purchased, only seven were of such a quality as to call for complaint. But in

this connection the report affords evidence of a practice that has been steadily condemned in these pages for many years past, for Dr. Dyer avows having been in consultation with the Chief Constable, Mr. Holmes, with regard to the further steps to be taken in the matter. Thus, he states that "it was decided by Mr. Holmes, after consultation with myself, that, under the circumstances, the most appropriate way of dealing with those who supplied the inferior articles was to caution them, and direct their attention to the fact that the law now imposed upon them a responsibility in the matter of this drug, which could not in future, as heretofore, be set aside on the ground of the omission from the Pharmacopœia of its popular name." The course decided upon was a very proper one under the circumstances, but the public analyst ought not to have had any voice in the matter. His duty is to report on the composition of samples submitted to him, and nothing more.

THE SUPPLY OF CALCIUM CARBIDE is already a matter of considerable importance, owing to the rapidly increasing use of acetylene, which has pushed the demand for the carbide so close to the present limit of available supply that the questions of increased productive capacity, the future output, and probable price of this new and important material assume a definite international interest. The *British Journal of Photography* understands that the use of acetylene, and consequently the consumption of carbide, has increased somewhat more rapidly in America than in Europe, and that, notwithstanding the large output at Niagara Falls, the home demand has rather more than kept pace with the supply. The latter may practically be also said of Europe, at least of Germany, which country obtains almost its entire supply of carbide from Switzerland, notably from the great works at Neuhausen. The whole carbide industry, so far as Central Europe is concerned, is now in a transition stage, and the conditions of supply and price are likely to be greatly modified by the increased production of next year. The most important accession will probably come through the operations of a great combination headed by the Schuckert Electrical Manufacturing Company at Nuremberg, which expects to have in operation during the course of next year four carbide factories, the aggregate annual product of which is estimated at 20,000 tons, capable of generating 211,896,000 cubic feet of acetylene. Besides these plants the Aluminium Industry Company, of Neuhausen-on-Rhine, has this year increased its capital to £640,000 for the purpose of constructing a 7500 horse-power plant at Land-Gastein, in Austria. All these establishments will employ the original process, by which the lime and carbon are smelted together by the heat of an electric current.

TO STUDY THE INDIAN PLAGUE it has been decided, on the recommendation of the Government, to send to India a commission, consisting mainly of scientific experts, to report upon the plague. Dr. Thomas R. Fraser, F.R.S., Professor of Materia Medica and Clinical Medicine at Edinburgh University, and an honorary member of the Pharmaceutical Society, has accepted the post of President, and with him will be associated two other scientific experts, Dr. Wright, Professor of Pathology at the Army Medical School, Netley, and Dr. Rüffer, who has been for some time head of the Egyptian Sanitary Department at Cairo. Two officers of the Indian Civil Service, Mr. J. P. Hewett, C.I.E., and Mr. A. Cumine, both of whom have had much to do with recent plague affairs in India, have also been appointed to the commission by the Government of India. The scope of the commissioners' inquiries will include (1) the origin of the different outbreaks of plague; (2) the manner in which the disease is communicated; (3)

the effects of certain prophylactic and curative serums that have been tried or recommended for the disease. The members of the commission are expected to reach Bombay towards the end of the present month.

THE ARMY MEDICAL SERVICE is apparently not yet all that the profession could desire, for the Royal College of Surgeons of Edinburgh has addressed a memorial to the Secretary of State for War, bringing under his notice its opinion in regard to certain changes which it deems necessary. The present regulations for the competitive entrance examination are thought to be not well adapted to secure the best men. Too much importance seems to be given to elementary subjects, and too little to the practical and clinical work which now occupy the latter years of professional study. It is urged, therefore, that the compulsory part of the competitive examination should be limited to those subjects with which the student is mainly concerned in his last two years of study—namely, surgery and medicine. Further, it is represented that the non-existence of a system of "study leave" in the Army Medical Service is a serious impediment to the efforts of the ordinary medical officer to keep abreast of the progress of medical science, and the memorial says it is essential that the Army medical officer should have a period of leave afforded him for practical study, and that some advantages should be accorded him in recognition of such further study. Finally, the view is expressed that, if improvements on the lines indicated were introduced, the Army Medical Service would be better fitted to attract young medical men of talent and to attain to that state of high efficiency which it is alike the duty and interest of the country to secure.

THE HAMPSTEAD GUARDIANS have been investigating the expenditure on drugs used in their sick wards. The bill for drugs purchased in 1897 for the infirmary, probably the smallest of the metropolitan Poor Law infirmaries, amounted to £462 14s. 2d. It is alleged that there is evidence of over-purchase of medicines and of excessive charges for drugs generally. For example, bottles in considerable number of proprietary emulsion, bought eighteen months ago, remain on the shelves untouched and unneeded, and it is suggested that they have probably become worthless through deterioration. Then, according to *London*, "Pills that could be made for 1d. or 2d. have been obtained from a local chemist at a cost of 1s. 6d. or 2s. Strong extracts of drugs have been used in cachets, expensive articles made under a French patent—so expensive that they are rarely used except by the rich. The difference in cost between using these cachets and administering medicine in the ordinary manner is represented by the figures 1s. 8d. and 12s." The Vice-Chairman of the Board is reported to have said that if the Board employed a dispenser at a salary of £120 a year, it would save money. Other guardians thought that the saving would be still larger. To begin the work of economy, the guardians have decided to appoint a dispenser, who will probably be a lady.

ETHERION, A SUPPOSED NEW GAS, was the subject of an abstract recently published in the *Chemical News*, of a paper by C. F. Brush, and in the same journal, for November 14, Sir William Crookes brings forward the results of some old researches, published and unpublished, which tend, in his opinion, to show that the supposed new gas may be nothing more than aqueous vapour. He abstains from making any positive statement until Mr. Brush's complete paper comes to hand. The supposition that etherion is

nothing more than aqueous vapour rather than a new elementary gas is corroborated by Mr. Brush's observations that etherion is absorbed by phosphoric acid and soda lime, as well as by the powdered glass from which it has previously been driven off by heat. The most remarkable property claimed for etherion is its heat conductivity, which is twenty-seven times that of hydrogen at a pressure of 0.38 of a millionth of an atmosphere. Though Sir William Crookes has not yet tried the experiment at a pressure below a millionth of an atmosphere, since at such high vacuum water-gas gains so rapidly on hydrogen, he is prepared to believe that the ratio may even be as great as that ascribed to etherion.

THE FIRST OPTICAL EXAMINATION conducted by the Worshipful Company of Spectacle Makers was held on Tuesday, Wednesday, and Thursday of last week at the Northampton Institute. The first and second days were devoted to the *viva voce* examination, and on the third day the written part of the examination was taken by all the candidates, of whom there were about a hundred. The examiners were Dr. Lindsay Johnson, Professor Silvanus Thompson, and Mr. George Paxton. It would have been difficult to find three men who could have performed the duties of examiner better or so entirely to the satisfaction of all concerned. The examination was a modified one, inasmuch as it was based on visual optics alone, and intended only for those who have been dealing in optical goods for seven years or more, but it was by no means modified as to its scope. Among the candidates were some of the oldest established retail opticians in the country. Each candidate was taken in hand by each examiner in turn, and the arrangements were carried out most successfully, thanks to the untiring efforts of the Master of the Company, Mr. W. H. E. Thornthwaite, and the clerk, Colonel T. Davies Sewell, both of whom personally looked after every detail beyond the actual examination of the candidates.

THE CHEMISTS' ASSISTANTS' ASSOCIATION will hold its annual reunion in the Grand Hall, Freemasons' Tavern, on Thursday, November 24, at 8 p.m., when the chair will be taken by Mr. R. A. Robinson, L.C.C., and the vice-chair by Mr. Frank A. Rogers. This meeting, which is to take the form of a smoking concert, is intended to replace the *conversazione* formerly held annually, that trinitarian function having gradually become somewhat obsolete. The exhibition that used to be held failed to attract attention, the concert room was usually in great measure unoccupied during the performances, and the dance has been supplanted by the Cinderellas held at intervals during the session. An excellent programme has been arranged for the smoking concert on Thursday week, the services of several prominent performers having been secured, and early application should be made for tickets (1s. 6d. each) to Mr. C. Morley, 3, Bucklersbury, E.C.

PNEUMATIC CHEMISTRY, which formerly led to important technical results, has in its latter-day development been less productive of utilitarian knowledge, but it has revealed the existence of material entities which appear, by their enigmatic nature, to raise a question whether they are to be regarded, as it were, as fossil remains of a former state, or as representing stages of incompleting evolution. By the discovery and study of these bodies, of which Professor Ramsay gave such an interesting account last Tuesday, his name has been added to the honourable list of British investigators who have been conspicuous for their work in the same direction during the last two hundred years.

CHEMISTS' ASSISTANTS' ASSOCIATION.

Thursday, November 3, was the date fixed for the reading of short papers by members of this Association, but, with the exception of several short communications by Mr. H. E. MATTHEWS, the Hon. Secretary, none of the papers reached 73, Newman Street, W., in time to be read that evening. However, five new members were proposed for election and it is hoped that these may, in future, succeed where the older members failed.—Mr. F. W. GAMBLE, the President, occupied the chair, and after expressing his regret at the smallness of the number of papers submitted, announced that under the circumstances he intended to inaugurate an old, yet as far as the C.A.A. was concerned, a new method of discussion. Each member present would have a blank piece of paper handed to him to write any question relating to pharmacy upon which he wished to hear the opinions of others. The papers would be collected and again distributed, each one being expected to speak upon the question on the paper. Should a member receive his own question to answer he would exchange it for another.

Mr. MATTHEWS then proceeded to read a note on

Pulv. Rhei Co.

It is well known that there is some difference of opinion as to the best method of preparing Gregory's powder, various authorities stating that its miscibility with water is affected by the degree of pressure to which it is subjected in mixing, but there being no agreement among these authorities as to what is the best method. Some assert that considerable trituration of the powders in mixing results in a preparation that readily mixes with water, while others maintain that such a preparation is only obtained by lightly stirring the ingredients together with a knife. To clear up the matter, experiments were made with three quantities of powder, prepared as follows:—No. 1, by considerable trituration of the ingredients in a mortar, with heavy pressure; No. 2, by moderate trituration, with light pressure; No. 3, by lightly mixing on paper with a knife. A portion of each of these differently prepared powders was then mixed with water, with the result that no difference at all in degree of miscibility could be detected between any of the three. It is possible that the contradictory statements which have been made about this matter have been caused by the varying amount of oil contained in powdered rhubarb, which would of course materially affect the miscibility with water. This seems to be supported by the fact that in the above experiments, where the same rhubarb was used in each case, there was no variation in the degree of miscibility.

Mr. MATTHEWS next read a note on

A Method of Separating Magnesium and Lithium.

In the analytical separation of the bases, the residual metals, after the removal of the fourth group by means of an alkaline carbonate are magnesium, lithium, potassium, and sodium. General text-books of chemistry classify lithium as a rare metal and often exclude it from analytical schemes; in pharmacy lithium falls into the category of bases of common occurrence. When a mixture of salts, which may contain either magnesium or lithium or both, is under examination, the following method is useful for their detection:—Test a portion of filtrate from group iv. for magnesium and lithium with di-sodic hydrogen phosphate. If a precipitate forms, evaporate another portion of the solution with a little sulphuric acid to remove HCl, dilute and add sodium hydroxide. Most of the Mg but no Li is precipitated as hydroxide. To the filtrate add di-sodic hydrogen phosphate, lithium, if present, is precipitated as basic phosphate together with the remaining traces of magnesium. The flame test is always sufficient to determine whether lithium is present in the precipitate. To confirm magnesium wash the precipitated hydroxide and apply the flame test to prove lithium absent. Dissolve the washed precipitate in HCl, add Na_2HPO_4 and ammonia, the magnesium is precipitated as phosphate in the cold.

A third note by Mr. MATTHEWS was on the

Identification of Soluble Ferricyanide, Ferrocyanide, and Cyanide when Mixed Together.

To an aqueous solution containing a cyanide, a ferrocyanide, and a ferricyanide add excess of lead acetate; lead cyanide and lead ferrocyanide are precipitated. Filter off the precipitate and detect ferricyanide in the filtrate by means of a ferrous salt. Wash the precipitate rapidly until free from ferricyanide, and finally wash it into a test-tube. Add a little acetic acid and cover the

mouth of the test-tube with a cap of filter paper moistened with yellow ammonium sulphide. On warming gently the lead cyanide is decomposed, evolving HCN, which forms ammonium thiocyanide with the ammonium sulphide on the cap. A drop of ferric solution serves to detect the formation of thiocyanide. When the whole of the lead cyanide has been decomposed by gently boiling the contents of the tube for several minutes in a fume chamber, wash the residual lead ferrocyanide, dissolve in KOH, add ferric chloride and then excess of HCl, and the solution gives the reaction of a ferrocyanide.

The PRESIDENT said their thanks were due to Mr. Matthews for preparing the papers, especially as he had been doing the work of two secretaries, owing to the ill health of the Financial Secretary, Mr. C. E. Pickering. With regard to the subject of Gregory's powder, it had been much to the front during the past few weeks, and there seemed to be an opinion amongst some chemists that the age of Gregory's powder has something to do with its miscibility. It was difficult to reconcile that opinion with the reason given by Mr. Matthews. Personally, he was inclined to agree with him, because age would increase its miscibility rather than not.—Mr. T. MORLEY TAYLOR thought that it did not much matter what process was employed in mixing pulv. rhei co, if the powder was to be sifted afterwards.—Mr. MATTHEWS agreed with the opinion that age would make the powder more easily miscible with water, also that the method of mixing the powder would not materially affect its miscibility if it was sifted.

Impromptu Discussion.

Pieces of paper were then distributed to those present, and after being collected and re-distributed, Mr. Charles Morley was asked by the President to reply to the question on his paper, viz, When magnesium carbonate is one of the ingredients of a prescription, should the heavy or light be used?—Mr. MORLEY said it was the common practice to use the heavy variety when mag. carb. was specified. There were certain questions which a candidate for examination at Galen Place might safely put to an examiner when dispensing, but if called upon to dispense magnesium carbonate he should advise any candidate not to put that question, or he might be "sat upon."—Mr. MATTHEWS was desirous of knowing why the heavy is used instead of light, seeing that the light shakes up better.—The PRESIDENT said that when he inaugurated the new method of discussion he did not anticipate being made the butt of all the questions.—Mr. MORLEY remarked that if it were left to his discretion he should prefer to use the heavy, as it seemed to be more easily manipulated.—Mr. GEORGE ROE was asked if it is advantageous for a chemist's assistant to have some knowledge of drug-store business methods. Personally Mr. Roe had very little knowledge of retail pharmacy, but he could not help admiring the way in which the drug stores display their goods in the windows. Of the modes of procedure inside he could not speak, but he should imagine that a man might become smarter in putting up goods in a store than in an ordinary retail pharmacy. From a pharmaceutical point of view, however, he thought an assistant would not gain much useful knowledge.—The PRESIDENT differed from the expression of opinion as to smartness in putting up goods, inasmuch as he believed that the majority of store goods were factory put up.—Mr. MATTHEWS thought there was not much real good to be obtained from stores, while Mr. George Pearson was inclined to think an assistant might become more proficient in "stock-keeping" by a store experience.—Mr. MORLEY had no experience of drug stores, but if he could do so without sacrificing his self-respect, he, personally, would like to serve in one for a short time, as he believed a good deal may be learnt there.—Mr. T. MORLEY TAYLOR was in possession of a paper which asked "How will the increased study of preventive medicine influence pharmacy, and what difference will it make to the pharmacist?" He thought that was rather a "tall order" to answer straight away, but it was a question which might very well form the subject of an interesting paper. However, all would probably agree that the practice of preventive medicine will affect pharmacy by the introduction of new medicines, while the pharmacist will be required to have a good knowledge of antitoxins and similar things that, as a rule, he now knows very little about. As events are moving at present, Mr. Taylor thought it possible that in one hundred years from now pharmacy might be "knocked out," but at the same time he did not think it at all probable.—Mr. G. PEARSON was asked to state where a pharmacist may obtain material for bacteriological research. It was

not quite clear what kind of material was required, but if the questioner had no knowledge of the subject Mr. Pearson suggested that he might apply to one of the institutions where bacteriology is taught, or he could recommend Cruickshank's work as a useful source of information.—The PRESIDENT thought that bacteriology was a question that would affect pharmacy in the future, so that chemists ought to have a knowledge of the subject.—Mr. J. FOTHERGILL, in reply to a question as to whether "pharmacy is worth going in for," said he was not inclined to express any opinion on the matter, except to say that it depends very much upon the man who is going in for it.—Mr. MATTHEWS seemed to think it depends to some extent upon the object a man has in view when entering pharmacy.—The PRESIDENT was of opinion that most men entered pharmacy through circumstances over which they had in a measure no control. It was about as good a business as one could go in for, and, personally, he had no higher ambition than to be a good chemist, and he thought that others too would find it to be a good thing.—Mr. SOWDEN was called upon to say if chemists ought to advertise. Certainly! was the answer briefly put. Chemists must advertise if they wished to reach "the top of the tree." Those who had already attained to that coveted position were there largely because of judicious advertising.—As the hour was rather late the PRESIDENT intimated that no more questions need be answered that night, unless someone had a burning desire to express his opinion on any subject not previously mentioned. No one being possessed of such a desire, he went on to observe that the new method of discussion seemed to be rather good, as it had turned what would otherwise have been a dull evening into a very pleasant one. It had, at any rate, imparted a certain amount of life into the meeting.—The proceedings then terminated.

PHARMACEUTICAL SOCIETY OF IRELAND.

The monthly meeting of the Council was held on Wednesday, the 2nd instant, at 67, Lower Mount Street, Dublin.—The PRESIDENT, Mr. R. J. Downes, was in the chair, and the other members of Council who attended were Messrs. Grindley, Kelly, Michie, Bernard, Britain (Drogheda), Connor (Newry), Wells, and Dr. Walsh.—A letter from the Under-Secretary, Dublin Castle, enclosed a copy of a memorial from James Hogg, who had been fined £5 at Belfast Petty Sessions for unlawfully keeping open shop for compounding medical prescriptions, asking the Privy Council to remit the fine.—The PRESIDENT read a copy of a letter which he had addressed to the Lord Lieutenant and Privy Council on the subject, pointing out why the fine should not be remitted or abated.—On the motion of Mr. BERNARD, seconded by Dr. WALSH, the President's letter was approved of.—A letter from Mr. William J. Wade, in reference to an application made by him to be admitted to the Licence examination, was considered, and the matter was deferred until the next meeting.—A letter from the Board of Inland Revenue stated that they saw no reason why there shall be any change in the law with regard to the sale of methylated spirits.—Mr. BERNARD: I do not think the grocers are allowed to have it.—The PRESIDENT: They are. They may keep it on sale, provided it is not consumed on their premises. I was written to by the Board for information on the subject, and informed them of a fact which I had ascertained, namely, that a woman walks along the banks of the canal at night laden with noggin bottles of methylated spirit, which she sells at 6d. apiece.—Several reports were disposed of. One from the School Committee stated that they could not accede to an application which had been made on the part of students in the Botany and Materia Medica School, asking that those who desired to supplement their courses should not be charged an additional fee.—Dr. H. C. Tweedy and Mr. S. Brown were elected to conduct the Preliminary examination; Mr. J. Smith was elected examiner in the botany and materia medica division of the Licence examination; Mr. J. Guiler and Dr. D. J. McKenny were elected to hold the Registered Druggists examinations in Dublin and Belfast; and Mr. W. V. Johnston was elected to hold the Pharmaceutical Assistants examination.—A motion, of which the Vice-President had given notice, relating to the Licence examination, was postponed.—The following gentlemen were elected members of the Society:—Mr. James Allen, Lisburn; Mr. David Smeaton Bennett, Cork; and Mr. Edward M. D'Arcy, Dublin. The Council then adjourned.

MIDLAND PHARMACEUTICAL ASSOCIATION.

The winter session of this Association was inaugurated on Thursday, November 3, when the members and their friends assembled at the Grand Hotel, Birmingham, in considerable numbers. The chair was taken by Mr. JEFFREY POOLE, President of the Association, and Mr. G. CLARIDGE DRUCE, M.A., F.L.S. (Oxford) gave the

Inaugural Address.

At the outset, Mr. Druce touched briefly on professional topics, admitting at the same time that so much had been said and written about the subjects pharmacists had at heart that he felt like a traveller over a country which had been despoiled by locusts, so few and far apart were the relics of vegetation which he could gather. They followed, he said, an anomalous business. Originally it was mingled with the practice of medicine when that was the only professional rival of the priest-craft, and probably these were formerly united so that the priest was also the physician, having literally the gates of life and death and the fears rather than the hopes of the future at his command. In the course of the ages segregation took place, not only as regarded the priest and the physician, to whom the whole question of medicine in its widest sense was for a long time entrusted, but also in the separation of the physicians from the crowd of surgeons, barbers, empirics, sorcerers, and magicians. In 1518 the physicians succeeded in obtaining a charter, and in 1748 the apothecaries were equally fortunate. Just as the physicians were jealous of the apothecaries and surgeons, so in turn the apothecaries attempted to obtain penal powers over the chemists and druggists. To aid in resisting these attempts there was formed in 1794 a Pharmaceutical Association, which met at the Buffalo Tavern, Bloomsbury Square, but it was short-lived, and failed to carry out the objects for which it was formed. In 1802 the chemists and druggists successfully resisted the apothecaries' Bill of that year, which seriously threatened their interests. In the year 1841 another attempt was made, by the Bill to amend the laws relating to the medical profession in Great Britain and Ireland, to circumscribe the privileges of their trade, but this also was defeated, and indirectly led to the foundation of the Pharmaceutical Society, which was established in that year for the purpose of protecting the permanent interests and increasing the respectability of chemists and druggists, on the proposal of Wm. Allen, seconded by John Bell, on April 15, 1841. The *Pharmaceutical Journal* was issued during the same year. The School of Pharmacy was founded in 1842, and a charter of incorporation was granted in 1843. There was no need to trace the subsequent history of legislation affecting the business, nor the adverse interpretation of it made in some instances by the judicial tribunals; and, indeed, he had only introduced this summary of their history in order to show what were the original objects of the founders of the Society. It was founded primarily as

A TRADE DEFENCE SOCIETY,

while the object of increasing the respectability of the trade and making it in some sense a profession was a secondary motive. It could not be denied that for many years the primary object, if not lost sight of, was at any rate relegated to an unobtrusive position, and education, which the passing of the Pharmacy Act rendered to some extent an obligation, became almost the one idea of the Council, who appeared to be under the impression that a bold defence of the business rights of pharmacists was derogatory to the respectability of its members. They were grateful for the change of policy which now appeared to animate the Council, but so long as the Pharmaceutical Society received no support from the great mass of the trade so long must its powers be limited when fighting vested interests. With the increase of members greater pressure would be brought to bear upon their representatives on the Council, and a more forward policy would doubtless ensue. On these matters he did not intend to dwell. He might, however, be permitted to say a few words about the system of examination. He recommended those who had not already made acquaintance with it to read the excellent and very comprehensive address of Sir James Crichton Browne, and to mark the wise words of caution against making the Minor examination too severe. He particularly welcomed the suggestion Sir James made, that the examination should be divided into two parts, and especially did he agree with the manner in which Sir James would have the subjects divided. Sir James suggested chemistry, physics and botany as the subjects

to be taken in the first examination, and that the second or qualifying examination should be devoted to *materia medica*, pharmacy, and dispensing. Why he so warmly agreed with this subdivision was because he held that the primary object which influenced the founders of their Society and the view taken by the Legislature and the public was that their examinations should be essentially for a pharmacist, and that no botanist, however well read, nor any chemist, however proficient, was qualified to be a chemist and druggist unless he shall be a competent pharmacist. He dissented from the idea that a mere laboratory course of botany or chemistry was sufficient, and he viewed with regret the comparative effacement, or, at any rate, the subordination which pharmacy was being made to undergo in the process of examination. He was not in any way wishing to minimise the importance of the two sciences which were the foundation of the pharmacist's knowledge, but he would most certainly make them subordinate to pharmacy. He saw that this might be better accomplished by accepting this

DIVISION OF THE MINOR EXAMINATION

into two parts. But he must hark back for a moment in order to allude to the obvious fact that the two sciences he had mentioned were in themselves so wide and vast that it was evident only a comparatively limited knowledge of them could be acquired. This was especially true of botany, which really consisted of several sciences. He was afraid he should be considered old-fashioned when he expressed the belief that they would do well to make the teaching of these sciences as technical as possible. There were some high in authority who held that there was no such thing as pharmaceutical chemistry or pharmaceutical botany. He was not going to meet this idea with a flat contradiction, but it did appear to him possible to utilise examples having direct interest to the pharmacist. A student of mineralogy, to whom chemistry was important, was taught a technical chemistry which differed widely from that needed by their own business, and as far as possible it should be chemistry as adapted to pharmacy which should prevail in their schools of pharmacy. In botany he deplored the undue growth of the physiological and histological branches of the subject, and the subordinate part morphology appeared to be doomed to play, while systematic botany was almost pushed out of their syllabus. Now physiological botany as a science was one of great importance, but so far as it bore upon their business it possessed no special value, so that anything more than an elementary knowledge was not needed. On the other hand, the advantages to be gained from a course of histology could scarcely be over-estimated, since the powers of observation, the dexterity of preparing sections for the microscope, the knowledge of the proper use of reagents, and the skill of the pencil to delineate the objects examined were all stimulated and heightened by such study, while the knowledge obtained might be of great assistance in the future calling of the student. He also looked upon morphological teaching as highly necessary, since it equally cultivated the powers of observation, while to the proper study of *materia medica* morphology was an essential adjunct. The outlines of systematic botany should also form a part of instruction. Not only was it necessary for obtaining an idea of the wonderful variety of plant structure on this planet, but it enabled them to see in what manner certain characters were found to be peculiar to certain groups, and it trained the mental faculty to appreciate and understand that order to which all creation moved. For other reasons, what was sometimes contemptuously called field botany was most highly to be recommended to the pharmacist as not only a study but a recreation, the more so now as it was alienated from the course of study of medical men. Of chemistry he need say nothing more, except again to express the hope that the teacher would bear in mind that it was for a pharmacist that the teaching was needed, and that, as in botany, one would like the *materia medica* to be the sources wherever possible for the objects taught and demonstrated. The first examination, therefore, would clear

THE SO-CALLED PROFESSIONAL SUBJECTS,

and with the knowledge thus obtained the student would with good auspices attack the remaining subjects, namely, *materia medica*, pharmacy, practical dispensing, and prescription reading. This second examination might conveniently occupy two days, as he considered three hours insufficient to comfortably examine a student in both practical pharmacy and dispensing, and he held that it should be conducted only by qualified pharmacists. He would relegate as far as possible the calculation of intricate percentages to the examina-

tion in prescription reading, as in that the candidate was not worried by his fellow students continually jostling him, nor by the nervous strain involved by attending to his other preparations. In adopting this course, one day would be devoted to the oral examination in pharmacy, prescription reading, and *materia medica*. In this way, he thought, the extremely high percentage of failures in the Minor examination might be reduced, as at present, although the subjects in themselves were not abnormally difficult, nor was there, he was convinced, too high a standard set for any undue severity in one subject, yet the large number and wide range which these subjects covered, compressed as they were into too small a space of time, assisted in making it a very difficult examination. He believed that not only would the percentages of passes improve, but what was even of more importance to the craft, the candidates would possess a greater practical knowledge of pharmacy; and the reproach which was not infrequently urged—and, he was afraid, not entirely without reason—that an examined man was not necessarily a better pharmacist than his unqualified neighbour, should not be heard. This reproach their system of education should do all in its power to avoid. The way to avoid it was not to hand over their qualifying examination to scientific men who had had no experience of the art of pharmacy. In the Major examination he would restore pharmacy as a subject, and in place of combining *materia medica* with botany he would give the former a distinct position. The knowledge of drugs, their adulterations and qualities, was of infinitely higher importance to a pharmacist than that of botany, which indeed might be deleted from the final examination, or at any rate be made to occupy a subservient position as formerly it did for many years. In fact, to summarise, let them endeavour to bring back to their examinations the appreciation of technical knowledge which was to be obtained in the pharmacy rather than in a cramming school, at the dispensing counter, not less than from text-books and manuals. Mr. Druce then proceeded to deal in a most interesting fashion with the history and peculiarities of the different monarch trees to be found in the British Isles, his remarks being well illustrated by an excellent series of views thrown upon the screen by Mr. C. F. Jarvis (Handsworth).—Mr. T. BARCLAY, proposed a vote of thanks to the lecturer, which was seconded by Mr. ELLIS, and carried amid applause—Mr. DRUCE having replied, a musical programme followed and light refreshments were served before the company separated.

IRISH PHARMACISTS' ASSISTANTS' ASSOCIATION.

At Dublin, on November 4, the third annual opening meeting of this Association was held at 67, Lower Mount Street, the newly-elected PRESIDENT, Mr. Henry Hunt, in the chair. There was a large attendance. The minutes of the last meeting were read and confirmed, and seven new members were elected.—The SECRETARY read extracts from the proceedings of the last committee meeting, referring to the establishment of an employment agency and to the holding of a concert early in December.—Mr. WILLIAMS objected to committee work being made public. His contention was upheld, and the matter was postponed until the Committee met at the close of the general meeting.—On the motion of Mr. WILLIAMS, seconded by Mr. JONES, it was resolved in future to keep the minutes of committee meetings separate from those of general meetings.

The President's Address.

Mr. HUNT then delivered the presidential address. He traced step by step the progress of the Association from its inception three years ago to the present time, and alluded to the many interesting functions held under its auspices. The financial position of the Association was sound. It was well supported by employers and assistants, and continued to successfully carry on the work for which it had been formed. The publication of the new British Pharmacopœia provided a wide field for work and discussion, and he hoped many members would contribute papers upon it. Pharmaceutical history during the year had been enriched not only by the publication of a new B.P., but by a considerable amount of legislation, successful and otherwise. During the last two sessions, ten per cent. of the members of the Association had become proprietors. Mr. Hunt then referred to the Poisons Bill introduced last session, and stated that it was not improbable that a second Bill, dealing with the distribution of poisons, might be introduced next year, and it would be advisable for all who were

qualified to obtain the benefit of the franchise and enlist the sympathies of any Members of Parliament they might be able to approach. He did not intend to allude to the rights or wrongs of company pharmacy, but would ask qualified assistants to remember the fact that they were essential to the company promoters, and should place a proper price upon their services. He was glad to find that the committee were making arrangements to establish an employment agency in connection with the Association. Owing to their limited resources, they could not attempt anything on an ambitious scale, but he thought a register of vacancies, kept by the Secretary, would be of much use to assistants and employers. Its utility could only be estimated by a practical trial, and, if successful, it would be an inducement to country assistants to become members. Mr. Hunt concluded by asking those present to make the success of the Association a personal matter. Some years ago there would have been no room for an assistants' association, as, with most of their predecessors, pharmacy was but the stepping-stone to medicine, the leisure time of the assistant being spent in the dissecting room or the lecture theatre. The old order had changed—most of the assistants had now to make pharmacy their life work. Let them endeavour to put their best energies into it and make pharmacy worthy of being called, not the handmaid, but the sister of medicine.—Mr. JONES said they all ought to be much obliged to the President for his very able address. It was gratifying to learn that their membership was on the increase, and it was only by keeping united that they would advance.—Mr. WILLIAMS spoke on the *personnel* of the Association. He thought it would be advisable if a request were made to the proprietors for a donation to put the new employment agency into operation at once. Seeing that 10 per cent. of the members had last year become employers and 10 per cent. the year before, it followed that there were now 20 per cent. of their friends in a position to help them. It was absolutely necessary to have an office for the carrying on of an employment agency, and where country members and others could meet one another. They would double their members when the new departure came to be known generally. He thought the balance in hand would be well invested in an office.—Mr. CONYNGHAM highly commended the Committee for starting an employment agency. There should be a list kept not only of members but a reference list of country members requiring employment. A small fee might be charged for the service, and that would add to the Association's income. He considered that having a register of vacancies would bring the young men of pharmacy together. It was a great hardship for assistants to be obliged to come up to Dublin for their examinations. That very fact kept down the market price of assistants. The youth coming up to Dublin from the provinces had to choose in most cases between idleness while reading for his examination or taking a situation at whatever salary offered. The result was that advantage was taken of his desire to work and study, and the general body of assistants suffered in consequence. He thought the Society ought to be compelled to widen its doors and to establish local examination centres in the principal towns of Ireland, such as Cork, Limerick, Galway, etc.—Mr. SAVAGE said the employment registry was now an accomplished fact. They proposed circularising all the employers in Dublin, and were open to receive lists of "wants" and "wanted."—Mr. CONYNGHAM: By paying a fee.—Mr. SAVAGE said that was an excellent suggestion, and the Committee would give it their best attention.—Mr. ASHE said the Committee's proposal was good in theory but they ought to move very carefully in a matter of that kind. Their funds were not large enough to carry out the scheme properly, and they might later on be sorry at having embarked in the matter.—Mr. JONES said they were not ungrateful to the Society, and their feelings towards that body were shown in a resolution passed at the last meeting, thanking the Council gratefully for past and present kindnesses. The assistants were a strong, loyal, and intelligent body, and could not be blamed for striking out a distinct line for themselves.—The PRESIDENT said they were in perfect accord with the Society. The suggestion to combine an office with a place where country members might meet their friends, where committee or special meetings could be held, and where the daily newspapers could be read nightly was a feasible one and not difficult to put into practice.—Councillor KELLY approved of the Association having a room where its members could meet and read the chemical and other journals, and Mr. CONYNGHAM offered to guarantee half the amount required for the rent of such a room.—On the motion of Mr. ASHE, seconded by Mr. SAVAGE, a vote of thanks was accorded to Mr. Conyngham for his liberality.

NOTICES TO CORRESPONDENTS.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ADVERTISEMENTS AND ORDERS for copies of the 'PHARMACEUTICAL JOURNAL' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers."

ARTICLES AND REPORTS sent for the Editor's approval should be accompanied by stamped directed envelopes, otherwise no guarantee can be given that they will be returned if not found suitable.

CORRESPONDENTS should write in ink, on one side of the paper only, and must authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

DRAWINGS FOR ILLUSTRATIONS should be executed twice the desired size; clean sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

NAMES AND FORMULÆ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

QUERIES addressed to the Editor will be replied to in the Journal as early as possible after receipt, though not necessarily in the next issue. Replies cannot be sent by post, even though stamped envelopes accompany the queries.

LETTERS TO THE EDITOR.

THE NEW TEXT BOOK ON PRACTICAL PHARMACY.

Sir,—The writer of a book on such a subject as I have ventured to take up, necessarily lays himself open to a good deal of criticism. I freely admit the clerical and other errors—many of which I discovered too late for correction—and I am much obliged to all those who have taken the trouble to point them out. On the other hand, there are many points to which exception has been taken which are matters of opinion, and I shall be quite ready to defend my position when a proper occasion offers. While saying this I feel bound to add that those who undertake the criticism of a work should be careful not to misinterpret the statements of the author, and I hope that you will see the justice of publishing the following extracts from your criticism of October 22, with my remarks thereon.

'PHARM. JOURNAL' REVIEW.

Page 441, line 7.

"The author should not appear to imply that he would countenance an error of 5 grains in a weighing machine, the maximum load of which is 1 oz."

Page 441, line 39, *et seq.*

"There is a little confusion of ideas If pure water be supplied to a boiler, the use of a pump does not contaminate it so much as to spoil the condense, but if oily water be fed to the boiler by an injector, the use of the latter in place of the pump would not improve the quality of the condense."

Page 442, line 52.

"The statement at p. 194 that ordinary potash ley is now used in making hard soap is at least questionable."

Page 442, line 31.

"At p. 332, dried sulphate of iron of the Pharmacopœia is said to be of uncertain composition, a statement which is scarcely justified."

Page 443, line 17.

"No authority can be found for the statement that bleaching powder may be considered as consisting of Ca(OCl)Cl."

Page 443, line 21.

"No authority can be found for the statement that ethylic alcohol is always the product of vinous fermentation."

REMARKS.

Lucas' 'Pharmacy,' page 16.

This table of the limit of error in balances is accurately extracted from the Weights and Measures Act.

Lucas' 'Pharmacy,' page 58.

A pure water *may* be made oily by passing through the pump attached to a steam engine, but it cannot be contaminated in this way by passing through an injector, since the latter does not need lubricating.

Authorities.

Crookes' Wagner's 'Chem. Technology.'

Alder Wright's 'Manual.'

B.P., 1898, says:—

"Residue should weigh about 60 per cent. of the original salt. One gram should require at least 54.6 C.c., etc., corresponding to at least 92.5 per cent. of FeSO₄.H₂O."

Authorities.

Thorpe's 'Dictionary,' vol. i., p. 525, Ca $\begin{matrix} \text{OCl} \\ \text{Cl} \end{matrix}$ and later Ca(OCl)Cl. See also Lunge, Odling, Tilden, etc.

Lucas' 'Pharmacy,' page 129, line 6.

"Ethylic alcohol is always a product of vinous fermentation."

Page 443, line 22.

"No authority can be found for the statement . . . that in the preparation of ferrie chloride, nitric oxide, and oxygen are evolved together."

(The italics are mine.)

I will not take up more of your space, except to say, with regard to "Student's" letter of November 5, that the Pharmacopœia statements as to solubilities cannot always be depended upon.

London, November 7, 1898.

E. W. LUCAS.

* * In view of this departure from ordinary usage, Mr. Lucas' complaint of misinterpretation of the statements criticised may call for some remark from the reviewer of the book. Meanwhile, most readers will probably find in Mr. Lucas' own quotations sufficient justification for the criticism which has appeared in the Journal. [Ed. P. J.]

Sir,—The author of the above work will no doubt welcome the pointing out of solubility differences by "Pharmacist" and "Student"; but if any data can lay claim to variableness, surely it is solubility tables—only accentuated by practical manipulation. Blind uniformity is not accuracy! A year or two back, in looking up the solubility of picrotoxin, the departures struck me markedly: B. P. (Addendum), 1—330. Martindale, 1—240. Squire, 1—150. Dorvault, 1—150. U.S. Pharmacopœia, 1—150. Merck describes it in general terms as "soluble in water, alcohol, and alkalies." This is not *ex uno disce omnes*; it is "one, out of many more." I pursue the details no further, beyond one specific objection, *i.e.*, acid boracic. Lucas gives 1—25. "Student" refers to B.P., 1898, 1—30. This is a recent decision; and B.P., 1885, gives 1—25, in harmony with other authority. There is a danger of conveying an impression that a useful book is careless or inexact; such judgment should not be based on uncertain grounds, as viewed by shifting lights. No protest is made against the communications referred to; the endeavour is simply to modify what might otherwise be a hasty conclusion.

November 7, 1898.

DELTA (152/31).

THE CASE OF LOCAL SECRETARIES.

Sir,—Reading over the current issues of the journals, I am a little amused by the varying reports of Mr. Atkins' sentiments *re* local secretaries. In the *Pharmaceutical Journal* I read: "Mr. Atkins said he could state from personal knowledge that some of the local secretaries were hardly deserving of the thanks of the Council." Another report runs: "Mr. Atkins was glad to hear the President thank the local secretaries, as from his personal knowledge some of them deserved thanks." I have no doubt both reports are accurate, only the second report puts it a little more politely; however, we may connect and read them together. It is a coincidence that before opening my journals and reading the above I had sat down to write this letter, inspired by a recent paper on "The Duties of a Local Secretary." I wished to remind the Society of its duties to a local secretary, but in the report of the Council meeting I read so many kindly remarks in recognition of the service rendered by its representatives that I will content myself by contrasting these sentiments with a bit of ancient history. I know a provincial pharmacist who acted, to the best of his ability, as local secretary for some thirty years, during that period he never debited the Society with any costs, and ultimately retired voluntarily in favour of a younger and more active man, possibly he was considered as "hardly deserving," anyhow he never received a single word of acknowledgment, official or otherwise, simply dropping out of the ranks. I am glad to believe this will not be repeated.

Scarborough, November 7, 1898.

JOHN WHITFIELD.

* * The general tenor of Mr. Atkins' remarks and of the whole discussion was quite in accordance with the sentence quoted by Mr. Whitfield from the Journal, but on referring the matter to the reporter we find that he had apparently abbreviated the word "thoroughly" in such a way that it misled the compositor, who took it for "hardly." [Ed. P. J.]

Sir,—The word "hardly" in my report of Mr. Atkins' remarks at the last Council meeting (see p. 487) is a misprint for "thoroly," for which I suppose my bad writing is responsible, but I did not think it was quite so illegible.

London, November 9, 1898.

YOUR REPORTER.

THE POSITION OF PHARMACY.

Sir,—The more that I read, the more that I hear, the more that I see of pharmacy throughout the country, the more I become convinced that the necessity for large reforms is urgent. We have reached a stage at which every grain of energy to be found in the pharmaceutical world ought to be exercised in the direction of the suppression of unqualified competition. Anti-cutting associations, increased educational demands, even more energetic organisation, are all but trifles if they do not help in this direction. I do not think that it is too much to say that at the present time two-thirds of the profits derived from the drug business are finding their way into the pockets of those whose names do not appear upon the Register of Chemists and Druggists. This is a position I should think unique in the history of callings for which the State requires special educational qualification, and viewed from the standpoint of common sense and common justice, it is absolutely absurd. I will go further and say that when the position is quite understood by the general public we will receive overwhelming support from all classes. This country loves justice, and it never lends its support to injustice longer than its ignorance of the subject exists. The position of pharmacy is one which the people have little understood in the past. Men who never were chemists have arrogated to themselves the positions and privileges of chemists, and even their title, and I find that the people are astonished when they are informed that these men are not chemists. I have never yet met an intelligent man who failed to see the injustice of all this when he was led to understand it. Even in the House of Lords a sense of the position is beginning to dawn, and I reckon that when the light begins to break upon the House of Lords the nation is not in darkness. School teachers, civil servants, and even men who have no examinations to pass, such as Poor Law officers, are all agitating for better positions, and we alone are afraid to go to Parliament because, forsooth, a few unqualified men who are interested harangue a public which they have already misled about monopoly. The fact is, the trade done in drugs is too limited everywhere to support this hordo of unqualified bloodsuckers, and pharmacy is not fighting for a luxurious living, but for a bare existence throughout the country. Now I would suggest that as the present Parliament has yet about three years to run, the Pharmaceutical Society do now set about getting ready for the next general election. To this end we ought, if at all possible, to go hand in hand with the British Medical Association, the Dental Association, and the Veterinary Surgeons' Society. I consider that the President of the Pharmaceutical Society is the right man to negotiate this, and from the able manner in which he carried through the Pharmacy Acts Amendment Bill I believe that he has tact and skill enough to succeed. Meantime local associations should be encouraged, and these ought to be instructed to wait upon their Parliamentary Members in deputations, and see that in Parliament every man has a knowledge of the real position. Then a proper Bill dealing with this matter ought to be drafted and introduced boldly into the House of Commons, and I do not think that it would be difficult to get a Minister to introduce it. I am sure that the Ministry would support this measure if a similar one appeared from the other professions dealing with the same subject at the same time. I am no advocate of noisy agitation, but we ought never to forget that the House of Commons is ready to rectify grievances when it is fully cognisant of them, but it seldom goes out of its way to search for them. We must bring them under its notice.

Dumfries, November 8, 1898.

JAMES REID.

LOYALTY TO THE CRAFT.

Sir,—In your issue of this week you have made me say that I "successfully filled the offices, etc." I wrote, or intended to write, "successively." I have some modesty left. I never for a moment expected that you would have any sympathy for the views I have given utterance to, but I do think I have a right to fair comment from you, and how anybody can possibly twist the sentence, "If salaries of £200 are common," into a denial that "any assistant is earning a salary of £200," entirely passes my comprehension. Perhaps that is another symptom of "eccentricity."

London, November 5, 1898.

C. P. (152/12).

* * Our correspondent conveniently loses sight of the fact that in passages omitted—for his sake—from the letter published last week, he accused Mr. Rymor Young, by implication, of untruthfulness in stating that he knew of several assistants in the receipt of £200 per annum, and also suggested that when Mr. Young said £200 per annum he meant £2 per week. [Ed. P. J.]

WINDOW-DRESSING AS AN AID TO BUSINESS.

Sir,—As the Christmas season is approaching, I would venture to suggest your opening a discussion in your columns on window dressing, from which I feel sure we should all benefit individually, for the quantity of articles sold from an up-to-date window is enormous as compared to days gone by twenty years since. A colleague remarked he considered Messrs. Hooper's, of London Bridgo, one of the best dressed chemist's windows in London. I asked why? He said it was quite full, everything could be seen, and yet at the same time not crammed. To anyone at all observant, a marked improvement has taken place in connection with chemists within the past few years, more especially in connection with the windows. One thing appears fairly certain—that is, the days of the carboy and specie jar are numbered. In this practical age the mystic ornaments will have to give place to everyday useful articles. I consider the first essentials in a well-dressed window are that it should be fairly low, that it can be looked right into, from a somewhat elevated point, that it should be well lighted, and, above all, the glass kept scrupulously clean (to stimulate the latter it would not be a bad plan for the local association to offer prizes to the errand boys who kept their glass cleanest). The articles should be arranged in "catchy" groups, sufficient of each article to be seen at a decent distance. In former days the articles were alternated—a little of almost everything—with the result that nothing attracted. The trade in cut smelling bottles, put up perfumes, and fancy toilet wrapped soaps, have all been more than retained in the hands of chemists, in spite of the former dangerous opposition from jewellers, drapers, and grocers. I believe at the present time that if anyone wanted a reliable article of the above kind they would always prefer purchasing from a smart chemist; consequently the three above articles should find a place nearly all the year round, together with seasonable requisites, influenced by local requirements, and specialties that might require particular prominence, always avoiding a tawdry or *6d.* bazaar appearance in showing seasonable articles. I would rather be a fortnight too early than a day too late; a customer will have noticed the articles, make a mental note, and mark that as the shop to purchase from.

November 7, 1898.

DEVONIAN (150/16).

IODIC-HYDRARG.—WHAT'S IN A NAME?

Sir,—You were so good as to publish my suggestion that the name Uro-Trepine might lead to a confusion with some other remedies. I now think it desirable to call attention to the name "Iodic-Hydrarg," as given by Messrs. Burroughs, Wellcome and Co. to a tabloid. One need not be an unreasoning purist in language to complain of such pigeon English as this name shows. A communication to the makers on behalf of a physician whose telegraphed request had not resulted in what he desired, brought the following reply: "The difference between mercuric iodide and iodic-hydrarg. is as follows: the former is, as its name implies, the higher iodide of mercury, having the formula HgI_2 , whereas the latter is a double iodide of potassium and mercury, having the formula $2(HgI_2KI)3H_2O$. Were the substances synonymous they would be entered in our list under both names." Now, the list of tabloids does not say a word about the composition of "iodic-hydrarg.," and one is entitled to ask, By what authority has potassio-mercuric iodide received this new and strange name, certainly not suggestive of a double salt, but which might more reasonably be supposed to be a new way of describing mercuric iodide? Trusting that the makers will adopt such a change of nomenclature as shall remove this stumbling-block from the path of physicians and pharmacists.

Leeds, November 7, 1898.

RICHARD REYNOLDS.

VISUAL OPTICS IN THEORY AND PRACTICE.

Sir,—I think Mr. Laurance has entirely missed the points I took against what I considered to be a careless and inaccurate description of the efforts of chemists to cater for and correct visual defects, and that whatever he may say or do, the bulk of sight testing will always be done by ophthalmic surgeons, for a number of reasons, which I think I could give, and which he appears to me to corroborate. I should be one of the first if it were, as he appears to think and say, that the majority of chemists know nothing of visual optics, to agree the condition of things should be altered. His assertion is a very tall one, and would without doubt be most vigorously contested; and

I am sure, as he fails to give either facts or figures in support of what at present (leaving out his satire) is his mere statement, his reply will fail to impress the members of our profession.

London, November 7, 1898.

D. JONES.

THE PROPOSED POISON REGULATIONS.

Sir,—Please allow me to express my satisfaction at the prospect there seems to be of the question of the storing and dispensing of poisons being raised from within our ranks. If I understood aright, our President deprecated the discussion of this matter during the time the late Bill was before Parliament, otherwise I should have ventured to write to you at the time, suggesting the necessity of reform from within. First, let me confess my ignorance of the regulations upon this matter, which are said to be found in the Calendar. What Mr. Cross said is but too true. He stated a fact very mildly when he said that "no doubt all pharmacists did not possess a copy of the Calendar." Doubtless our Secretary could give information upon that point. I should like to see those regulations printed in the Journal [They were reprinted in the *Pharmaceutical Journal* for July 2 last.—ED., P. J.], and also I should like, as a preliminary to discussion, to have that table of mortalities from scheduled poisons printed again. In reading that table I was particularly struck by the fact that sixty deaths had occurred in two years from prussic acid. This presumably includes deaths from poisonous cyanides generally, but some cases were certainly due to prussic acid. The sale of this might, I think, very conveniently be prohibited *in toto*, except, of course, to medical men. My experience, I know, is limited, but during sixteen years as assistant and principal in various places I have as yet not met a case in which there was any real necessity to sell prussic acid. Would there be any objection, sir, to a regulation ordering that strychnine should be coloured in the same way as arsenic? I know of none, nor of much occasion to sell undiluted strychnine at all, but that would come out in discussion. Such a regulation would have probably averted one recent death at least in a case which must be fresh in the mind of every pharmacist. Some regulation might be made, too, with regard to the sale of opiates. I am aware that there is much difficulty in restricting the sale of those poisons which have a *bona fide* and legitimate use in arts, manufactures, or domestic economy; but I am convinced that a discussion of the problem and a serious effort to diminish the number of deaths from the poisons which are restricted to us pharmacists can be productive of nothing but good, both to the public well-being and to the reputation of the persons entrusted with the duty of safeguarding the public welfare in this direction.

Bristol, November 8, 1898.

E. F. YEUNG.

COMPANY TRADING.

Sir,—The remarks *re* company trading made by the President at the recent Council meeting are sensible and timely, and should be carefully kept in mind when the perplexing problem of company pharmacy is being considered. The general tone of his remarks would, however, give the impression that the resolution passed by the Nottingham and Notts. Chemists' Association was, to put the matter mildly, a little wide of the mark, and I shall, therefore, be glad if you will afford me a little space in which to present an aspect of the Nottingham meeting which the incomplete report in the *Pharmaceutical Journal* overlooked. The members of the Nottingham Association were practically in complete accord on several points, viz. :—

1. That any matter of legislation can be considered only from the standpoint of how it affects the public welfare.
2. That it appears logical to assert that if it is not legal for an unqualified individual to carry on the business of a chemist and druggist it ought also to be illegal for an unqualified company to do so.
3. These unqualified companies generally employ a registered chemist as manager of each branch, and, therefore, the crucial point of the whole question is, Is the employment of a registered chemist, who is simply a salaried assistant to an unqualified company, a sufficient public safeguard? On this question the whole issue rests, and unless it can be answered with a definite negative, we need not seek any reform.
4. The question of company trading is rendered more difficult of solution by the fact that several chemists have turned their businesses into companies, and conduct them in a manner to which no exception can be taken.

On these points most pharmacists will be agreed, but when we come to consider whether the case against unqualified companies is sufficiently clear to warrant us seeking further legislation, and

if so, on what lines we shall proceed, then it requires some body of men in touch with the whole question to give a definite answer. Several suggestions were laid before the Nottingham meeting, but none were considered to be sufficiently practical to crystallise into a resolution, and it seems to me that instead of asking local associations to discuss the matter and report to the Federation it would be far better for the Council of the Pharmaceutical Society to carefully consider the matter, formulate some plan which it considers to be practical and submit that to the local associations for consideration and ask their assistance in furthering the plan. The Nottingham resolution was, therefore, not an abstract one, but the most practical one that could be passed, and unless the Pharmaceutical Society (or its Council) does formulate some scheme I fear the whole agitation will simply end in smoke.

207, Radford Road, Nottingham,
November 8, 1898.

WILLIAM GILL.

THE CHEMISTS' ASSISTANTS' UNION.

Sir,—In placing before the chemists' assistants of Great Britain a proposed policy of the Chemists' Assistants' Union through the medium of your columns, perhaps a few remarks on its constitution and on the difficulties to overcome in its construction would not be out of place. A point that has caused a considerable amount of discussion at all meetings of the Union, and which is one of great importance, has been: Should membership of the Union be open to every assistant in the drug trade, or only to those who have served an apprenticeship with and are employed by a registered chemist? The Committee (*pro tem.*) have, after protracted deliberation, decided that the Union shall be composed of the latter only. And as a further check against unsatisfactory membership, the Council have the power to refuse any application from an assistant whose business principles are detrimental to the interest of the calling. It may be intimated that a prominent wholesale firm has kindly placed its register of situations vacant at our disposal, and that a number of chemists have already been supplied with assistants by the Union. The Union has met with considerable favour in the eyes of many prominent medical men, and several chemists have been enrolled as patrons. The Committee submits the following to the notice of your readers, and invites criticism for the perfection of its policy. This draft is respectfully brought to the notice of all provincial chemists and chemists' assistants' associations for their consideration:—

PROPOSED POLICY OF THE CHEMISTS' ASSISTANTS' UNION.

1. To combine against the unjust system of unqualified company trading, to do our utmost to secure the co-operation of our fellow-assistants.
2. To avail ourselves of the privileges given to qualified assistants by the Pharmacy Acts Amendment Bill, 1898, and by combination to secure direct representation on the Council of the Pharmaceutical Society.
3. To establish in London an institution or club, to be the headquarters of the Union, where members can meet for social or business purposes, and where provincial members can apply for information, etc.
4. To establish at the headquarters an Engagements' Register, with the object of facilitating the securing of worthy employment and employes.
5. To strengthen the parent Society by our combined support to the suppression of illegal competition and trading.
6. To appoint at every large centre a local secretary, and so establish branches of the Union in touch with the London headquarters.
7. To consider, and if practicable to form a mutual benefit institution, with the object of providing aid in sickness.
8. To bring what weight we may possess to bear on Members of Parliament for the extension of the power of the Society in the protection of our calling.
9. To promote good fellowship in a hitherto alienated body of workers, and to seize all opportunities for the promotion of our welfare.
10. To secure by the above policy a healthier condition both financially and socially of the employer, and thereby ensure to assistants a remuneration and hours of labour consistent with the higher educational training of the present.

These few lines in conjunction with the rules published after the second public meeting of the Union, which have been revised, No. 19 now reading "shall not" instead of "is recommended not to" sell his services to improperly constructed companies, will give to assistants generally some idea of the intentions of the Union. A smoking concert will be held at an early date, and we cordially invite all employers and employed in the trade, when there will be a full opportunity of discussing the proposed policy.

Headquarters (*pro tem.*), The Formative Committee,
Horse Shoe Hotel, Pp. J. LLOYD ROBERTS,
Tottenham Court Road, W.C., Hon. Secretary.
November 8, 1898.

ANSWERS TO QUERIES.

Special Notice.—Scientific, technical, legal, and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on different slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms, and the registered number added in each instance should be quoted in any subsequent communication on the same subject.

STAND DEVELOPMENT.—Yes, the method of development described at p. 446a can be used with cut films, provided they are kept upright and apart from one another. [*Reply to GAMMA.*—18/19.]

FORMULÆ AND REACTIONS.—Thanks for the suggestion. The matter has already been under consideration, and will not be lost sight of. [*Reply to H. G.*—151/37.]

CONTINENTAL PRESCRIPTIONS.—Yes, both solids and liquids are weighed as a rule. Your second question is not comprehensible as it is written. [*Reply to INQUIRER.*—18/33.]

BOOK ON PHYSICS.—You cannot do better than procure Aldous' 'Elementary Course of Physics' (Macmillan, 7s. 6d.); though not "a small book," it deals with the subject more satisfactorily than any other we know. [*Reply to E. A. S.*—18/29.]

SOLUBILITIES.—You quite miss the point of the communication you refer to. The writer did not attempt to convey that one set of figures was more accurate than the other, but merely that one was not in accordance with what he regarded as the recognised standard. [*Reply to A. M.*—152/44.]

MODERN WORKS ON VETERINARY MEDICINE.—Gresswell's 'Equine Hospital Prescriber'; the same author's 'Bovine Prescriber'; each published at 2s. 6d.; Hoare's 'Veterinary Therapeutics and Pharmacology,' 10s. 6d., and Gresswell's 'Veterinary Pharmacopœia,' 10s. 6d., are all useful works. [*Reply to J. H. G.*—18/23]

MICROSCOPIC CHARACTERS OF LEAVES.—There is no recent book on the subject, but the structure of several medicinal leaves has been dealt with in the *Pharmaceutical Journal*: hyoscyamus, stramonium, senna, and jaborandi (October 27, 1894), aconite (February 27, 1897), belladonna (July 17, 1897), buchu (September 11, 1897), and cannabis indica (January 8, 1898). For others you should refer to 'Pharmacographia.' [*Reply to H. L. S.*—18/30.]

INDIGO CARMINE.—No, this is not the same as sulphate of indigo; it is the sodium salt of indigotin disulphonic acid, $C_{16}H_8(HSO_3)_2N_2O_2$. The reagent, consisting of so-called sulphate of indigo, is really a solution of this acid in a great excess of sulphuric acid. Indigo carmine is largely used by dyers; although wholesale druggists may not include it in their lists they would procure it for you if asked. [*Reply to APPRENTICE.*—18/21.]

DISINFECTANT FOR OLD CESSPOOLS.—Probably Tuson's patent disinfectant fluid, which consists of a mixture of zinc chloride and corrosive sublimate, together with sulphurous acid, is what you refer to. You can procure this through any wholesale house. Crude commercial sulphate of copper is also useful for the purpose. For special compounds apply to Messrs. T. Tyrer and Co., Stirling Chemical Works, Stratford, E., or to Messrs. May and Baker, Garden Wharf, Battersea, S.W. [*Reply to F. R.*—18/32.]

BACTERIAL TREATMENT OF SEWAGE.—You will probably find all you require to know in Dibdin's recent work on sewage. A patent was granted to D. Cameron and F. J. Commin, of Exeter (No. 21,142, November 8, 1895), for this method of treatment of sewage, which has been successfully carried out at Exeter and many other places in this country. If you obtain a copy of the specification of this patent, it will give you full information on the subject. Notes on the process have also appeared in the *Journal of the Society of Chemical Industry.* [*Reply to ENQUIRER.*—18/34.]



Pharmacy and the Allied Sciences.

REVIEW OF CURRENT WORK.

Drs. H. W. G. Mackenzie and W. E. Dixon

Physiological Action of Podophyllin. publish an interesting paper on the physiological action and therapeutic properties of podophyllin, with special reference to Indian podophyllin. They find that *Podophyllum emodi* is an active purgative and a useful therapeutic agent, and that it may be substituted for *P. peltatum*. The Indian drug, however, is nearly twice as effective, physiologically, as the American. The active principles contained in the crude resin of Indian podophyllum—crystalline podophyllo-toxin and podophyllo-resin—both act as excellent laxatives in small doses, without secondary constipation or other objectionable symptoms. Although both those substances act very similarly on the alimentary tract, it is only the podophyllo-resin which exerts a true cholagogue effect, and that shows itself "rather by a large increase of the solids secreted than by an increased quantity." Both the active principles exert their specific activity when injected hypodermically in alcoholic solution, but in man so much irritation is produced as to forbid their employment in this manner.—*Edin. Med. Journ.*, November, 1898.

Eucalyptol Determination. L. F. Kebler recommends the following assay process for eucalyptus oil:—Place 8 Gm. of the oil in a beaker cooled in ice-water, gradually add 4 C.c. of phosphoric acid (s. g. 1.75) with agitation, and again cool the contents of the beaker by means of ice-water. After cooling, slowly but thoroughly mix the contents of the beaker by means of a glass rod, remove the eucalyptol phosphate formed by placing it between folds of filter paper and subjecting it to heavy pressure, then weigh and decompose it by treatment with hot water. The phosphoric acid is liberated and can readily be determined by titration with potassium hydroxide; the eucalyptol can then be determined by difference. As a method of assay, the above process does not give absolute results, but those obtained are close approximations. Working with pure eucalyptol, the percentage by difference came out at 103.75, whilst Scammell's direct process indicated 62.14 per cent. only.—*American Journal of Pharmacy*, lxx., 492.

Nutrition of Yeast. Dr. A. L. Stern has undertaken an investigation to determine the amount of inorganic and nitrogenous nutriment required to produce the largest crop of yeast, the greatest assimilation of nitrogen, and the most complete fermentation in a fixed time. The yeast employed was a pure form obtained from a Burton pitching yeast, the sugar was *d*-glucose, the nitrogenous nutriment asparagin, and the inorganic nutriment of two kinds—the first prepared from a yeast ash and free from sulphur, the second a mixture of potassium phosphate, magnesium sulphate, and calcium sulphate. Each experiment consisted in fermenting 500 C.c. of a 10 per cent. solution of the sugar, to which varying amounts of the nitrogenous and inorganic nutriment had been added. The author finds that sulphur is an essential constituent of yeast nutriment, and that in the absence of other more suitable forms of sulphur nutriment, sulphates can supply the yeast with this element, a portion of the sulphate being invariably reduced to sulphuretted hydrogen. Attempts were made to find a substance of known constitution which could supply yeast with sulphur

without the evolution of sulphuretted hydrogen, but without success. No evidence could be obtained in support of the statement that iron is an essential constituent of yeast nutriment. The author has examined the effect of variation in the amount of (1) nitrogen nutriment and (2) inorganic nutriment respectively on the amount of nitrogen assimilated, the percentage of nitrogen nutriment assimilated, the percentage of nitrogen contained in the yeast, the percentage of sugar remaining unfermented, and the weight of the yeast crop, and draws the following conclusion:—Any increase of nutriment beyond a definite limit will not materially increase the amount of nitrogen assimilated by the yeast, the percentage of nitrogen in the yeast, the weight of the yeast, or the amount of sugar fermented. This limit, called the normal supply, is the largest quantity that the yeast can assimilate under the conditions employed in the experiments, and is approximately 0.025 Gm. of inorganic nutriment per 100 C.c., and the same weight of nitrogen supplied as asparagin.—*Proc. Chem. Soc.*, 198, 182.

Extraction of Nickel. Dr. Ludwig Mond has devised an ingenious process for extracting nickel from its ores, by combining the metal with carbon monoxide. The process is of exceptional interest because nickel is a very refractory metal, having a melting point of over 1000° C., and is yet able to combine with carbon monoxide at a temperature of over 50° C. to form a gaseous compound—nickel carbonyl. That gas, on heating to a temperature of 150° C., becomes completely dissociated, pure carbon monoxide being given off and metallic nickel deposited on the sides of the vessel in which the gas is heated. Nickel ores, most of which contain sulphur and arsenic, are first roasted to convert them as far as possible into oxides, and the resulting oxides are treated with reducing gases so as to reduce the oxides to finely-divided metallic nickel. The reduced nickel is then transferred to a suitable tower, which is maintained at a temperature not exceeding 100° C., and carbon monoxide passed over the material. The nickel carbonyl thus formed is then passed into a suitable chamber or vessel containing granules of commercial nickel or iron, and on being heated to 180° C. the nickel carbonyl is immediately decomposed, and metallic nickel deposited on the granules of metal, whilst carbon monoxide is set free. The carbon monoxide thus liberated in the process is returned to the volatiliser, where it attacks a fresh quantity of nickel, so that the process is continuous.

Lubricants for Glass Stop-Cocks. F. C. Phillips has experimented with a view to producing better lubricants for glass stop-cocks than those in ordinary use, and he finds that the following mixture lubricates well, is translucent, adheres to the glass, and is not saponifiable:—Pure rubber, 70; spermaceti, 25; soft paraffin, 5. The materials were thoroughly mixed while hot, the rubber being melted first and the other ingredients stirred in. A little more soft paraffin should be used in winter than in summer. Still better results were obtained by mixing pure and fresh rubber, 70, with yellow beeswax, 30. The rubber was heated in a covered vessel until thoroughly melted, the wax added, and the hot mixture well stirred. This lubricant is quite translucent in thin layers, and protects stop-cocks from sticking, even when used for concentrated solutions of caustic alkalies. To keep the rubber mixtures in the best possible condition, they should not be exposed to air longer than necessary when heating, and they ought to be preserved in closed bottles. The stop-cocks should occasionally be thoroughly cleaned and re-coated with the rubber mixture.—*Journ. Am. Chem. Soc.*, xx., 678.

PHOTO-MICROGRAPHY.—VIII.

BY EDMUND J. SPITTA, L.R.C.P. LOND., M.R.C.S. ENG., F.R.A.S.

The photo-micrographer may occasionally be asked to produce photographs about 200 or more diameters to illustrate pathological specimens which are violently stained in contrast colours, of which red is often a large component. If these be photographed by the ordinary methods it will be found the resulting prints are full of severe contrasts, the red stained portions coming out violently black if the rest of the print be fully developed, whereas if under-developed to render these less pronounced and to show details which exist in the negative, the rest of the structure appears faint and ill-defined. No amount of "shading" in making the print will cure the trouble. To render a more uniform photograph resort must be had to the power which exists in the hands of the photographer to lessen contrast, viz., he must use a coloured glass of the same wave-length as the predominant colour of the specimen. If, for example, it is one of those specimens, where red stained parts abound and are so troublesome, he must reduce the contrast by employing a red glass, which will increase the exposure for the parts not red, whereas it will not materially affect those so stained, anyhow to the same amount. In other words a more balanced negative will result. To take such photographs he must, it need scarcely be pointed out, use a red stained plate, such as a Cadet Spectrum or Lumière's Panchromatic, or the red and yellow plate. He must develop in the dark, only looking at his picture by fits and starts with a subdued green light if possible. If he is unable to have this green light he must look at his plate as little as possible or, of course, it will get fogged; and he must recollect also to place it in the slide in the absolute dark. Having then produced a much flatter negative, but one full of detail without much contrast anywhere, he had better print from it, either by the platinotype process with daylight or by the use of platino-bromide paper and the gas. Let him develop too with weak developer and over-expose the print. He will then get a grey print not unlike a pencil drawing.

How to make lantern slides from the negatives obtained photo-micrographically is the next process to be explained. Plates ready made are sold by most makers, and each claims superiority of manufacture. They are primarily of three kinds: Ordinary gelatin, printing-out gelatin, and collodion. Of these the gelatin are by far the easier to work, as they possess much latitude on exposure, whereas the collodion type, whether ready made or manufactured by the photographer himself, must have exactly the right time given them, or they are of no use.

With respect to plates made with gelatin emulsion, they may again be divided into rapid and slow. It is not easy to define accurately the advantages or disadvantages of either, but speaking generally the rapid type give black images, whereas the slow are more amenable to treatment and produce pictures much more warm and soft. Almost any colour may be obtained with them if the directions enclosed in each box are carefully carried out. Then, again, if one is unable to obtain detail known to exist in a negative with a quick plate, the prudent experimenter will surely try a slow one, and if unsuccessful again, try his luck with one of the printing-out type.

For the subject in hand—the production of lantern slides from photo-micrographically obtained negatives—seeing they are more dense, and require such careful exhibition of detail—and as there are many who consider that rapid emulsions give more gradation than slow ones—although this is not a universally accepted statement—so it has mostly been found that the rapid series of lantern plates suit the purpose the better. As to the finest maker, the

reader cannot expect to be advised here, but what I have used and can find no fault with are those prepared by the Paget Prize Company, the "Rapid" series.

Let one be placed on the negative as it lies in the printing frame, having first carefully examined its film to see that no little pieces "stick up" from the edges—an attempt at "frilling" of the plate. If these bits are present they will be found to be very hard, and will resist the accurate contact of the lantern plate against the film of the negative so effectively as to prevent the best result being obtained. Let them be scraped off with a sharp knife. Seeing that the lantern plate lies in sharp contact then, the frame is held in front of the gas flame at a distance of a foot, taking care to move it about as mentioned when explaining the exposure of Nikko paper. A good negative of the proboscis of a blow-fly will require about thirty seconds, forty-five will not hurt it, as there is so much latitude with these lantern plates. This ended, remove the plate and flow over it a developer consisting of equal parts of the hydroquinone and soda solution, which happens to suit the emulsion admirably.

In a few seconds the positive will commence to appear, growing in density and definition with exceeding rapidity. Attaining sufficient definition and blackness, the developer is poured back again into the measure (for it can be used over and over again, as when using it for Nikko paper), and the slide allowed to drain for four or five seconds, when it will be found to grow distinctly foggy. Wash quickly and sharply—not losing much time, as development is apt to go on notwithstanding the washing—and plunge into the hypo bath, which is of the same strength as that employed for fixing negatives.

In a few minutes—a much shorter time than that required for fixing negatives—the positive image will appear quite free from yellowness. Let it rest in the bath for a few minutes longer than appears actually necessary, just the same, only for a shorter time, as was recommended when dealing with negatives. If now the background appears perfectly transparent and the image bright and black, the operator may be satisfied, but if brown it has been over-exposed. Try half the former exposure. If, on the contrary, it is everywhere faint and shows lack of detail—the hair points hardly out and the ends of the suctorial tubes deficient in continuity—the time before the gas has been too short—remedy: double it.

But should the slide appear with a muddy ground, so very common and so very unsightly, one of three faults have caused it. Either the negative is too thin—remedy, intensify it in a manner to be yet explained—or the slide has been over-exposed or over-developed. To ascertain which of the three, first look at the negative. If too thin the gas-flame will be too easily seen through it. If the fault is over-exposure of the slide, try less; and if over-developed, do not be so slow over the process. Suppose, after trying again, the background of the slide still appears dirty-looking and overcast, then glance at the original specimen and note if the mounting medium is clear or yellow. If yellow, there is no remedy but taking a fresh negative with more exposure. But here a most troublesome difficulty may arise. Suppose a more exposed negative is taken and it is found on development that the background is sufficiently dense and black so as to produce a clear, clean positive, but at the same time the proboscis itself is much over-exposed; all its details being choked up with deposit. Thinning will be of no service, because the background will be thinned at the same time as the proboscis, and the final result will be the same as if the whole negative had been all over-exposed less. Admittedly the difficulty is great, but it can be very often got over to a great extent in the following manner:—Consider the circumstances: a yellow interceptive background

from the colour of the mounting medium, which increases the exposure, and a brilliant proboscis, which has only absorbed enough of the yellow mountant to clear it and make it more transparent. An increase of exposure has been found to increase the density of the background, it is true, but at the same time to cause over-exposure of the proboscis itself. The only way generally known is to use a glass screen of some colour to render the contrast in exposure less severe. A green pot glass, about one-eighth of an inch thick and of medium density, will increase the total exposure, it is true, some five or six times, but will often produce a more equally balanced negative. Sometimes a yellow screen is preferable, and with certain specimens a still better result is obtained. Let the photographer try the effect of each colour and judge for himself. When the contrast is not pronounced enough, as often found with photographs of bacilli, exactly the opposite treatment is required, and a glass used to increase it.

The lantern plate should be washed after leaving the hypo for at least an hour, and then be dried on the hot water tank, after having wiped the back. Wiping the front of any lantern plate is not a good thing to do. It is very useful in the case of negatives, but with lantern plates certain markings sometimes occur if the fabric be too severely pressed on to the emulsion.

One more matter should be mentioned, which sometimes gives rise to a large amount of trouble and experiment, and which will occasionally occur in warm weather with these and other lantern plates, namely, a distinct and fatally pronounced yellowing of the clear portions of the film, which shows itself after fixing. It seems to resist all treatment, and it was a long time before I ascertained the cause. At first, common hypo was thought to be the cause, and that the yellowness was only due to imperfect fixation. This was ascertained to be an error, and all the solutions were alike called to book for the trouble. The emulsion was then blamed, and the manufacturers called upon to explain. After a very considerable time was spent, and after the most courteous attention of the Paget Company was well-nigh exhausted, the trouble was discovered to arise from a staining by the developer when the process was carried on too slowly, and to an insufficient subsequent washing before fixing. The trouble never occurs in winter, but sometimes, though rarely, it occurs in summer. Considerable soaking in water after development will remove it, but it is better to expose a little more, risking a browning of the final image, which will occur from over-exposure with lantern plates as with Nikko paper.

The slide is mounted by bending it against another slip of glass the same size, a mask of paper of suitable shape being interposed to prevent the film touching the surface of the opposing plate.

The "printing-out" slide needs but little description. It is made with a very transparent emulsion, and is placed in the frame and exposed to artificial or other light like an ordinary piece of printing-out paper. One side of the frame can be lifted, and owing to the transparency of the film the depth of printing can be easily estimated. The subsequent processes are fully set out in the printed directions with each box, and need not be narrated here.

With respect to collodion plates, the best ready-made ones I know are sold under the name of "Hill-Norris Dry Collodion Lantern-slide Plates." They require about a third more exposure than the rapid Paget previously described, and they may be developed with the same hydroquinone and soda solution, as it suits them very well. Great care is necessary in the use of the plates by contact, as the film is so delicate the slightest touch will scratch them. They also require the most exact exposure, as they flash up in development to a certain pitch which can never be made deeper or more dense by any length of development. They have the advan-

tage, however, of being able to be fixed by a watery solution of any strength of cyanide of potassium, which does its work immediately and only requires a few seconds' washing to remove. They can be dried, too, in front of the fire or over a spirit lamp with impunity in a few minutes.

Seeing, however, that so many collodion slides are made by the so-called "wet-plate process," it would be an omission on my part if I neglected to mention how these can be manufactured by the photographer himself. It is first necessary to obtain what is called a bath and dipper, which can be procured for small-sized plates very cheaply. Into this is placed a solution of re-crystallised nitrate of silver from 40 to 60 grains to the ounce of distilled water. The glass plate to be used should be first most scrupulously cleaned both sides, and this must never be neglected, for if so the penalty paid for the mistake will be a severe one—the film will float off after its development, or after it is fixed in one or other washings.

To make this less likely I have always adopted the following plan in times past, when the wet-plate process was freely used for negatives, even on the field. It is to pour over the plate a preliminary coating of albumin in some form. There are many formulæ, but the one used was always effectual, easy to make, and kept well. The solution was made by mixing 1 part of white of egg in about 500 to 700 parts of water, to which was finally added 3 or 4 drops of commercial carbolic acid. The plate, carefully cleaned with spirit and water and plenty of rubbing, the albumin solution is poured over it, several plates being done at one time, and drying afterwards effected spontaneously in a dust-proof cupboard. When coating these plates with the bromo-iodised collodion, each one is held in the left hand, whilst the right one is occupied with pouring the collodion from its specially-capped bottle on to the centre of the plate in a little pool. The plate is tilted so as to flow the collodion in one wave—and only one—all over it equally, the surplus being quickly returned to the bottle, which is instantly covered. The operator is careful now not to incline the plate more in one direction than in another, or there may result a crease from this cause on the film. Presuming he accomplishes this satisfactorily, he watches for the material to "set," and just when it has—let him try the edge at one corner to make certain—he places it into the silver bath, resting it on the dipper. When on lifting the slide out he sees no greasiness of the film, which is generally effected in about three minutes in summer, and six in winter, he places it on the slide, which, by the way, should be made for wet plates, having silver wire corners. It is needless to say contact is out of the question, so all transparencies of negatives must be taken with the camera and lens, the lime-light condenser already explained being used if daylight, which is much quicker, cannot be utilised. Development with one of the many formulæ is carried out in the usual manner, great care being exercised in pouring the fluid over the plate to do so with one sweep of the hand. The following recipe is a very good one:—

Ferrous Sulphate	10 grains.
Glacial acetic acid	15 minims.
Alcohol	15 to 20 minims.
Water	1 ounce.

As the silver bath gets old—more and more silver crystals being added from time to time to keep up its strength, more and more alcohol is required in the developer to make it flow evenly. This hint should not be forgotten.

Washing, fixing, and drying are carried out in the same manner as with the dry-plate collodion plates.

As all collodion films are so tender every lantern-plate must be varnished. Rouche's transparent variety for wet plates I have always found to be excellent, but most dealers supply varnish equally good.

If the slide after development appears rather flat, intensification may be resorted to, and this is done at once by pouring over the film some of the following, to which has been added a few drops of silver nitrate dissolved in distilled water (about 2 per cent.).

Pyrogallic acid	2 grains.
Citric acid	3 grains.
Water	1 ounce.

After fixing, intensification may also be performed, but the solution is different and the effect very often prohibitive, as the film nearly always turns yellow or of an ugly colour. In my experience it is quicker and far more satisfactory to make another exposure rather than tinker with a lantern slide. With a negative it may be different.

The faults that may arise by this process are many. The following are the leading ones:—

1. If the plate, after development, appears foggy in patches, probably the plate has not been properly coated with albumin, or is not clean.
2. If patches are transparent in bubbly-looking spots probably bubbles have been present, and so have prevented the plate being properly sensitised in the bath.
3. Streaks and irregular markings suggest a damp plate in parts.
4. Streaks all over and general irregularity in the film; some parts much more coated than others; usually arise from badly coating with the collodion, and parts drier than others before putting in bath.
5. Comets and pin-holes often come from dirt either in the collodion or on the plate.
6. Marks of deposited silver on the edges arise nearly always from a dirty slide.
7. Flat pictures nearly always mean a dirty bath. To remedy expose it to the sun and filter. Avoid a too acid bath, but equally so an alkaline one.

A short while back I mentioned that I would describe intensification of a gelatin plate. It is easily done. The dried negative is re-wetted and placed in a concentrated solution of perchloride of mercury. It turns completely white. When white all the way through, let it be well washed for half an hour, and then returned to the developing dish, into which should be poured some of the hydroquinone developer. The negative will turn rapidly black. When this is seen on looking through the negative to be complete, more washing must be carried out for an hour. Streaks and spots arise nearly always from too short and inadequate washing.

BACILLUS SUBTILIS IN LIQUOR POTASSII CITRATIS.*

BY WILLIAM A. CHAMBERLIN.

Pharmacists are often annoyed by growths of micro-organisms in the aqueous solutions of certain chemicals. While many of these are comparatively harmless from a therapeutical point of view, they spoil the appearance of the preparation, and often excite a fermentation that ultimately renders it worthless.

Many dispensers find it convenient to keep separate solutions of citric acid and potassium bicarbonate for preparing the official "liquor potassii citratis" extemporaneously.

In examining, recently, a solution of citric acid kept for this purpose I noticed a heavy flocculent deposit or growth. I collected some of the growth and added it to agar-agar in a test tube, which had been allowed to gelatinise in an oblique position in order to extend the surface of culture, if any occurred.

The tube was permitted to remain in a closet at an ordinary temperature. After twenty-four hours there were no signs of development, and it was concluded that the growth, if any, would grow only in an acid media, for the agar-agar used had been made distinctly alkaline, since most bacteria thrive better in an alkaline media. After forty-eight hours, however, a decided growth appeared. Two spreads of the organisms were made on cover-glasses, one being stained with gentian violet for three minutes, the other with carbol fuchsin for five minutes. They were mounted in Canada balsam, and examined with a one-twelfth inch oil immersion objective.

The organisms were distinctly recognised as *Bacillus subtilis*, or hay bacillus.

Bacillus subtilis is ordinarily found in water, air, and infusions of hay. It has locomotive powers, and grows at ordinary room

temperatures in all culture media, whether acid or alkaline. It is aerobic, that is, it requires the presence of oxygen in order to develop. It reproduces its species by producing spores and by fission. It is non-pathogenic, but is saprophytic, i.e., it lives on decaying organic matter, causing putrefaction and fermentation.

From this it can be plainly seen that a preparation with the usual "liquor potassii citratis" as an ingredient—subjected to the above conditions—would be liable to decompose in a very short while, or, at any rate, it would be anything but a permanent preparation.

There is, however, a remedy for the difficulty. In the first place, distilled water should be always used for making the solution, and the salt and acid should be dissolved in it while hot.

Then, if decomposition takes place, the bottles holding the solutions should be placed in a water-bath, or in a steriliser, twenty minutes a day for three days, and all the bacilli that have been developed will be killed, for but a few spores are killed at 100° C.; they must be allowed to form into bacteria before they can be destroyed by sterilisation. Of course, this eliminates all carbonic acid gas, but it inhibits further fermentation, and yields a sterile solution.—*Alumni Report*.

TIME LIMITS IN THE U.S. PHARMACOPEIA.*

BY JOSEPH FEIL, PH.G.

All drugs are essentially chemicals, and as chemicals are all prone to decompose under a vast variety of conditions, it is natural to expect that galenicals, always containing several substances in intimate contact and frequently a large number, should decompose to a greater or less extent from the moment that their preparation has been completed.

In a large percentage of the pharmaceutical preparations used to-day, deterioration or detrimental changes are so guarded against that they remain in almost perfect condition for a long time; but in another class, containing important medicaments, it has been found impossible to preserve against destruction and serious regression, that not only render them worthless but even dangerous substances when used as drugs.

In the case of this class of galenicals the pharmacopœias should establish not only clear methods which tend to prevent decomposition, but also state a time limit beyond which their use should be prohibited.

I showed last year that tincture of iodine will remain about U.S.P. strength for a month, if kept in an ordinary shelf bottle exposed to light, but two months when kept in a dark closet; hence such a time limit ought to be appended to the description of this preparation and instructions added to prepare a quantity not larger than sufficient to supply the ordinary demand for this period.

Spirit of nitrous ether remains of fair strength for about three months after preparation, yet I have known a sample of this preparation manufactured by one of our best manufacturing pharmacists to assay only one-eighth strength and, on investigation, discovered that the jobbing house from whom this article was purchased had had it in stock for two years, selling it only when the particular make was specified; with a date on the package all interested would have used proper caution.

Diluted hydrocyanic acid deteriorates to one-half strength in six months and it is so easily prepared by the second process of the U.S.P. 1890 that no excuse can serve the dispensing of this important substance, having practically no value: a time limit would serve to prevent such action.

I have frequently noticed sulphurous acid in pharmacies with no odour. How long this preparation remains useable I do not know.

Among other galenicals that could profitably be marked with time limits in addition to all other precautions to preserve quality, may be enumerated syrup of wild cherry, syrup of althæa, solution of lead subacetate, camphor water, fennel water, anise water, diluted nitrohydrochloric acid, solution of hydrogen dioxide, certain cerates and ointments and others.

It would seem quite desirable likewise to order the yearly replenishing of the stock of such crude drugs, oils and chemicals that cannot be made by ordinary methods to retain their virtues, this is practically accomplished in some European countries at present.

* Read before the American Pharmaceutical Association, at Baltimore.

The British Pharmacopœia, 1898.

At a meeting of the Glasgow and West of Scotland Pharmaceutical Association, held on November 10, Mr. THOMAS DUNLOP read a paper on

The British Pharmacopœia, 1898.

He said the Association had taken such a lively interest in its production that he thought the members should not seem to be indifferent to it now that it was an accomplished fact. It was gratifying to find that several suggestions forwarded from Glasgow had been considered worthy of adoption. At the Conference it had been stated that in the production of the book the medical profession and manufacturers had been more studied than pharmacists, and on that account pharmacists might the more readily be excused if they were its principal critics. It had been generally and rightly admitted that it was an advance on any of its predecessors. Its qualitative chemistry and the physical and chemical tests that were appended to fixed and volatile oils and other articles of *materia medica*, placed in the hands of the pharmacist weapons of defence that were invaluable. Whilst redundancy had been avoided in the text, that was not the case in the index, which had now assumed dimensions that could not serve any useful purpose. For example, three pages were taken up with the acids arranged alphabetically, first in English and then in Latin. Similarly two pages were taken up with the extracts, one page with the infusions, one and a half pages with the pills, one page with the syrups, and five pages with the tinctures. The cross references were not more numerous than in the 1885 Pharmacopœia, but the fact that dosage and composition (or percentage strength), were repeated in each case made it more cumbersome. Although there was only one page more in the text of the volume, the index took up sixty additional pages, and in all comprised nearly one-sixth of the volume. The section of it, however, with which they came or should come most closely into contact was pharmacy. He said "should come" because it had been enunciated at the Conference, presumably in the interests of manufacturers, that the pharmacist of the future was likely to stand in the same relation to galenicals as the pharmacist of to-day did to chemicals, viz., be able to guarantee their quality whilst he relegated to another the manufacture of them. When that time came the examination schedule would require modification, as it would only be a waste of time for students to acquire a practical knowledge of processes they would never practise. It was to be hoped, however, that the "traditional pharmacist" and "the pharmaceutical purist" would not become extinct species, but that as education advanced their numbers would increase. Coming to the text, his first observations referred to CONCENTRATED LIQUORS.—Although those were not meant to supersede fresh infusions they gave in a concentrated form official preparations which should be uniform instead of the heterogeneous products that were commercially called concentrated infusions. Those of them he had were more limpid than any concentrated infusion he had ever handled. The menstruum being an alcoholic one would contribute much to this result. OINTMENTS.—The ointments with a paraffin base have been much improved by the re-arrangement of the relative proportions of the two paraffins. The more limited range of the paraffin melting points, as well as the reduction in the percentages of the active ingredients, also tend to make them much more plastic. Having changed the solvent in the alkaloidal ointments they could not now be rightly designated by their old title, as neither the Latin nor the English name was in keeping with the chemical constitution, oleate. Sulphur ointment was a very watery looking preparation, and one wondered what called for it being altered. OXYMEL OF SQUILLS.—The making of this without evaporation was an improvement. The formula admitted the practicability of a double strong diluted acetic acid exhausting the squill, therefore, why not have acetum scillæ made the same strength and dilute when required for syrupus scillæ? SYRUPS.—Many of these had been improved through the quantity of sugar having been reduced. It should be noted that syrup of codeine was stronger in alkaloid than it had been heretofore. The unofficial syrup contained 1 grain of alkaloid per oz.; the official syrup contained 2 grains of the phosphate per oz. This, calculated according to the new atomic weights, was equal to about

1½ grains of alkaloid, 40 grains phosphate representing 29.9 grains of alkaloid. The new phosphate for syrup of lemon was a decided improvement. The addition of syrup of glucose was of doubtful utility, syrupus giving satisfactory results where the compound syrup was ordered. Having said this, further reference to pills was obviated. TINCTURES.—These had attracted his attention most, not that he questioned the soundness of the judgment that led to the changes, but looking at them comparatively with the 1885 B.P., and in view of the fact that the changes might, as formerly, only be temporary. On Mr. Farr's authority they were informed that in cases where a weaker menstruum had been ordered the drug was equally well exhausted, a stronger spirit only removing more extractive. But no reason was given for increasing alcoholic strength where a weaker spirit had not failed to do its duty. Although they were informed in the preface that "90 per cent. alcohol is almost identical with the rectified spirit of the 1885 Pharmacopœia," the use of it for the same purposes was not justified by the experiments of Farr and Wright, whilst it entailed an outlay beside which there was no corresponding advantage. Mr. Martin was right when he, at the Conference, took exception to increasing alcoholic dosage for the sake of unifying medicinal dosage. The inclusion of an 80 per cent. alcohol (from 90 per cent. to 70 per cent. was a big gap) would, in his opinion, have been very judicious, as it could have taken the place of the 90 per cent. in many cases where such a strong alcohol was not required, e.g., spt. camph., spt. chlorof., spts. of the ess. oils, and tinctures generally, where S.V.R. of the 1885 Pharmacopœia was used. Under ol. menth. pip. they were informed that "it should dissolve in four times its volume of 70 per cent. alcohol," and yet nine times its volume of 90 per cent. alcohol was ordered to make spt. menth. pip. Similarly one volume of ol. lavand. dissolves in three volumes of 70 per cent. alcohol and ol. rosmarini in twice its volume of 90 per cent. alcohol, whilst nine volumes of 90 per cent. alcohol were ordered for the respective spirits. Asafetida, on the other hand, they were informed "should contain not less than 65 per cent. of matter soluble in 90 per cent. alcohol" (it did not say how much alcohol would be required to dissolve this 65 per cent.), and yet the tincture, although it has been increased in strength from 1 in 8 to 1 in 5, is ordered to be made with 70 per cent. alcohol. In this connection it would be interesting to know if manufacturers to whom they were asked to pin their faith observed the standards of crude drugs before making galenicals, as they must do the standards of officially standardised pharmaceutical preparations? That was where the extractive residues of the tinctures would give an approximate indication of the quality of the drugs that had been used in their manufacture. This question had been suggested by an experience of his own in making tr. asafet. since the issue of the new B.P. The gum resin, so far as appearance and aroma went, seemed good, but it only yielded 46 per cent. of soluble matter—a deficit of 19 per cent.—and the ash amounted to 31 per cent., an excess of 21 per cent. Moreover, although it had been such a poor specimen the menstruum only removed 43 per cent. of the soluble matter, which showed that 70 per cent. alcohol was not sufficiently strong. This was further proved by the tincture, which was bright, producing opalescence when it was mixed with some 1885 tincture. A glance at past pharmacopœias with reference to that drug showed how capricious an authority the Pharmacopœia was for the time being. In 1867 asafetida was said to "dissolve almost entirely in rectified spirit"; in 1885, "50 to 60 per cent. should be soluble in rectified spirit," and now the percentage, without variation, had been raised to 65. An analysis of the changes that had been made in the tinctures showed that 41 had been strengthened in alcohol:—

No. 11	Menstruum	S.V.R. 1885	Trs.,	are now made	with 90 p.c. alcohol.
" 3	"	Pr. Spt.	"	"	90 "
" 6	"	"	"	"	70 "
" 21	"	"	"	"	60 "

Of these 6 had been weakened in active ingredients, 19 were unaltered and 16 had been strengthened. On the other hand 18 tinctures had been weakened in alcohol:—

No. 7	Menstruum,	S.V.R., 1885	Trs.,	are now made	with 70 p.c. alcohol.
" 11	"	Pr. Spt.	"	"	45 "

Of these four have been weakened in active ingredients, three are unaltered, and 11 have been strengthened. The omission of tr. zingib. fort. when it is still required for making tr. zingib. *per se*—when both it and the syrup would have been conveniently made as dilutions of the strong tincture—were equally inexplicable. Six proof spirit tinctures and four S.V.R. tinctures had been omitted and three tinctures had been added. The *modus operandi* in the percolation process also called for remark, inasmuch as the relation of menstruum and drug in the initial process had been reversed. The quantity now ordered was inadequate for the purpose of damping, his experience being that to thoroughly moisten a drug it required double the volume of menstruum for the weight taken. On the chemical side, it might be noted that the tests for essential oils would have had their usefulness increased had colour reactions, as well as physical changes, been uniformly observed. In the ammonia test for ol. caryoph. and ol. pimentæ, the colour of the "semi-solid" was stated in the case of the former, but not of the latter. In the latter there were two strata, the lower being orange-yellow, and the upper amber coloured, which ultimately assumed the original colour of the oil. Then the phosphoric acid test for ol. cajeputi and ol. eucalypti acted differently on these oils. In the former the green colour was discharged, and a pale, straw-coloured mass resulted; while in the latter, as stated by Helbing, the addition of the acid produced "a dark reddish coloration." Then the nitrite test applied to ol. eucalypti produced a beautiful emerald-green colour, but according to Baker and Smith, of the Technological Museum, Sydney, the oil of the eucalypt. globulus does not give this coloration (*P. J.*, October 22, 1898, p. 437). If that were so, the importance of that colour reaction could easily be seen, seeing that globulus was official, and commercially was the higher priced oil. Several samples he had examined all gave the green colour, and they were bought as globulus. If these were constants they would be better for being authoritatively stated, rather than that they should seem to be accidental or give rise to doubt. Ol. cadini is stated to be "soluble in ether and chloroform, partially soluble in cold, almost entirely in hot alcohol, 90 per cent.," but in what proportion was not stated. These were a few of the points that had arrested his attention in perusing the B.P., 1898, and they served to indicate what a fertile field it presented for a varied expression of opinion. In view of the fact that the object of the paper was to introduce a discussion, he had purposely left untouched many points that were sure to be raised during the progress of the discussion, which he trusted would be as enthusiastic and profitable as it was to be prolonged.—Mr. SUTHERLAND thought there was a distinct improvement in regard to the index, especially from a student's point of view, but at the same time he thought it more profuse than it really ought to be. He should have liked to have seen one or two more syrup formulæ. Easton's syrup, according to the new formula, showed no distinct improvement. It deposited in a short time, and required a small amount of free acids to keep the salts in solution. The colour tests of the essential oils might well have been added. Most of them were coming to the conclusion that quite a number of things were beyond the capabilities of the ordinary pharmacist. Take the standardised preparations. There was no doubt a distinct improvement in having these placed on the market with a uniform strength; but at the same time he should have liked to have had a simpler method of determining the strength of these drugs, so that the average pharmacist could prepare them in his own place. While he did not doubt that these were supplied by the wholesale houses at the pharmaceutical strength, it was desirable that these should be manufactured by the pharmacists themselves. He was only thus expressing what many of the recent examiners in pharmacy had been saying. The new concentrated liquors were not, in his opinion, equal to the old-fashioned infusions. He did not think a uniformity of doses a step in the right direction. Doses might have been kept within a limit of 5 to 10 minims or 10 to 30 minims, and at the same time have a pretty uniform system of strengths from which they were prepared.—Mr. MACMILLAN thought the uniformity of doses a very great mistake. It was a Glasgow production, and he had done what he could to show the absurdity of it at the time, but the idea had been that it would be such a saving to the younger men. The difficulty with the whole of them was the number of doses on the border lines of safety. He had searched out about a dozen of these, and he defied any man to say whether they were strong or ordinary doses.—The PRESIDENT failed to see why the alteration of doses had been gone into to so large an extent. He was certain, for instance, that many medical

men who now ordered tincture of nux vomica were not aware that they were getting a stronger dose.—Mr. MACMILLAN said it was absurd that they should dispense prescriptions according to the new B.P. when it was not the thing ordered by the prescriber. He understood that there was a difficulty about this, but that it might be overcome by publishing the book, say, in the middle of summer, and not gazetting it till January 1. Might there not be some pronouncement sent by the Association now to the General Medical Council, or whichever body was responsible for the publication?—Mr. SUTHERLAND thought that would be remedied in the next edition, as he had no doubt the Committee would, in the next edition, publish the book some time before they made it legal.—The discussion was then adjourned to the next meeting.

At a meeting of the Manchester Pharmaceutical Association, held on November 9, the chair was taken by Mr. G. S. WOOLLEY, and a paper was read by Mr. J. H. HOSEASON on

The Standardisation Processes of the B.P.

The author criticised many of the official processes at length. He said the lead oxide quantitative test for phosphoric acid might have been replaced with advantage by the method of determination with magnesium pyrophosphate. In the present test, other acids (except nitric) and salts occurring as impurities will be reckoned as phosphoric acid. Ammonium phosphate is assayed by the magnesium test, but not sodium phosphate. The salts of quinine and morphine are not to be quantitatively determined, but in the case of all other alkaloids and their salts no assay process is given. It seems desirable that those compounds and preparations obtained from them should answer to suitable volumetric tests. The present titration method for ammonium carbonate is fallacious, especially in the hands of an unskilled operator, and the quantitative tests are incomplete in spt. ammon. aromat. The total ammonia is to be determined by acid, and a minimum limit is fixed for ammonium carbonate, but there may be no free ammonia present and the preparation yet answer the test. The following process is suggested:—(1) Determine the total ammonia; (2) add excess of barium chloride, filter into excess of decinormal hydrochloric acid, wash the precipitate with three quantities of distilled water, add the washings to the acid, and finally titrate with decinormal soda solution. A simple calculation gives the correct amounts of free ammonia and carbonate. These should vary within small limits. Suitable processes for the quantitative determination of the arsenic preparations are necessary. In the case of iron arsenate the ferrous iron is to be determined, but not the arsenic. The method for sodium arsenate, in which magnesium pyro-arsenate is used is distinctly better than precipitation with lead arsenate, as in the latter case the presence of free acid or ammonia vitiates the result. The belladonna assay process of the Pharmacopœia is due to Cripps. Wilson has criticised the process, and his (Mr. Hoseason's) experience in great measure coincided with Wilson's. He found the loss due to alcohol to be from 1 to 2 per cent. of the total alkaloid present. In working with belladonna there is less tendency to emulsification if the first lot of chloroform added is rotated gently and withdrawn. The washing of the chloroformic solution is quite unnecessary, but whether a preparation is assayed by the B.P. process or by Wilson's method, the analytical results are substantially the same. Baryta or lime water would be preferable to soda solution in the B.P. assay process. The end reaction is much sharper, owing to the absence of carbonate. Hæmatoxylin is preferable as an indicator in this process. The assay process for ext. cinchona liq. is practically that of the B.P. of 1885, with the addition of a purification process. The results are lower than by the earlier process, and are undoubtedly nearer the truth. The addition of a check by titration might be advisable, and a limit of variation, based on the average proportion of mixed alkaloids found in cinchona, should be allowed. The B.P. test for calx. sulphurata allows a 50 per cent. or a 99 per cent. sample to pass indiscriminately. Total precipitation and weighing of the sulphide would be preferable. The preparations of cantharides might well have been made from a standardised fluid extract. The assaying of cantharides should not present any great difficulty. The assay process for fluid extract of ipecacuanha is one of the most unsatisfactory in the Pharmacopœia. Wilson had found that process faulty in precipitating alkaloid along with the lead compound formed by the addition of sol. of subacetate of lead. He (Mr. Hoseason) had not been able to obtain such close results as those of Wilson, and he thought Wilson's method open to improvement. In jalap extract no definite quantity of resin is required,

and an assay might be added with advantage. In lead salts the determination by total precipitation is unsatisfactory. By precipitation from neutral oxalate solution of known strength and subsequent determination of the residual oxalate by permanganate correct results are obtainable. The sulphate in magnesium salts is determined, but the oxides and carbonates, which are more likely to be variable, are not. In assaying *nux vomica*, strict adherence to the pharmacopœial quantities is absolutely necessary to obtain correct results. The new process for opium is a distinct improvement; the final titration and addition of an average loss makes this assay almost absolutely accurate. Potassium permanganate is estimated by oxalic acid, which is not official, neither is it a substance that can be taken as a constant. The B.P. process of assaying pepsin is inadequate. Nothing short of a method for assaying the peptone formed under given conditions of time, dilution, acidity, agitation, should have been inserted. With the present test, solution is regarded as digestion. *Strophanthus* preparations might well have been made from a standard fluid extract. Barclay has suggested a very easy and apparently accurate means of determination, but the pharmacopœial authorities seem to have overlooked his paper.

Mr. GRIER next read a paper on

The Pharmacy of the B.P.

Beginning with the nomenclature of the book, he drew attention to the changes which have been made, and referring to the Latin names, which were now declinable, expressed wonder at nouns, such as thymol, menthol, chloral, etc., being still treated as indeclinable. With regard to the chemical names he saw no reason why, since chloroform was a sufficient title for chloroform plus 1 per cent. of alcohol, that ethyl alcohol was not sufficient for alcohol plus 1 per cent. of water. Further, he thought that phenol should have been the official name of ac. carbol., and carbolic acid the synonym. In the case of calcium hydroxide he failed to see any reason for this new title, inasmuch as it was not pure $\text{Ca}(\text{OH}_2)$, and potassium hydroxide was defined as $\text{K}(\text{OH})$, plus combined water and impurities. Coming to pharmacy proper it was noted that considerable alterations had been made in the processes for exhausting drugs: (1) In the degree of comminution; (2) in the solvent employed; and (3) in the methods of exhaustion, as well as in the strength of doses, and, generally speaking, he thought all were distinct improvements on what had gone before, whilst he thought they by no means represented the utmost that British pharmacy could do. He took exceptions to the application of the name liquor to such preparations as the new liq. *calumbæ*, etc., thinking it should be reserved for solutions of definite substances, such as strychnine or caoutchouc; and on the same ground he thought the term misapplied in the cases of liq. *thyroidei* and liq. *pancreatis*, which were not solutions of the substances themselves but of their soluble constituents only. Dealing with the extracts he thought that cold re-percolation would be more suitable for ext. *cocæ* liq., seeing that cocaine readily decomposes in hot solutions, and that process might have been extended with advantage to some other liquid extracts. On the other hand a distinct improvement had been made in the methods of exhausting *jaborandi* and *rhubarb*. He expressed surprise that no change had been made in the preparation of extract of chamomile, as he considered a much better process would be exhaust with weak alcohol, and after recovering the alcohol, continue evaporation *in vacuo*, as he had advocated elsewhere. Referring to the *aceta*, he noted the improvement in the process of making *acetum canthar.*, but thought the new process of making *acet. ipecac.* a rather roundabout one. In the matter of wines, seeing that the presence of tannin and free acid was objectionable, he was of opinion they should be detannated, or that a weak flavoured alcohol should be used instead, as recommended by the U.S.P. Revision Committee. Passing to the tinctures, he did not think the substitution of liq. *ammonia* for *spts. am. arom.* a good one, and questioned the necessity of pressure in many cases where now ordered. In the cases of tinctures made by the maceration process, and which were now to be made up to a definite volume, he pointed out that, as considerable loss of spirit by evaporation might occur during filtration, the final products might vary considerably. In the solution of *indiarubber*, too, he considered that the volatile nature of the solvent employed was such as to render necessary some statement as to the volume of the final product, and he showed two samples—one a clear brown solution, and the other more of the nature of an emulsion. Speaking next of the syrups, he suggested that liquid extract of

rhubarb and *senna* should be made official, and also the respective syrups made therefrom. Referring to the waters, his opinion was that, as calcium phosphate is slightly soluble in cold water, a better medium would be teased filter paper. He then briefly referred to the more important changes which had been made in other classes of preparations, and disapproved of the use of dried sulphate of iron in *pil. ferri*, as the pills so made showed a tendency to crack. The Pharmacopœia authorities having done away with descriptive methods for preparing chemicals, and having gone still further in giving two general processes for the preparation of the tinctures, leaving the details and minor variations in their preparation to the judgment of pharmacists, the speaker wondered if the same principle would be extended in future pharmacopœias to other classes of preparations, such as extracts and infusions.

Discussion.

In the discussion which followed the reading of the papers, Mr. FRANKLIN said he agreed with almost everything Mr. Hoseason had said, but in regard to the standardisation of, say, belladonna plaster and ointment, this would entail very great difficulty to working pharmacists to do this with every preparation. It seemed to him the object had been achieved in having one standardised basis for the whole lot. In regard to ointment bases generally, he thought there was great room for improvement, and he himself thought that petroleum jelly was a typical ointment basis.—Mr. BATTLE agreed that there was a lot of waste in the lead process, and if another were brought out, it would be better all round.—Mr. HOSEASON said that Mr. Grier had had the same difficulty as he had. Concentrated infusions of *senega* were liable to deposit, and he spoke of the large amount of solvent required for moistening the drug. He (Mr. Hoseason) thought it might be added to the Pharmacopœia, stating at what standard oleate of mercury could be evaporated.—Mr. WALTON agreed with Mr. Franklin's remarks on the wholesale and retail pharmacopœia. He did not, however, see the necessity of standardising three or four preparations of belladonna. If they could not do it in their own pharmacy they should certainly be able to buy the standardised preparation and make their own from it.—Mr. KIRKBY said he came expecting to hear some criticism of the Pharmacopœia and its methods. Most of them, as far as printed matter was concerned, had been almost surfeited with particulars of the new Pharmacopœia, what it did and what it did not contain. They could not help feeling when they heard the voices of fellow pharmacists that there was another interesting side to the subject. He felt thankful for the two papers, and he thought Mr. Hoseason's suggestions with regard to the Pharmacopœia appeared to the point, and might very well be adopted. The questions which had been raised as to a wholesale and a retailer's pharmacopœia must be considered in connection with standardising processes. If they were made too elaborate the chances were they would not be undertaken at all, and in a pharmacist's retail establishment it was almost certain they would not be undertaken. The present Pharmacopœia had thrown into the hands of the manufacturing pharmacist a great many things which might have been made by the pharmacists, and he deplored that this should be so. He thought the time had come when the Pharmaceutical Society might devise some means of getting somehow into touch with the members of the General Medical Council, to see if the Research Laboratory could not be made useful for working out the formulæ which should come into the new Pharmacopœia.—Mr. KEMP also agreed with Mr. Franklin and Mr. Walton that it was a mistake to have a standardised preparation to start with in the making of such things as belladonna plasters and belladonna ointment, and then being under the necessity of still further standardising. He inferred if they started with an already standardised preparation in all these things, given all reasonable care, they were bound to get what was practically a uniform preparation as a result.—Mr. HOSEASON and Mr. GRIER having briefly replied, the meeting terminated.

REACTION FOR VANILLIN.—Bounema has found, while working on santal oil, that a little vanillin, dissolved in a few centimetres of acetic acid containing 10 per cent. hydrochloric acid, gives immediately, on the addition of 2 drops of santal oil, an intense cherry-red colour, which changes to dark bluish-violet on heating. At ordinary temperatures the bluish-violet colour changes to green in the course of twenty-four hours.—*Pharm. Centralh.*, xxxix., 357, after *Pharm. Weckblad.*, 1897, 24.

WESTERN CHEMISTS' ASSOCIATION (OF LONDON).

The annual dinner of this Association was held at the Café Royal, Regent Street, W., on Wednesday, November 16, the retiring president, Mr. J. H. MATHEWS, in the chair. He was supported by Mr. WALTER HILLS, President of the Pharmaceutical Society, Mr. J. F. Harrington, the newly-elected President of the Association, Dr. A. P. Luff, Dr. B. H. Paul, Mr. F. W. Gamble, President of the Chemists' Assistants' Association, and other gentlemen well known in pharmaceutical circles.—After dinner and the usual loyal toast, the CHAIRMAN proposed

The Western Chemists' Association.

Mr. MATHEWS said he was very interested and pleased to bring this toast before them that evening, inasmuch as he had taken a deep interest in the Association from its formation. The number of permanent members was now about one hundred, and on the whole the Association could boast a successful career. It had been the means of bringing together not only the chemists of the West-end but others from all parts of London, and as a result they were on more friendly terms than was the case eight years ago. He believed it was the only Association formed to discuss purely trade matters in London, except, of course, the Pharmaceutical Society. He was sure they would all wish with him that the Association should continue to prosper, and he hoped they would support it at all times. That occasion would be the last on which he would address them as President of the Association, but he was pleased to know that the lot had fallen upon one fully capable and worthy in every way of occupying the position. He coupled with the toast the name of the new president.—Mr. HARRINGTON, in reply, thanked those present for the way in which the toast had been proposed and received. There was one matter on which he was desired to speak that night. He understood that if the Association were to invite the British Pharmaceutical Conference to visit London in the year 1900, there was every reason to believe the invitation would probably be accepted, and it was desired to send a cordial invitation to the Conference from the Association. The matter would be brought forward at the December meeting, and he hoped they would be prepared to accord the Conference a good welcome, such as the pharmacists of the metropolis ought to give. With regard to the Association itself, they all wished to see it grow. When the Association got the name of the Western Chemists' Association he believed it was not intended that it should be confined to the chemists of the West-end, but that it should include chemists from all parts of London. Already they had a number of members from many parts outside the western district, and if in the future it was thought desirable to alter the name of the Association no doubt it would be done. He hoped there would be a large attendance at the December meeting, as several things of interest to pharmacy in general, and London chemists in particular, would be brought forward.

The CHAIRMAN next proposed the toast of

The Pharmaceutical Society of Great Britain.

He said it had always been customary to propose that toast, and he might perhaps be allowed to say that the Western Chemists' Association as a body is perfectly loyal to the Society, and is prepared in every possible way to support the Council with its sympathy and practical help in everything it might think proper to do for the general good of pharmacy and the advancement of education. He coupled with the toast the name of the President of the Pharmaceutical Society.—The toast was drunk with musical honours and, in reply,

Mr. HILLS said he thought the speakers that night laboured under a considerable disadvantage, for with such a good musical programme as had been provided those present would not wish to listen to long speeches. Still he felt that on the present occasion it was necessary that he should say a few words on matters pharmaceutical. First, however, he would like to thank the Chairman for the very kind way in which he had proposed the toast of the Pharmaceutical Society, and all present for the very enthusiastic way in which it had been received. The duties and responsibilities attached to the position he had the honour to hold at the present time were very considerable, but they were very much lightened by the kind reception that he received at meetings of the character of the gathering that night. Wherever he went he was received as President of the Society with the utmost cordiality. He was always glad to attend meetings of associations similar to theirs, because he was of opinion that such associations were of great

service to the parent Society, which he had the honour to represent. Since he last had the pleasure of addressing them twelve months ago the Society had gone through a little excitement, and several things had happened of very considerable importance. He need only refer to what had taken place in Parliament during the past session. They would recollect that during the last session the Council of the Pharmaceutical Society was successful in carrying through the Pharmacy Acts Amendment Bill, which is now on the Statute, and during the same session the Poisonous Substances Bill was successfully opposed. He took credit for the Pharmaceutical Society entirely for the first feat, and he took a very large amount of credit to the Society for the successful opposition of the Poisonous Substances Bill. The Pharmacy Acts Amendment Bill was one which, he believed, received the almost unanimous support of the members and associates of the Society throughout the country. They had not in that case to fight against anything like public opinion, but they had a fair unanimity amongst the Society's own members and associates, and so were able to carry that Bill through Parliament. With regard to the Poisonous Substances Bill, they had a very strong argument to urge; that was that poisonous substances should only be sold to the public by those who know their qualities and those who know the responsibilities which accompany such sales. He wished to refer more particularly, however, to what took place towards the end of the passage of the Pharmacy Acts Amendment Bill through the House of Lords. It would be remembered that when the Bill came before the Upper House, the Lord Chancellor and Lord Herschell pointed out the anomaly that exists at the present time with reference to the carrying on of the practice of pharmacy by

LIMITED COMPANIES AND CORPORATIONS.

Those remarks caused a considerable flutter in the ranks of pharmacy and consternation amongst those connected with such companies and corporations. Lord Hardwicke, however, who had charge of the Bill, very wisely asked the Lord Chancellor to frame an amendment on the lines of the remarks made by himself and Lord Herschell. But after their views were put upon paper, the Council felt that they did not give much encouragement to proceed in the matter. They were, in fact, such as would have legalised the practice of pharmacy by limited companies and corporations. He thought the Council did well, therefore, that on the part of those whose interests were affected—if for no other reason—the Lord Chancellor was asked to withdraw that amendment, and that the Bill passed without it. They had been told, by one organ at least, that the Council did a very unwise action by asking the Lord Chancellor to withdraw that Amendment. He (Mr. Hills) had no evidence of that except from that organ, which does not always represent the opinions of chemists throughout the country, but he thought that the Council's action was justified and advantageous under the circumstances. After the Bill had passed and become a Statute, he had a very pleasant interview with the Lord Chancellor at the House of Lords. He did not propose to tell them all that passed on that occasion because it was of the nature of a private interview, and he did not wish to say anything which was not intended to be made public. There were two points, however, which struck him with reference to that conversation (1) The Lord Chancellor strongly advised that in any action the Pharmaceutical Society took to regulate the practice of pharmacy, only such measures should be proposed as would be favoured by public opinion, and which would receive the support of Members of both Houses of Parliament. (2) The Lord Chancellor said he thought that the public have some right to know that its medicines are compounded and dispensed by qualified persons. Those were the two points which particularly struck him with reference to that interview. Of course, the interview was asked for by him (Mr. Hills) because of the companies question, and that was the point to which he wished to refer. He thought they would believe him when he said that personally he was utterly opposed to company pharmacy. He believed it to be contrary to the spirit of the Pharmacy Act, and it had been of very great disadvantage to the progress of pharmacy. He thought and felt that the great obstacle to progress was the dreadful bane of companies carrying on the practice of pharmacy. He was inclined to think it was to the interest of every community that there should be in it a good parson, a good physician, and a good pharmacist. It might also be advantageous

to have a good lawyer. Those men should be above the carking cares of poverty. Certainly there should be a good pharmacist, who ought to have sufficient remuneration for his services to enable him to do generous actions in cases of real need in any particular community. But company pharmacy has interfered with that ideal. Such is the problem facing pharmacists at the present time, and it is one which has been suggested by the Federation of Local Associations for discussion during the coming winter. It has already been discussed at Nottingham, and he desired to impress upon that and other associations the desirability of discussing it from a practical point of view, not from an ideal standpoint, but to deal with it as they found it to-day. In connection with the resolutions sent up from the Nottingham meeting, he was not altogether correctly reported when he last spoke at the Council meeting. What he wished to say was that he thought that the remarks—as reported to have been made—by some of the speakers at that meeting were not in accord with the unanimous passing of the resolution which was afterwards sent up to the Council, because some of the gentlemen said it was almost impossible to prevent companies trading in pharmacy from carrying on their business. Now, there were three ways or lines of policy which might be pursued. The first was what he might call the *laissez-faire* policy, and that was the policy which had been pursued during the last eighteen years, it being about eighteen years since the House of Lords gave the judgment which made it possible for companies to carry on the practice of pharmacy. The objection he had to that policy was that matters were getting worse and worse. Companies are pressing pharmacists on every side, and the rights that those companies have are increasing. Moreover, the Pharmaceutical Council has no means at the present time of taking proceedings against companies, the only course it can pursue is to find out and prosecute the unqualified seller of poisons. Another objection to the *laissez-faire* policy is that the Government itself may bring in a measure dealing with the question, and it is not likely to bring in one which is as good as one pharmacists could bring in themselves. The second policy would make it

ILLEGAL FOR ALL COMPANIES

to carry on the practice of pharmacy. He was bound to say that if the matter was being discussed at a debating society he should like to throw in his lot with that policy. But they would have to make it perfectly clear to the members of the House of Commons that it is to the interest of the public that the practice of pharmacy should be under the control of qualified persons, and that there is no safety in company pharmacy. He thought, however, that in the present state of public opinion they would have a very powerful opposition against which to fight, to obtain legislation to carry out that policy. Of course, they would have the opposition of companies, there could be no doubt about that, and not only that, but to be of any use to pharmacists a proposition of that kind must be retrospective in its action. Now, if there is one thing about which the House of Commons is very strong it is its regard for existing rights, and he thought it was very obvious that if pharmacists were to make any suggestion of that kind there would be a very strong feeling on the part of the House of Commons to place on some kind of register those companies which have been in business for some length of time. In spite of that he believed that if there were, say, 90 per cent. of the trade in the Society, it would be possible to go to Parliament on the question. But even if they had 90 per cent. of the trade with them, they would certainly have public opinion against them in the matter. The third thing that might be done would be to draft a Bill which would in some way regulate company trading, and ensure that there is a qualified man in all places where medicines are sold, dispensed, or compounded, and it might with advantage include qualified managers in branch shops of qualified proprietors. He was inclined to think that such a measure could be framed, and he did think that it was quite possible that some Bill might be framed which would under present circumstances be of advantage to registered persons. It would certainly place difficulties in the way of what he called bogus companies, who would have to say from time to time whether a registered man was in charge of their business places. But he was bound to say that that action would be met by a considerable amount of opposition from many of their own friends. He believed, however, it was possible that a Bill drafted on those lines would be accepted by the Government and would be, under present circumstances, advantageous to the craft. He should say that any Bill which they drafted for the consideration of Parlia-

ment should most certainly contain a clause restricting to qualified persons the compounding and dispensing of medicine and the sale of pharmaceutical preparations. It should be a *sine quâ non* that the sale should be restricted to those who have passed the necessary qualifying examination; and that pharmacy should not be taken up and practised by persons who are simply banded together without taking that qualification. He had thrown out these views in the hope that it might help associations in their discussions, and he would urge associations to treat the matter from a purely practical point of view. There are many things pharmacists want, but which they are unable to procure. He found that there was an opinion current that the companies have now got such a long-established right to practise pharmacy that it is almost impossible to stop the practice altogether. They would have to fight public opinion, and they must recollect that many pharmacists are now engaged by companies; moreover, there are many chemists who have formed themselves into companies, as had been ably pointed out by Mr. Gill in the last issue of the *Pharmaceutical Journal*. But if chemists were all united in this matter, they would not need any fresh legislation, because if they were all bound together companies could not be carried on. He did not blame those persons for lending themselves to companies. There might be circumstances in their case which rendered it necessary, but so long as persons did lend themselves to companies, the difficulty would always be very considerable. He did not intend to speak about the Poisonous Substances Bill, nor about poison regulations, but both those subjects were of importance at the present time, and were worthy of consideration by local associations. He thanked the Association for the very kindly response to the toast that evening, and he trusted that it would continue to flourish, and that it would help to strengthen the Pharmaceutical Society, for that Society required strengthening, and it was hoped that the Pharmacy Acts Amendment Act would be the means of bringing many into the Society. He hoped that in the coming spring they would have a considerable accession of members to the Society, and the Council would then be better able to deal with such matters as had been mentioned. It could not go to Parliament with any measure unless it had the great body of chemists with it, and he hoped that during the coming winter local associations would let the Council know what were their views on the question of company trading, and on other subjects to which he had alluded.

Other Toasts.

The next toast was that of the "Visitors," which was responded to by Mr. F. W. GAMBLE, President of the Chemists' Assistants' Association.—Mr. A. G. WORSLEY then proposed the toast of the "Chairman," Mr. MATHEWS replying.—Mr. J. F. HARRINGTON proposed a supplementary toast to the "Dinner Committee," which was replied to by Mr. H. CRACKNELL, the Hon. Secretary, and Mr. G. S. TAYLOR.—The toast list was interspersed with an exceptionally good musical programme, while the dinner itself left nothing to be desired.

DENTAL NOTES.

PROPERTIES OF VULCANITE.

Vulcanite is easily cut by dipping the chisel in oil. It packs clean and easily if used warm and wet. Warped vulcanite plates can be made to fit by using a fresh model of the mouth, warming the plate until quite pliable, then press well home on model and dip in water.

REPLACING A BROKEN TOOTH.

An easy and quick way to replace a broken tooth on a rubber base is to remove all pieces of tooth and pins, cut retaining form where pins were with engine bur, place new tooth in position, and stick it to approximating teeth by placing sticky wax over the labial surfaces. Then fill the retaining form and around the pins of the new tooth with amalgam. Leave the wax in place until amalgam has hardened.—*Ohio Dental Journal*.

LIQUID BORAX FOR SOLDERING.

Use a saturated solution of borax for soldering. The piece to be soldered is painted with solution where the solder is wanted to flow. The solder will be found to run much quicker and easier than if the borax powder is used.

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.*

Extractum Belladonnæ Alcoholicum.—By simply evaporating a given bulk of the liquid extract to dryness we should obtain a solid extract whose weight, and consequently whose potency, would vary with the amount of extractive matter, other than alkaloid, contained in different samples of the liquid extract. Moreover, a solid extract so obtained would obviously contain several per cents. of alkaloid and would be too strong for general use, since the dose would have to be a very small fraction of a grain. To avoid these objections the Pharmacopœia directs a small trial portion to be evaporated to a moderately firm extract to determine the total solids contained in the liquid extract. *Extractum belladonnæ alcoholicum* is required to contain 1 per cent. of alkaloids. The liquid extract, from which it is made, contains 0.75 part of alkaloids in 100 fluid parts; hence to obtain a solid extract containing 1 per cent. every 100 fluid parts of liquid extract must yield 75 parts by weight of solid extract. This explains why the weight of total solids from the trial portion, one fluid ounce (or 50 C.c.—*vide* B.P. directions) is to be subtracted from three-quarters of an ounce (or 37.5 grammes). The figure so obtained shows the weight of milk sugar required to produce, with the solids derived from the liquid extract, a solid extract having the required relationship to the liquid extract. In making the solid extract, it is better to add the required weight of milk sugar to the liquid extract before evaporation. We obtain thus an intimate and uniform blending of milk sugar with extractive matter more easily than we could by triturating the sugar with the solid residue produced by evaporating the liquid extract by itself.

Extractum Cinchonæ Liquidum.—The assay process for this extract has been elaborated. In the B.P., 1885, the residue of the benzolated amylic alcohol solution, obtained by agitating the extract with this solvent after addition of alkali, was weighed and reckoned as alkaloid. In order to effect further purification before weighing, the alkaloids are "shaken out" from the benzolated amylic alcohol, as hydrochlorides, by acidulated water. They are then transferred, as free alkaloids, to chloroform after addition of ammonia to the acid aqueous liquor. Colouring matter will be eliminated at each of these additional operations, and assuming that no appreciable quantity of alkaloids are simultaneously lost, the chloroform residue should yield a more accurate index of the alkaloidal contents than the crude residue of the benzolated amylic alcohol.

Extractum Filicis Liquidum.—Note the alteration in the official dose. It is now in accord with medical practice, for the dose given in B.P. 1885, was much too small to have the desired anthelmintic effect.

Extractum Nucis Vomiceæ Liquidum.—The method adopted for the preparation of this extract is followed in principle in the case of several others in the official formulary. The drug is moistened and percolated with the menstruum. A certain portion of the percolate first obtained is set aside. Since this contains the greater portion of the substances extracted by the menstruum, it is not subjected to evaporation. The weaker portion of the percolate obtained subsequently in completing the exhaustion of the drug is concentrated to a small bulk and added to the stronger reserved portion.

The assay process now adopted aims at the determination of strychnine only—not strychnine and brucine. Compare the notes on this subject in the last series of "The Students' Page." The extract is first evaporated to remove alcohol, then after suitable dilution the alkaloids are liberated by sodium carbonate and shaken out with chloroform. From the chloroform they are transferred as sulphates to water. The separation of the two alkaloids is based upon the fact that strychnine forms an extremely sparingly soluble ferrocyanide, while the corresponding brucine salt is only precipitated from comparatively strong solutions, and, therefore, not at all from the dilute solution as described in the Pharmacopœia. The strychnine ferrocyanide is washed free from brucine by acidulated water, in which the precipitate is less soluble

than in plain water. The washing is stopped when the bitter taste of brucine is no longer distinguishable in the wash liquor. The determination of the strychnine cannot be satisfactorily effected by drying and weighing the precipitate, since this undergoes decomposition during drying. A hole is therefore made in the point of the filter and the moist precipitate washed into a separator by a jet of water from a washing bottle. To the strychnine ferrocyanide thus suspended in water some solution of ammonia is added. Ammonium ferrocyanide remains dissolved in the water, from which the liberated strychnine is removed by repeated agitation with chloroform.

Extractum Nucis Vomiceæ.—The production of this from the liquid extract is conducted on lines quite similar to those already described under *extractum belladonnæ alcoholicum*. Here, however, the total solids of 500 C.c. of liquid extract, containing 7.5 grammes (1.5 × 5) of strychnine, must be made up by the addition of milk sugar to a total weight of 150 grammes in order that the finished solid extract may contain 5 per cent. of strychnine; for 5 : 100 :: 7.5 : 150.

Extractum Opii Liquidum.—The strength of this is now reduced so as to make it of the same potency as *tinctura opii*.

Extractum Pareiræ Liquidum.—The solid extract of *pareira* from which the liquid extract was prepared in the B. P. 1885 is now omitted. By careful comparison of the processes in the 1885 and 1898 Pharmacopœias it will be found that the new process for the liquid extract is a combination of the processes for both solid and liquid extracts in the former edition. The omission of the solid extract is probably due to the impracticability of giving the dose required (10-30 grains) in the pilular form for which solid extracts are generally adapted. The new process for the liquid extract provides a preparation practically identical with the 1885 liquid extract.

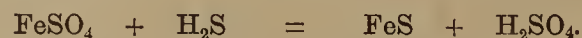
Extractum Physostigmatis.—This is now diluted with milk sugar to make the dose more manageable, and uniform with the other potent extracts of the Pharmacopœia.

Extractum Sarsæ Liquidum.—In making this extract maceration successively with proof spirit and water is replaced by repercolation with dilute alcohol (20 per cent.). Note that only the strong percolate up to the required amount is collected, probably because belief in the medicinal virtues of sarsaparilla has long since disappeared, and the value of the substances obtained by complete exhaustion are not considered worth the time and trouble their extraction involves.

Extractum Stramonii.—By omitting the preliminary treatment with ether to remove oil the yield of extract is increased, with a corresponding decrease of potency in the extract obtained. The dose of the new extract is therefore larger, and is now uniform with the other potent extracts.

Extractum Strophanthi.—The maximum dose of *strophanthus* seeds is about half a grain. It is therefore obvious that the residue produced by the evaporation of the alcoholic percolate (obtained by following the official directions) would be extremely potent, and its dose would be inconveniently small. It is diluted with a comparatively large quantity of milk sugar to produce from 1 part of seeds two parts of extract, the dose of which will therefore be one-quarter to 1 grain. The oil is removed from the seeds by previous treatment with ether. The presence of this oil would prevent the production of a dry extract in powder form, as described in the Pharmacopœia.

Ferri Sulphas.—Solution of ferrous sulphate is not precipitated by sulphuretted hydrogen on account of the solubility of ferrous sulphide in the sulphuric acid which would be produced at the same time.



In the case of ferric salts a precipitate of sulphur is produced. This is due to the oxidation of the H₂S by the ferric salt, which is thereby reduced to ferrous salt. This fact should be carefully remembered in qualitative analysis, since the precipitate of sulphur, caused by the presence of ferric salts in the solution analysed, is often mistaken by students for one of the yellow sulphides.

Ferri Sulphas Exsiccata.—Note that this substance still contains one molecule of water which is not expelled at a temperature of 100° C. If it be heated above this temperature the ferrous sulphate undergoes decomposition with formation of an insoluble oxy-sulphate.

* NOTE.—This series of articles should be read in conjunction with the series referring to the 1885 B.P., and published in the *P. J.* during 1897 and the earlier portion of the current year.

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THE CHIEF PROBLEM FOR CHEMISTS.

No one, we imagine, will be found in the ranks of pharmacy to deny that the most serious difficulty with which the craft is faced to-day is the growing tendency to render a proprietary qualification in pharmacy a non-necessity. Judicial interpretation of the Pharmacy Act of 1868 has all tended in the direction of upholding—as a substitute—the personal qualification of the individuals who sell poisons by retail to the public, and that personal qualification is now more effectually protected by Statute than any other qualification known to British law. But whilst the public is thus ostensibly protected by the Legislature and confirmed in its claim to such protection by the courts of justice, it has been gradually drifting into a position of extreme danger by reason of the utter inadequacy of the Pharmacy Acts to regulate the practice of pharmacy. If unqualified persons as companies—being outside the Act—can lawfully keep open shop for the sale, dispensing and compounding of poisons for medicinal purposes, the practical effect of that interpretation is to make the business free to everyone without restriction. It is not even requisite that the actual dispensing and compounding of poisons should be performed by or under the supervision of a duly qualified person. All that is really requisite is that the dispensed and compounded poisons shall be handed to the purchasers by a person registered under the Pharmacy Act. That position would be absurd if it were not so serious. Thirty years ago an Act was passed by Parliament, the preamble of which states that “it is expedient for the safety of the public that persons keeping open shop for the retailing, dispensing, or compounding of poisons, and persons known as chemists and druggists, should possess a competent practical knowledge of their business.” But though the legislators agreed as to what was expedient, the portion of the Act referring to those points—as since interpreted by lawyers—has been held not to apply to corporations consisting of seven or more persons, all of whom may be lacking as regards competent practical knowledge of the business they conduct.

Moreover, a company or other corporation consisting of unqualified persons may—according to that judicial interpretation—not only keep open shop for the sale, dispensing, and compounding of poisons; but, for the same reason, it may, apparently, appropriate the titles which the Pharmacy Acts were supposed to restrict to duly qualified persons; it need not observe any regulations with regard to the keeping and dispensing of poisons, nor is it obliged to compound medicines of the British Pharmacopœia in strict accordance with the formularies of that book. Poisons may be dispensed and compounded by errand boys or porters in establishments owned by corporations, without the supervision of a registered chemist and

—according to the same view—so long as the packages of medicine are handed to the purchaser by a duly qualified person, the law is fulfilled. Such is the absurd position in which matters now stand, and such is the position in which they are likely to remain unless active steps are taken to amend the existing Act, so as to effect the objects stated in the preamble more thoroughly. At present there is no protection for the public, except in regard to the mechanical sale of some few poisons. By the public spirit of chemists and druggists, as represented by the Pharmaceutical Society, a certain measure of protection has been established, as the result of half a century's work in improving the training and qualifications of the recognised retailers of poisons. But proprietary qualification in pharmacy—the chief essential for public safety—was attacked with fatal results when the decision of the House of Lords was given in the case of the London and Provincial Supply Association and, at the present time, an insidious attack is being made on the personal qualification of registered chemists, through the appropriation by limited liability companies of the titles which the Pharmacy Acts have been supposed to protect.

Unless registered chemists are willing to acquiesce in this state of affairs—which reduces British pharmacy law to a delusion and a mockery—they must resolve to dispute the conclusions which have led to it. They must therefore be prepared to fight again for their position, unless they are content to witness the loss of everything which they have acquired by years of persevering and hard work in the public interest. Having realised how miserably insufficient is the protection afforded by the Pharmacy Acts, and especially by the 1868 Act which opens with the declaration that so much is requisite “for the safety of the public”; recognising also how unsatisfactory is their own position, registered chemists as a body should take measures to secure the proper regulation of the practice of pharmacy, and insist that it shall not be open for any combination of unqualified individuals to do what the law prohibits one, two, or six persons from doing. When a person is compelled by the State to devote time, labour, and expense to the acquirement, in the public interest, of a special qualification, it is reasonable to expect that the State should for that reason prohibit unqualified persons—however many may combine together for the purpose—from exercising the business for which that qualification is held to be requisite, and it is also reasonable that unqualified persons should be effectually prevented from usurping the titles attaching to that qualification. If, further, a person submits to the regulation of his business by the State, also in the public interest, he is entitled to ask that no person or combination of persons shall be in a position to do what he may not do. There should not be one law for individuals and another for corporations, and if registered chemists will only combine to ask for the proper regulation of their business on a logical and common-sense basis, they can present so good a case that the result can hardly fail to be satisfactory to them and advantageous to the public. In conclusion, attention may profitably be directed to the offer made by the President of the Pharmaceutical Society (see p. 532) to take the lead in working for an amendment of the existing law if he is properly supported. Registered chemists can only give the support needed by joining the Society of which Mr. HILLS is the head, and the sooner they recognise that fact the better.

ANNOTATIONS.

THE FIRST EDINBURGH EVENING MEETING of the Pharmaceutical Society will be held in the Society's House, 36, York Place, on Wednesday next, November 23, at 8.30 p. m. The chair will be taken by Mr. J. Laidlaw Ewing, and the inaugural sessional address will be delivered by Ralph Stockman, M.D., F.R.S.E., Professor of Materia Medica and Therapeutics in the University of Glasgow. The subject of the address will be "Arrow and Ordeal Poisons: their History, Sources, and Constituents," and the lecturer's remarks will be illustrated by an exhibition of specimens.

THE PHARMACEUTICAL SOCIETY, according to certain newspapers which are not usually well informed regarding the Society's methods of procedure, has recently issued a circular to its local secretaries bearing on the sale of certain "patent" medicines. Vendors of the articles referred to are accordingly warned to be on their guard where a question of poison is involved, and it is suggested that, perhaps as a consequence of the circular, many inquiries for prohibited goods have recently been made at shops selling "patent" medicines. No circular of the special nature indicated has been issued by the Society, and the alleged effects of the hypothetical document must, therefore, be due to some other cause, possibly the working of conscience in the case of individuals who have been selling poisons illegally. In any case, the warning addressed to such persons by the *Grocer* and other papers cannot fail to be useful, and the public should reap the benefit by a diminution in the number of infringements of the Statute.

THE PHARMACEUTICAL SOCIETY OF IRELAND has failed to convince the Judges of the High Court that there was not a good reason for a writ of mandamus to be granted in the case referred to a fortnight ago (see *ante*, p. 496). It will be remembered that the applicant, Mr. Conyngham, sought a mandamus to compel the Council of the Society to admit him to their examination for the pharmaceutical licence. That they had declined to do on the ground that he had not served a full term of four years' apprenticeship to a pharmaceutical chemist or a firm of legally qualified pharmaceutical chemists, a portion of his term having been served to a limited liability company. On the part of the applicant the contention was that the regulation requiring four years' apprenticeship was *ultra vires*; but that even if it were not, his apprenticeship was a compliance with the regulation, as all the members of the limited company with whom he had served part of his term were duly qualified pharmaceutical chemists, and that none others could belong to that company. The judges were all of opinion that the Court was not precluded from examining into the validity of the regulation; that the regulation went outside the powers conferred by Section 15 of the Act of 1875 to make regulations, and consequently was originally *ultra vires*; that it had, however, been set up by Section 10 of the Amendment Act, and was consequently operative; and, finally, that the apprenticeship of Mr. Conyngham was a compliance with the regulation, the limited company in question fully answering the description of a "firm of legally qualified pharmaceutical chemists," which the regulation contains. The writ of mandamus was therefore granted.

THE DIPLOMATIC PRINCIPLE of using language to conceal one's thoughts has within recent years been extended to the selection of names intended to be registered as trade marks which must not have any descriptive significance, and, to that extent, fairly good reason can be assigned for this practice. But in connection with

articles used for medicinal purposes caution is necessary to avoid a resemblance of names which might lead to possible mistakes, such as that pointed out a few weeks ago by Mr. R. Reynolds as arising from the confusion of a preparation described by the word "urotropine" with a drug so widely different as atropine. The further instance, given by Mr. Reynolds in last week's Journal (see p. 523), of a designation that fails to convey a definite indication of the article to which it is applied, shows how readily mistakes may result from the use of defective or unmeaning nomenclature. With such a multiplicity of articles as the pharmacist has to handle more or less frequently at the present time, the necessity of avoiding names that are at all misleading cannot be too forcibly insisted upon.

ECONOMY MAY BE EXAGGERATED, and it certainly appears to be so when medicine is administered to healthy individuals in order that it may not be wasted. Judging from the remarks of the Flintshire coroner at an inquest held last week, that was the position of affairs which had resulted in a child's death. The child had been taking medicine, but the supply had been exhausted for some days, and the erstwhile patient had since been playing about and quite happy. The mother was using a lotion containing atropine for the eyes, and, before paying a visit to Liverpool Infirmary, she emptied what was left of her lotion into the bottle that had contained the child's medicine, so that she might take the lotion bottle to be replenished. Next day she noticed the liquid in the child's medicine bottle and—forgetting what it was, and ignoring the fact that the child was not ailing—she administered to the poor infant a dose of the poisonous lotion. Death ensued, and was shown to be due to poisoning with atropine; the coroner said it was clear from the evidence that the mother had been most negligent, but the jury returned a verdict of "Death from misadventure," apparently without comment. Possibly, the jurymen are enthusiasts on the subject of economy, and prefer that their pet virtue should be persisted in, under all circumstances, even at the cost of a life.

THE DOOM OF THE RETAILER is suggested by a communication in the *Times*, the writer of which suggests that if the consumer can procure, by the simple expedient of a postcard, a trade article delivered at his door straight from the manufacturer, with less trouble and at a lower price than from the middleman, the needless labour involved by the use of the intermediary is, surely, so much loss sustained by the State. Accordingly, he proposes that the State should become the universal middleman, and that the policy at St. Martin's-le-Grand in this matter should be "to lead by its example the nations of the world—not sluggishly to halt in the background while others show it the way across country." He argues that lower cost means usually more production; and more production, at the same profit, greater activity and wider employment in remunerative trade. Why then, he says, waste (say) ten per cent. of the cost of manufactured goods, when by utilising a national establishment the ratepayer may save it? "He may at one stroke benefit himself and those who depend on wholesale manufacturers." Fortunately for the dismal science, this would-be revolutionist's object is not so much to touch the fringe of political economy as to urge that our Post Office should in no respect lag in the rear of the Continent and our dependencies, but be encouraged to develop "its still limited potentiality."

A PECULIAR COMPANY CASE came before the Deputy Judge in the City of London Court this week. It was sought to enforce payment of money, due from a defendant, who said he was the Chairman and a Director of the United Watch and Jewellery

Company, Limited, but that he received no remuneration from the Company. There were seven shareholders in the Company, but his wife, who had paid one hundred pounds, was the only shareholder who had paid for any shares. The Company had only been in existence for two months, and employed seven people. Defendant said it was not correct to say that he was virtually the Company. He held no shares, but he and another director signed the cheques. The latter were not countersigned by the Secretary, because there was not one. The premises in which the Company carried on business were tenanted by defendant, and the Company paid seventy-five pounds a year rent. Only a small business was done. The opinion of the Deputy Judge about the case was rendered sufficiently clear when he remarked that, after a decision in the House of Lords, no amount of fraud would justify him in getting at the defendant behind the Company. The defendant was evidently well acquainted with the Companies Acts, and he (the Deputy Judge) could not see any way to help the plaintiffs. He wished he could, and hoped that Parliament would before long consider such a case, and enable such companies to be dealt with.

INCUBATION OF BABIES BY GAS is the somewhat misleading heading of a news paragraph in the daily press, in which the use of gas for heating incubators is referred to. Gas plays a very valuable part in modern life, and new uses are found for it every day, but it is not yet directly available in the incubation of infants. Electricity, which has taken the place of gas very largely in the kindly office of dispensing light, might equally replace it in this newer direction, so that the *Daily Telegraph* is hardly justified in assuming that gas need not fear for its future on that account. At the same time, it is difficult not to sympathise with the journalist who has found a small vein of humour in the story of the proprietor of gas-heated incubators at Earl's Court, the Crystal Palace, and in other parts of the country. The gentleman in question had failed to pay his gas bill, the reason for the delay in payment being some dispute about the meter. Under such circumstances a deadlock might be most dangerous, the *Daily Telegraph* thinks, and it shudders to think what might happen if the gas were suddenly "cut off" from the disconsolate babes. "It would be a 'nice' point as to who was responsible for the result. After this we shall look at a street lamp with moistened eyes, knowing that it contains the foster-parent of some of our future citizens. It would be interesting to watch the effect of such early training on the inmates of these gas incubators. Will they grow up politicians or religious reformers, or merely light-headed?"

A HOSPITAL NURSE has accidentally caused the death of a patient through administering an overdose of tincture of opium in an enema. The written instructions left by the medical man in charge of the case were to the effect that if no relief were obtained by the patient by a certain time, an enema was to be administered, containing six ounces of starch and half a drachm of tincture of opium. The ordinary medical signs appear to have been used to indicate the quantities, and the nurse, unfortunately, misinterpreted the drachm sign, taking it for that of the ounce. Accordingly, half an ounce of the tincture was administered, with a fatal result. As might be anticipated, newspaper comments on the case have not been lacking, and much printing ink has been wasted in the endeavour to show that if the signs for the ounce and drachm were not so much alike the patient's life would not have been sacrificed. Lay writers have also enlarged on the possible dangers incurred by the regular employment of such signs in prescriptions. The more obvious moral would seem to be that if the technical signs and other abbreviations were

reserved for the exclusive use of persons trained in a knowledge of the properties and uses of dangerous drugs, a more effective check would be placed on the risk of accident than by simplifying matters for hospital nurses. The person most at fault in the case referred to appears to be the medical man who used signs in directions that should have been written in plain language. No similar mistake would be likely to occur with a properly trained dispenser, for even if a wrong sign were employed his knowledge of the properties and doses of dangerous remedies would suffice to prevent him sending out a wrong quantity. Most mistakes in connection with prescriptions occur in writing them, and the public would be surprised, and might be alarmed, if it were known how frequently registered chemists act as a check on prescribers in that respect.

THE CHEMICAL SOCIETY celebrated, last week, the continued existence of six of its past-presidents, all of whom have been Fellows for half a century.—Sir J. H. Gilbert, Sir E. Frankland, Professor W. Odling, Sir Frederick Abel, Dr. A. W. Williamson, and Dr. J. H. Gladstone.—The chair was taken by Professor Dewar, the President of the Society, who, in proposing the toast of the evening, remarked that it included the health of six of the Society's most distinguished past-presidents. It was admitted on all hands that the cultivation of chemical science had added enormously to the resources and power of mankind, and that its successful cultivation involved the exercise of every faculty of the human mind. Those men had laboured for half a century in the public interest, and they had added enormously to our knowledge of chemistry. It was almost impossible to over-rate the work they had executed. The width of it was something appalling, for amongst them they had recorded four hundred and fifty separate contributions to chemical science, many of which were of the highest importance, and they had really exercised an extraordinary influence on the development of chemistry. It was well that the Chemical Society of London—the oldest chemical society in the world—should have inaugurated that dinner, and it had been held because it was felt that the opportunity might probably never again occur. The sympathy of every chemist in the world was with them that evening, and their guests had the warm congratulations of the learned men in chemical science in France, Holland, Germany, Sweden, Austria, Russia, the United States, and other countries, which showed that Continental chemists appreciated the honour that it was desired to confer. Professor Dewar then proceeded to give a brief epitome of the work of the guests of the evening, and subsequently each of the six past-presidents responded

A LADIES MEDICAL AND PHARMACEUTICAL ASSOCIATION has been registered with a capital of three thousand five hundred pounds, its object being the advancement of the interests of gentlewomen who are qualified to act as doctors, dentists, and chemists, or who are desirous of acting in those capacities; to form a preliminary school of pharmacy; to establish a registry for general, midwifery, and surgical nurses; to open a consulting room where "women" may have the advice and attention of "gentlewomen" duly qualified in medicine and dentistry, and to carry on the business of pharmaceutical chemists, druggists, etc. The first subscribers and directors are all women, the qualification for directorship is ten pounds, and the directors are to share among them one hundred pounds per annum. It may be wondered why female patients are referred to in the prospectus as "women," whilst the members of the Association who wish to make a living out of those patients are "gentlewomen," but the prefix is doubtless justified by the great superiority of the joint-stock article.

CHEMISTS' ASSISTANTS' ASSOCIATION.

One of the most attractive and pleasant features of the weekly meetings of the C.A.A. is the gathering together of old school chums and fellow pharmaceutical students, now engaged in various parts of London, for a few minutes' chat over a cup of coffee prior to the scientific or practical business of the Association. On Thursday, November 10, there was a much larger assembly than usual at 73, Newman Street, W., that fact being largely accounted for by the presence of Prof. J. Reynolds Green, F.R.S., who had attended to deliver a lecture on

The Biology of Yeast.

Professor GREEN briefly sketched the work of the early investigators of yeast from the time of Leeuwenhoek down to that of Pasteur, and descanted at some length on Pasteur's famous theory that fermentation is an expression of life in the absence of oxygen. The lecturer, referring in detail to the complex composition of the yeast cells, pointed out that they are in some respects as highly organised as the animal body, inasmuch as many enzymes, among others, diastase, maltase, and invertase, have been found in them. In fact, the various functions performed in the yeast cells gave a picture on a small scale of what goes on in the human body. Professor Green enlivened the lecture by occasional characteristic flashes of humour, and narrated several incidents in connection with experiments conducted by himself, on the lines laid down by Buchner and other workers.—The PRESIDENT (Mr. F. W. Gamble) said they must all have listened with the greatest possible pleasure and interest to Professor Green's account of most of what is known concerning yeast. All present would doubtless have a wider view of what they had previously looked upon as a very insignificant organism. The fact that yeast cells form matter for their own use from time to time seemed to indicate that there must be some nervous mechanism in the plant which suggests to itself means to an end. The heartiest thanks of the meeting were due to Professor Green for the trouble he had taken to prepare the lecture, which must have cost a great amount of time and labour, even to one possessed of such an ample range of knowledge of the subject as the lecturer.—Mr. H. E. MATTHEWS, the Hon. Secretary, seconded the vote of thanks moved by the President, and said they had been charmed with the lecture, and he was sure all had benefited by the account of the personal experiments of the lecturer.—The vote was then put to the meeting and carried most enthusiastically.—Professor GREEN, in reply, expressed the pleasure it had given him to come amongst his old friends, even though some of them had new faces. He could assure them that if it had been any pleasure to listen to his remarks, it had been a greater pleasure for him to talk.—The meeting then adjourned.

BURNLEY PHARMACEUTICAL ASSOCIATION.

A meeting of chemists and druggists in Burnley and district, convened for the purpose of considering the desirability or otherwise of forming an association, was held at the Bull Hotel, Burnley, on Thursday, November 10. In response to invitations sent out by Mr. J. Brown, there was a fairly good muster at the meeting. Mr. J. A. Heaton, a member of the local Board of Guardians, was voted to the chair. At the outset of the meeting Mr. BROWN read a number of letters from chemists in the town and district who were unable to be present, yet who signified their intention of supporting any association which might be formed.—Councillor CRITCHLEY, President of the Blackburn Association, who was introduced by the Chairman as the "father of Blackburn chemists," spoke of the great benefits which had accrued to chemists in Blackburn as a result of forming an association. One of their chief aids to success had been a dinner, which was held once a year, and brought the members together. By doing this they believed they were creating a really good feeling amongst the trade, a feeling which enabled them all to be friends one with another.—Mr. R. LORD GIFFORD, Secretary to the Blackburn Association, also addressed the meeting. He was of opinion that all pharmacists should be alive to the fact that the time had come for altering the laws of the land, and putting pharmacy on a proper basis. There was no man amongst them who lived by pharmacy only, they depended on trade almost solely. In Blackburn they did not wish to interfere with another man's

business. Chemists there worked on the principle that they had to earn their bread and butter to-day; but that this should not prevent them working for to-morrow. They all agreed as to what ought to be, but they should quarrel at once on what is. In other words, he would not tolerate any interference from persons who could not properly appreciate his difficulties and, therefore, he had no right to interfere with others. However, they would not find many chemists who were not straightforward honourable men. This was an age of progress and everything was tending towards specialisation. That ought to apply with special force in pharmacy. It must be supposed that in 1868 it was intended to give to the body of men required to qualify, certain duties which no one else should exercise. It was ridiculous to suppose that a time was not looked forward to when a natural growth would have made those duties extensive and consequent privileges tangible. To-day there are more stringent examinations and fewer privileges than then. Why? Because the Pharmaceutical Society incorporated by Royal Charter had not fulfilled its charge. It had partly fulfilled its charge in that it had made examinations more stringent. It had, however, absolutely failed in making the position of chemists more secure. They were attacked on every side by unqualified practitioners of pharmacy in the shape of grocers, drug stores, and herbalists; and now also by the unqualified medical assistant who, turned away by the doctor, naturally falls back on the drug trade. What they wanted was a remedy. Their livelihood ought to be the first thing to be considered, and if there was a meeting of chemists they ought to attend that before doing anything else. *Esprit de corps* was wanted, and they demanded that those who were not qualified should not act as chemists and druggists.—Mr. W. HOLT, also of Blackburn, gave an account of the Belfast Conference, at which he was present, and reverted to several lessons learned from it, stating that chemists themselves were to blame for the present condition of trade.—Mr. WILKINSON (Colne) expressed his sympathy with the proposed movement. He said the calling of the chemist and druggist had become a by-word and a reproach, and until by united and concerted action they asserted their true position in the country they were little more than a rope of sand. Mr. Gifford had spoken of them as a body of honourable men, but he was afraid many did not come up to that standard when they would sell a P.A.T.A. article for 2s. 6d. though the minimum price was 3s. Others would sign an agreement with the proprietor of a preparation and then sell the article at cost price. The "craft" had become so demoralised that nothing but union and legislation could help them. Why should the State inflict upon them severe examinations and not give them some equivalent more than they had? The doctor, lawyer, and dentist are to a large degree protected by the State, and the artisans, with their "trade unions" and "labour leagues," could vindicate their rights, and why not the chemist? He referred to the Teachers' National Union by way of illustration to show what a power it had become in the country during the last twenty-five years by continued effort, and how the just claims of teachers were met by the Education Department. The crass ignorance of the position and of the legitimate duties of chemists is daily noticeable in the unjust censures cast upon them by magistrates and coroners and other public men. In fact, their want of union and combination prevents them from making their influence felt in Parliament, and thus enlightening the public on these matters. Mr. Holt had said the Pharmaceutical Society was their only representative and could not do much. Why? Because the trade as a whole did not give the Society its support. He (Mr. Wilkinson) was glad to hear Mr. Critchley recommend all members of local associations to become members of the Pharmaceutical Society, and thus support that body. He was also pleased that in the Blackburn Association they did not recognise qualified managers of drug stores. Such were traitors to the craft. What did the General Medical Council do with men who hired themselves to such as Munyon? Why they were struck off the roll. Companies robbed the legitimate chemist and his family of their livelihood, and it should not be allowed for a syndicate elsewhere to reap the benefit. That was an open violation of the Pharmacy Act, and if the chemists of England were only united they could compel the British Parliament to remove the iniquity and protect the vested interests of the chemists. Members of Parliament were ignorant as a whole of the grievances chemists, as a technical trained class, laboured under. If a body of them, say 100 strong, could wait upon their member, Sir Ughtred Kay-Shuttleworth, he would be open to reason and admit the justice of their claims. They must agitate and seek legislation to redress their wrongs, and the Executive of the Pharmaceu-

tical Society must be backed up by local associations of qualified men.—Mr. COLLINS (Nelson) at this juncture moved that an association be formed.—Mr. WILKINSON seconded, and the motion was unanimously adopted.—It was also decided that the Association be affiliated with the North-East Lancashire Association with certain reservations. A vote of thanks to the friends from Blackburn was proposed by Mr. BROWN and seconded by Mr. COATES, after which the following officers were elected:—President, Mr. J. A. Heaton; Treasurer, Mr. C. E. Dodsley; and Honorary Secretary, Mr. J. Brown. Messrs. Hitchen, Walker, Clarkson, Shepherd, Lawton (Nelson), Stuttard, and Wilkinson (Colne) were elected a Committee with power to add to their number.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.

At a meeting held on November 9, Mr. G. H. C. ROWLAND, President, was in the chair, and the first paper read was by Miss FLORA C. MADGSHON, being a

Note on Glycerin Suppositories.

In making glycerin suppositories by the B.P. method there are invariably some pieces of gelatin which remain undissolved and in a hardened condition. To obviate this place the gelatin in a weighed evaporating dish with sufficient water to cover it, let it stand for two minutes, pour off the excess of water, set aside till the gelatin is quite soft, add the glycerin, and dissolve on a water bath. If, instead of adding the glycerin to the soaked gelatin before applying heat, the softened gelatin be dissolved on a water bath in the water of hydration and the glycerin is then gradually added, the result is also completely satisfactory, and accomplished without loss of time or material. A point to be observed in dissolving the gelatin is not to stir so vigorously as to introduce much air into the solution, or inconvenient frothing will ensue. Gentle stirring is all that is necessary, and if performed with little breaking of the surface, aëration need be very little.—Mr. RUTHERFORD HILL said there was a formula for preparing glycerin jelly as a mounting medium in microscopic work, and it was made in the way suggested by Miss Madgshon, which seemed obviously the best way. It would appear that the error in procedure arose somehow in connection with Squire's process for gelatin suppository basis, from which the official formula was copied.—Mr. BOA said the matter arose from a frequent trouble in making suppositories—especially on short notice—by the official method, and a little investigation proved that the method suggested in the paper obviated all difficulty. This was one point that rather indicated something that was more theoretical than practical in the compiling of the Pharmacopœia.—Mr. GEORGE SINCLAIR said he had found the same difficulty in making Unna's gelatum zinci.—Mr. COWIE said he did not agree as to the explanation of the insolubility of the gelatin. It was due to hard pieces of gelatin, which ought to be picked out, and not to the dehydrating effects of the glycerin.—Mr. DUNCAN said the finest sheet gelatin was used, and he did not think the difficulty was due to the presence of hard pieces. If 1 oz. of glycerin and 1 oz. of mucilage of acacia or simple syrup were mixed there would be a separation of gum or sugar, because the glycerin took up some water. The same thing happened in this case, and he thought it was clear that Miss Madgshon's explanation was correct.—The CHAIRMAN said he had found the same difficulty in making ichthyol suppositories, and had found that they could be made without any difficulty by following Miss Madgshon's method.

Mr. J. RUTHERFORD HILL then read a paper on

The Dispensing of a Strychnine Mixture.

The following prescription was dispensed in two different pharmacies, and in both instances the dispensers added a suspending agent, in one case two drachms of mucilage of acacia, in the other the same quantity of glycerin:—

℞ Liq. Strychninæ Hydrochloratis (1885) ʒiii.
Potass. Iodidi ʒiiss.
Aquam ad ʒiv.

When acacia was used there was very little separation of any precipitate for several hours. It looked, indeed, as if precipitation had been prevented, and a careless dispenser might send out the mixture without any direction to shake the bottle. But, ultimately, of course, there was a separation of the compara-

tively insoluble strychnine hydriodide (see *P. J.* [4], vi., 389), and after twelve hours the strychnine salt settled on the bottom of the bottle, to which the acacia caused it to adhere, so that it could only with difficulty be detached, and then only in pieces, which could never be properly diffused. Moreover, decomposition had taken place, owing to oxidation. The mixture assumed a dirty brownish-yellow colour, and the addition of starch solution indicated that this was due to free iodine. Acacia seems to facilitate oxidation, probably because, being always acid, it liberates hydriodic acid from the potassium iodide. Even in the case of ferrous salts acacia seems to facilitate oxidation. When glycerin was used, there was a separation of strychnine hydriodide in a few minutes, but it easily diffused; the mixture remained for months perfectly colourless, and the glycerin apparently prevented the oxidation that takes place when the mixture is dispensed without any suspending agent. Glycerin is in every sense superior, and either it or simple syrup should be used rather than mucilage of acacia.

The third paper was by Mr. WILLIAM DUNCAN on

Lotio Hydrargyri Nigra.

The author thinks the new B.P. preparation is an example of very bad pharmacy. The addition of glycerin as a preservative of mercurous oxide may be unobjectionable provided it does not induce reduction of the oxide to metallic mercury. The addition of tragacanth as a suspending agent, on the other hand, simply spoils the preparation, the oxide clotting with the insoluble gum. Samples that have been made for about a month conclusively show that the tragacanth addition is not a success, and the sooner a return is made to the old formula the better.

The next paper was by Mr. WILLIAM DUNCAN on

Magnesia in Mixtures.

The tendency of magnesia and similar salts to cake into hard non-diffusible deposits when dispensed in aqueous mixtures is well known. Recently the following was brought under notice:—

℞ Magnes. Calc.
Sp. Ætheris Nit. aa ʒvi.
Sacch. Alb. ʒss.
Ol. Menth. Pip. ℥lxx.
Aquam ad ʒviii.

Dispensed in the usual way the magnesia in a few days becomes a hard, solid mass, which refuses to break up by agitation. In order to ascertain if this objection could be obviated or mitigated, the following experiments were made:—The prescription was dispensed in the usual way, triturating the magnesia with water, adding the sugar previously dissolved, and finally the oil and spirit. In two days the magnesia had formed a solid undiffusible mass at the bottom of the bottle. The mixture was dispensed as above and the hard cake when formed was removed, thoroughly rubbed smooth in a mortar, and returned to the bottle. This showed a slight tendency to aggregate, but was diffusible on shaking. In a third experiment the magnesia was allowed to stand for twenty-four hours under water, with occasional agitation, and then the other ingredients added. This method, like the preceding, was successful. As these, however, take time, a fourth method was tried. The magnesia was boiled in half the water, the sugar added, the boiling continued for a few minutes, and after cooling the other ingredients added. This gave the best result, the magnesia being freely diffusible on shaking, and remaining so. A similar series of experiments were made with the following mixture:—

℞ Magnes. Sulph. ʒi.
Magnes. Calc. ʒss.
Aquam ad ʒviii.

This mixture frequently causes trouble to the patient from caking. In this instance the results were the same. The caking is due to the fact that magnesia absorbs water to form hydrate. In doing so it aggregates, especially in presence of certain salts, much in the same way as calcium sulphate does. The hardness and rapidity of the caking largely depends on the other constituents and on the shape of the bottle. In a mortar or flask with a rounded bottom allowing free expansion the hardening is not so great as in an ordinary dispensing bottle. If previously hydrated magnesia is used the difficulty does not arise. Most samples of magnesia absorb water more or less readily—especially light magnesia—and show a tendency to aggregate into a gelatinous mass. This property, however, is not constant and seems due to the temperature to which the salt has been exposed during calcination. Much attention has lately been given as to the rapidity

with which magnesia absorbs carbonic anhydride. With magnesia and other similar oxides the absorption largely depends on the presence or absence of moisture. The better hydrated the substance the more rapid is the formation of carbonate.

LIVERPOOL CHEMISTS' ASSOCIATION.

A largely attended meeting of this Association was held in the Royal Institution on Thursday evening, the 10th instant, the PRESIDENT, Mr. John Bain, in the chair.—In addition to the usual business, the SECRETARY reported the receipt of a letter from Mr. Edward Evans, of Wrexham, expressing his willingness to accept the office of President for next year and thanking the Association for the honour done him. One new member, Mr. W. Parry, of Waterloo, was elected.—Mr. R. C. COWLEY read a paper on a

Simple Laboratory Arrangement for Drying Alkaloidal Residues in Organic Assays.

According to the new Pharmacopœia the alkaloidal residues in the assay of opium preparations must be dried at 110° C. for two hours before determining their purity by titration. To the pharmacist this entails considerable trouble, which he does not encounter in drying other alkaloidal residues. The time also is an item to be taken into consideration by the busy man. When the new B.P. was published the following simple contrivance was adopted to overcome these difficulties, and in practice it works remarkably well, enabling the operator to dry the alkaloid to a constant weight in a much shorter time than the B.P. demands. A 50 per cent. solution of calcium chloride, or a corresponding weight of the crystallised salt will boil at a temperature of 110° C. If water is added from time to time to make up for evaporation, this gives a means of obtaining and retaining the requisite temperature. By fixing a thermometer in the bath and keeping the flame of the Bunsen low after the required temperature has been reached, the frequent addition of water will not be necessary. The alkaloid to be dried is folded up in the enclosing filter papers and placed in a small wide-mouthed bottle furnished with a rubber bung, having two perforations. Two pieces of glass tubing, bent at right angles, pass through these holes; one tube passes to the bottom of the bottle, the second terminates just within the bung. The bottle with the alkaloid is now placed in the calcium chloride bath. The longer tube is connected with a drying tube containing quicklime; the other is attached to a Geissler's filter pump. Heat is applied to the bath and the pump is started working; dry air is sucked through the whole apparatus. Since the longer tube passes to the bottom of the wide-mouth bottle, the air will be somewhat heated. Thus the moist air in the bottle will be continually displaced by warm dry air. At first a condensation of moisture will be noticed beyond the bend in the short tube, and when this disappears it has been experimentally proved that the alkaloid is dry. A similar method was adopted in drying other alkaloidal residues, using, of course, a water bath. Where a number of assays are made, the loss of the alkaloidal solvent is a consideration. Instead of evaporating the solution in a tared dish, as is usually done, the solution was collected in a small tared flask, from which the solvent was distilled off; this distillate may be repeatedly used, thus entailing but a small loss even on a number of assays. The moisture left in the flask is removed by attaching the flask to the drying apparatus previously described in the place of the wide-mouth bottle. A few minutes in the drying oven will then be sufficient to remove the moisture that adheres to the outside of the flask.—In the absence of Mr. Catford, Mr. COWLEY proceeded to read that gentleman's communication on

The Determination of Alkaline Cyanides and Copper.

The cyanide process for the volumetric estimation of copper has been much used during the last fifty years in technical assaying, the writer of this note used it daily more than twenty years ago in South America. Although easy and convenient, it is not strictly accurate, because the quantity of cyanide required to discharge the blue colour of ammoniacal copper solution depends upon the amount of ammonia, free and combined, which varies according to the amount of free acid to be saturated, and so varying quantities of secondary products, such as urea, formate of ammonia, etc., are formed. Fleck attempted to minimise this, and also introduced a second indicator, potassium ferrocyanide, so that as the blue is discharged there remains the red of the cupric ferrocyanide, which in turn is decomposed by more KCN. This suggested to the writer

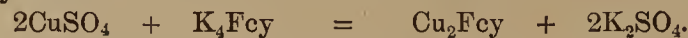
to leave out altogether the disturbing element—the ammonia—as follows:—If the cupric solution is acid, add caustic fixed alkali until a slight permanent precipitate of cupric hydrate is produced—



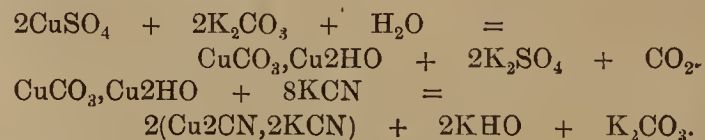
add a drop or two of 1 per cent. solution of potassium ferrocyanide, and run in the KCN until the greenish cupric cyanide at first precipitated is re-dissolved—



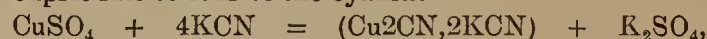
and the solution becomes pink from the minute quantity of cupric ferrocyanide—



It is best to stop at this point to be sure that too much KCN has not been added. On standing, the cupric ferrocyanide will deposit, leaving the solution colourless. The KCN reacts equally on the cupric hydrate and on any carbonate produced by impurities in commercial cyanide—



The slight amount of free alkali does not prevent the appearance of the cupric ferrocyanide, and experiment proves that the addition of fixed alkaline salts does not affect the amount of KCN required. Thus an acid solution of pure copper becomes a reliable means of standardising cyanide solution, preliminary to using it for volumetric assays, or, for example, to check the strength of the No. 1 Fehling's solution, the new B.P. formula, for which, by-the-by, is one of the instances in which the old atomic weights have been used in the calculations. In the absence of ammonia, a cupric salt reacts with KCN in the proportion of one molecule of the cupric salt to four of the cyanide—



Silver reacts in the proportion of one molecule to two—



but the various and considerable impurities in commercial cyanide render its determination by silver difficult; whilst copper is not interfered with by chlorides or carbonates, the latter again interfering with the estimation by iodine, which is generally used for the purpose. Fresenius recommended soda water to be used to convert the carbonate into bicarbonate, but this not being among the reagents on the laboratory shelves, recourse might be had to liberating CO₂, as in the B.P. process for estimating arsenic. But a decinormal cupric sulphate would not require any such precautions.—A good discussion followed, and votes of thanks were accorded to the authors of the papers, which were of considerable pharmaceutical interest. A fine collection of

Medicinal Plants

was then exhibited by Mr. J. Gutteridge, Curator of the Liverpool Botanical Gardens, whilst Mr. T. H. WARDLEWORTH pointed out their chief characteristics and points of interest. Ginger rhizome, grown in the gardens, reminded the lecturer of the fact that some specimens of ginger had been met with on the Liverpool market so badly cured that it was possible to cause them to grow under favourable circumstances. *Kola acuminata*, the ordinary variety yielding the dicotyledonous seed, was shown, as well as *Stillingia sebifera*, a Euphorbiaceous plant, from whose seeds the Chinese vegetable wax or tallow is prepared. The following are the other plants exhibited:—*Coffea arabica*, the Liberian or large-leaved variety; *Psychotria ipecacuanha*, the true ipecac. root; *Cinchona succirubra*; *Piper nigrum*, a strikingly handsome plant; *Cinnamomum verum*; *Maranta arundinaca*, or arrowroot; *Manihot glaziovii*, from which the Ceará rubber of South America is obtained; *Hevea brasiliensis*, the source of Pará rubber; *Physostigma venenosma*; *Sarracenia purpurea*, or pitcher plant; several specimens of *Strophanthus* plants, and some of the dried follicles; *Bixa orellana* or annatto; *Andropogon schænanthus*, which yields the ginger grass or roussa oil; *Saccharum officinarum*, or sugar cane; *Ipomea purga*, jalap; *Dioscorœa sativa*, or yam; *Luffa ægyptica*, or loufah; *Gossypium barbadense*; *Abrus precatorius*, or Indian liquorice, whose leaves, as well as root, taste of glycyrrhizin; *Garcinia mangostana*, the mangosteen fruit found as an adulterant of bael; *Persea gratissima*, or Avocado pear; *Kicksia africana*, whose seeds are met with amongst those of *Strophanthus Xanthochymus pictorius* yielding;

a variety of gamboge, and *Lagenaria vulgaris*, which furnishes the peculiar calabash or bottle gourd.—In the course of his remarks Mr. Wardleworth gave as the reason for the present extreme price of ipecac. root, that the demand for Pará rubber had increased to such an extent since the advent of rubber-tyred cycles that the native collectors had neglected the ipecac. in order to bestow their whole attention to the search for rubber.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION.

The first of the monthly meetings of the present session was held on November 10. Mr. W. L. CURRIE presided, and there was a good attendance.—The CHAIRMAN said he had consented to occupy the chair for another year, and he hoped the success which had attended their past session would be as prominent in this. Between the sessions matters of considerable importance to the trade had happened.

The Pharmacy Acts Amendment Bill

had become law, and its passing had removed every possible objection which a registered chemist and druggist could have to becoming associated with the Pharmaceutical Society of Great Britain. Previously it had been said by those not members, What is the good of becoming associated with the Society when there are practically no benefits resulting from it? We certainly have the privilege of voting, but that is the extent of it. Now, no one could point the finger of scorn at the Society, and say nothing could be obtained, because every office which was open could now be had by registered men. He hoped that during the approaching year they in Glasgow, at all events, and particularly because the Bill had its origin in Glasgow, would in large numbers, employers and assistants who were qualified, become associated with the Pharmaceutical Society. By so doing not only would they have a voice in the election of Members of Council, but would be eligible for election to that honourable position. That, he thought, was a very great advance upon past times. He need not say that the very best way to obtain that result was for every member to buttonhole his friends who were not connected with the Society, and point out to them that so long as they remained outside they could not possibly expect it to have that power it ought to have, and which if they were all members they could wield with much greater effect than at present. He supposed there were 15,000 chemists and druggists on the Register, and at the present time there were only between 4000 and 5000 connected with the Society. That was not sufficient. If they had 10,000, he made bold to say, they could approach Parliament with a Bill asking for almost anything, and he was sure they would meet with a very large amount of success. During the last Parliament they had shown what could be done by united action, for he had no hesitation in saying that the Poisons Bill had been rejected simply on account of the unanimity of the expressed opinion of the chemists and druggists throughout the country. If they wanted to improve their position they had now the opportunity of doing so, and by strengthening the hands of the Society they could rely upon getting what they had been aiming at for a long time.—Mr. THOMAS DUNLOP then read a paper on "The British Pharmacopœia, 1898," a report of which will be found at page 529.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.

At the third meeting of the session, held on November 9, at the Exchange Rooms, Birmingham, the chair was taken by Mr. J. SELBY, and there was a good attendance of members.—Mr. J. F. LIVERSEEDGE in a paper entitled

Health and Occupation,

submitted some statistical tables compiled from the last census relating to the comparative mortality pertaining to various occupations. He pointed out as the most striking circumstance the excessive mortality of those associated with the liquor traffic, not only in respect of alcoholism separately considered, but in the aggravation of various diseases. Mr. Liverseedge went on to show how, through lack of ventilation, cutlers and potters suffered from dust, and how plumbers and file-makers suffered from lead-poisoning. The deduction the reader of the paper drew was the great importance of thorough ventilation.—Mr. Liverseedge was heartily thanked for his paper.

PHARMACEUTICAL SOCIETY OF IRELAND.

At an evening meeting of this Society, held at Dublin, on Monday last, a lecture on

Plants and Insects

was delivered at 67, Lower Mount Street, by Professor F. W. MOORE, M.R.I.A., Royal Botanic Gardens. There was a large attendance of ladies and gentlemen, the spacious examination hall being crowded to inconvenience. The PRESIDENT, Mr. Robert J. Downes, occupied the chair, and amongst those present were the following: Dr. J. A. Walsh, M.C.P.S.I., Dr. J. Evans, Dr. W. G. Smith, Dr. J. C. McWalter, M.P.S.I., Messrs. J. Smith, M.C.P.S.I., D. M. Watson, L.P.S.I., J. Forde, Deakin, Simpson, M.C.P.S.I., Evans, Smylie, Monroe, G. Grindley, M.C.P.S.I., Beggs (Vice-President), W. F. Wells, M.C.P.S.I. (ex-President), P. Kelly, M.C.P.S.I., A. T. Ferrall (Registrar), Brady, H. O'Connor, M.P.S.I., Miss Ada Wyatt, M.P.S.I., etc. An apology for non-attendance was received from Mr. J. Tyrie Turner, M.P.S.I.—The PRESIDENT, in a few well-chosen words, introduced the lecturer, who said the title of his subject covered a very large field. He proceeded to speak on its various aspects, namely, insects which were injurious to plants, and plants that destroyed insects. The mutual beneficial relations between insects and plants were explained, and the adaptability of plants to their surroundings illustrated. There was hardly a single plant in which there was not some special structure. The lecturer enumerated a number of curious phenomena connected with the growth of plants, and dwelt at some length on the functions of certain peculiar fleshy stems thereon. He afterwards demonstrated his remarks by a choice collection of slides prepared from living plants and obtained from the College of Science, and instanced Sir John Lubbock as an authority in connection. Ants played an all-important part in plant life. Four genera of plants were described, viz., *Myrmecodia*, *Myrmedoma*, *Myrmephytum*, and *Hydnophytum*, of which there were numerous species. The history of ant plants afforded one of the most striking instances known of the advance of botanical knowledge within so recent a period. In 1874 two imperfectly known genera, with four or six ill-defined species, were known. Beccari in 1884 published his work, enumerating four genera and upwards of fifty species. The cinchona family then came under notice, and the habitat of this plant was given and also its general features. The pitcher plant and Fuller's teasel were shown on the screen, and the head of the common thistle commented on. There was hardly a living plant that did not possess an affinity between itself and certain of the insect world. The opening and closing of flowers by day and night respectively formed an interesting part of the lecture, and the explanation of the two-fold process was listened to with marked attention, frequent outbursts of applause testifying the appreciation of Mr. Moore's hearers. The methodical habits of insects were next touched upon, and the necessity of the ant as a botanical life-giver in the cases named impressed on the audience. The difficulty of importing cinchona in a living condition was pointed out, and the lecturer stated that all plants associated with ants were very difficult to cultivate. Some beautiful specimens of plants mounted on slides for the lantern were then thrown upon the screen by Mr. George Beggs, the Vice-President, who kindly acted for the occasion as honorary lanternist, chief amongst the specimens so exhibited were orchids, pineapple, and others. The "bull's horn" acacia, the thorns on the stems of which served as a protection for the plant as well as a home for the ants, was seen in various stages, as were also three different kinds of palms and the compound leaf of the acacia. The transmission of pollen by bees and the functions of the night-flying moth were explained in a clear and lucid style. A feature in the lecture were the slides of the "Bucket" orchid, which were commented on in appreciative terms. Illustrations of flowering plants were next shown. It was interesting to find that in the other great section of the vegetable kingdom equally remarkable structures were found. Some descriptions of ferns would not grow unless by the assistance of ants. A specimen in connection was shown, and the difficulties experienced in gathering it mentioned. The stems of this fern were compared. Mr. Curtis, of the Botanical Department of the Straits Settlements, collected the specimen in question, which was named *Polypodium patelliferum*, but could not succeed in cultivating it. The study of orchids next came under notice, and the special formations of the flower were described and commented on. Darwin's researches in connection were quoted, and the observations of Rodway described minutely. The flowering

plants of British Guiana were reviewed, and the lecturer concluded by giving an interesting description of the fertilisation of plants by insects.—On the motion of Mr. P. KELLY, seconded by Mr. J. SMITH, a warm vote of thanks was passed to Mr. Moore for his able and instructive lecture, and in conveying the same the PRESIDENT said it was unfortunate that chemists nowadays did not give as much attention to botany as they did some thirty years ago. The study of plants was essential to the chemist, and they would do right if they oscillated in that direction to the past. He hoped Professor Moore would again favour the Society with a similar lecture.—Professor MOORE suitably replied, and the proceedings terminated with a hearty vote of thanks to Mr. Beggs for his kindness in acting as honorary lanternist on the occasion.

NEWCASTLE-ON-TYNE AND DISTRICT CHEMISTS' ASSOCIATION.

A meeting of this Association was held in the Hôtel Métropole on Wednesday evening, November 9, at 8 o'clock. There was a full attendance of members, and in the absence of Mr. F. E. Schofield (President), Mr. KERSE occupied the chair. Six new members were elected, and the SECRETARY intimated that the President and himself had received invitations to represent the Association at the annual dinner of the Sunderland Pharmaceutical Association on November 30.—Routine business having been disposed of, Mr. T. MALTBY CLAGUE, pharmaceutical chemist, proceeded to tell his hearers all about X-rays. Commencing with the inception of the science of radiography, and touching briefly upon currents, coils, and batteries, Mr. Clague proceeded to sketch minutely the apparatus he was to operate with, using a black-board to illustrate by means of diagrams the various points in his lecture. A number of very interesting practical experiments were given, the audience taking part in many of them. Some relics of bygone days—mostly of metallic nature—in the form of foreign bodies located in various parts of the human anatomy by the lecturer in the course of professional work, proved of interest to the meeting. "This," said Mr. Clague, holding up a piece of steel of about the diameter of a sixpence, "is a piece of H.M. battleship 'Victoria,' which for many years was in the possession of one of the workmen in the Elswick Works (unfortunately, however, its then owner could not lay his hands upon it). The large piece of the same vessel was kept by Admiral Sir George Tryon, and is now at the bottom of the Mediterranean." The workman had been injured during the building of the vessel at Armstrong's, and for years the metallic invader had baffled the surgeon until unearthed by the aid of the X-rays. Much interest was evinced by members, and many questions were asked the lecturer at the close of his experiments. The meeting was one of the most successful held by the Association. A hearty vote of thanks was accorded Mr. Clague and his assistant, Mr. T. S. Herd, who operated the apparatus during the experiments.

CAMBRIDGE PHARMACEUTICAL ASSOCIATION.

This Association held the annual meeting at Dale's Assembly Rooms, on Friday, November 11, the PRESIDENT, Mr. Ald. Deck, in the chair. There were present Messrs. A. Sidney Campkin, E. Saville Peck, P. McAvoy, C. S. Addison, W. L. White, H. F. Cook, W. Spencer Turner (Willingham), T. Sidney Campkin, H. A. Hancock, P. A. Barker, B. S. Campkin (Hon. Sec.).—The Treasurer's report by Mr. H. F. Cook showed a balance in hand of £1 13s. 2d., and a reserve fund of £2.—The Secretary showed the work done by the Association to be profitable to the senior and junior members.—The following officers were then elected: President, Ald. Deck, F.C.S.; Vice-Presidents, Mr. A. Sidney Campkin, J.P., Mr. E. Saville Peck, B.A.; Hon. Treasurer, Mr. H. F. Cook; Hon. Secretary, Mr. Bernard S. Campkin, Mill Road, Cambridge; Committee, Messrs. Addison, McAvoy, Parson, Harris, W. L. White, and Spencer Turner. It was decided to hold a *conversazione* during the winter.

MERCURIAL OINTMENT FROM COLLOIDAL MERCURY.—P. Suss suggests that colloidal mercury may be used for the preparation of mercurial ointment, the process being rendered less tedious and laborious. From experiments which he has conducted, it would seem that the ointment so prepared is at least equal to that made by trituration with metallic mercury.—*Ph. Cent.*, xxxix., 553.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.

In connection with this Association, on November 15 Dr. C. E. WADDINGTON delivered a lecture on "Nerves," with lantern and microscopic illustrations. The lecture was of a most interesting nature and was listened to with great attention by those present. Speaking first of the simplest form of animal life, the ameba, the Doctor went on to say that nerves consisted of cells in which the protoplasm was the sensitive part. He then described the structure of nerve fibre, saying that in the centre is a very fine thread called the axis cylinder, which runs along the whole length of the nerve. This axis cylinder, except at its origin and termination, is covered by a medullary sheath or the white substance of Schwann, a white substance of a peculiar fatty nature. Certain constrictions occur at intervals called the nodes of Ranvier, and are supposed to allow of the percolation of lymph to nourish the axis cylinder. Dr. Waddington then told how the nervous system was divided into voluntary and involuntary nerve fibre. The voluntary consisted of brain and spinal cord, while the involuntary consisted of ganglia. Voluntary nerve fibre ended in muscle or skin, while the involuntary ended in intestines, blood vessels, heart, and lungs. The Doctor fully described the chief features of the spinal cord, medulla oblongata, and described the chief functions of the brain.—At the conclusion of the lecture Mr. SILSON proposed a vote of thanks for the treat the Doctor had given the Association.—Mr. HARVEY (of Bourne, Johnson, and Latimer), who was present, seconded, and it was carried in a very hearty manner. The meeting then terminated.

EXTRACTS FROM CONSULAR REPORTS.

PROPRIETORS OF TURF MOORS in Scotland and Ireland, Consul Powell is of opinion, might start briquette factories with profit to themselves and the community at large. His reason for thinking so is that a briquette factory at Langenburg, Germany, which has been in existence for two years has proved a complete success. Turf is cut from an adjacent moor and is ground into mull or a fine powder, and then pressed into briquettes for fuel. The factory turns out eighty briquettes a minute or thirty-five tons per day, with an average output of about 12,775 tons per annum. The demand for this fuel is far greater than the supply, the reason being that the briquettes are so marvellously cheap, an average price being 6½d. per 130 briquettes. This "poor man's fuel" burns slowly but gives a fairly good heat, one briquette, in a closed oven, remaining in a glowing state for twenty-four hours. In an open grate it burns quicker, but remains alight for a longer time than any coal, giving a good red heat. The machinery for making briquettes is patented in England, and can be employed either by purchase or royalty.

TO CHECK THE ADULTERATION OF OLIVE OIL with cottonseed oil the Council of Government of Malta has passed a new Ordinance (No. VI.), which regulates the duty on oil. The duty now established is (a) 6d. per caffiso (4½ imperial gallons) on oil of every description, with the exception of linseed oil, of other oils used as medicine, and of any oils which, being unfit for food, are intended for industrial purposes; and (b) 1s. per caffiso on cottonseed oil or any oil containing any mixture of cottonseed oil. This measure originated in a report made by the Chamber of Commerce to the effect that cottonseed oil was being mixed with olive oil and sold as olive oil. The Collector of Customs, in supporting the report, called attention to the loss that the Revenue suffered by such mixture in connection with the duty on olive oil. To prevent importers of cottonseed oil deceiving the public and defrauding the Treasury, it was considered that a 1s. duty on cottonseed oil or any mixture thereof, compared with a 6d. duty on olive oil, would be sufficient to check fraud.

A BACTERIOLOGICAL LABORATORY was started in Colombia, Panama, in 1896, under Government auspices in conjunction with the poor asylum. In a recent session, the Legislative Assembly granted a further vote towards the purchase of additional apparatus. Great results are expected from this institution, and it is hoped that much benefit will accrue if the facilities for research are placed in the hands of competent observers.

NOTICES TO CORRESPONDENTS.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ADVERTISEMENTS AND ORDERS for copies of the 'PHARMACEUTICAL JOURNAL' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers.

ARTICLES AND REPORTS sent for the Editor's approval should be accompanied by stamped directed envelopes, otherwise no guarantee can be given that they will be returned if not found suitable.

CORRESPONDENTS should write in ink, on one side of the paper only, and must authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

DRAWINGS FOR ILLUSTRATIONS should be executed twice the desired size; clean sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

NAMES AND FORMULÆ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

QUERIES addressed to the Editor will be replied to in the Journal as early as possible after receipt, though not necessarily in the next issue. Replies cannot be sent by post, even though stamped envelopes accompany the queries.

LETTERS TO THE EDITOR.

THE NEW TEXT-BOOK OF PHARMACY.

Sir,—The various instances mentioned by Mr. Lucas in last week's Journal, so obviously fail to support his complaint of having been misinterpreted that my reply to his remarks need only be short.

1. Presuming that Mr. Lucas will assent to the view that an error of five grains is not admissible in a weighing machine to be used in pharmacy for quantities under one ounce, a table of errors relating only to liability to penalty should not have been quoted without comment.

2. This remark does not clear up the confusion of ideas. Mr. Lucas' words are, "If fed by a pump the distilled water nearly always contains traces of oil used for lubricating the working parts of the engine." There is no objection to his straining the gnat out of the distilled water, but he still overlooks the camel which the engine introduces. I had no intention of being hard upon Mr. Lucas, either for want of engineering knowledge, or want of critical accuracy in the use of his words, and would not have noticed these points had it not been that, with similar laxity on the part of his readers, they might take his statement to be "If a boiler be fed by means of an injector, the condense water may be used in place of distilled water"—a statement of much greater laxity than Mr. Lucas intends.

3. The statement is a crude one, and Mr. Lucas does not much improve his position by sheltering behind the names of Wagner and Alder Wright, except by showing that he errs by authority.

4. If the dried ferrous sulphate is of B.P. quality, that is, 92.5 per cent. of $\text{FeSO}_4 \cdot \text{H}_2\text{O}$, or a little more (in fact, any point between this and absolute purity), he should have told the student how much syrup was the right quantity to mass it with, and that was the main point of the comment on this article.

The other "remarks" as to the criticism complained of being based on "misinterpretation," seem to indicate inability to perceive that bleaching powder is something more than $\text{Ca}(\text{OCl})\text{Cl}$, that ethylic alcohol cannot be always a product of vinous fermentation, as it is also a product in other ways, or that the words "being set free" are equivalent to "evolved together," as shown by the equation at p. 169.

November 12, 1898.

THE REVIEWER.

Sir,—Since the appearance of Mr. Lucas's letter in your last issue, I have had a visit from an expert engineer, in whose works there are twelve Lancashire boilers, each capable of

vaporising six hundred gallons of water per hour; they work all the twenty-four hours, but not all the twelve boilers at once, so that his dealing with condense is a considerable one, say sixty to one hundred thousand gallons per day. The condense contains oil which it is desirable to separate before returning the water to the boilers, as the presence of oil causes pitting and injury to them. Consequently, precautions are taken to avoid contamination as far as practicable. The condense water is passed through sawdust filters or other appliances for the separation of oil, including a centrifugal cream separator, capable of dealing with five hundred gallons per hour. To this engineer I submitted Mr. Lucas's statement, and his reply was: "He says 'the engine' when he means 'the pump,' but it is really in the passage through the engine where it gets the oil. The pump is not lubricated on the valves, only on the piston rod and stuffing-box. The engine is lubricated through all its working parts, and the oil is carried forward by the steam from the high pressure, through the triple expansion and the condenser and exhaust pumps to the filters, where the oil is absorbed and the water passes on, in comparative purity, to the boilers again. Injectors are not so much used as pumps, but when they are used it may be either with high pressure or exhaust steam. If the latter be used, of course it might carry a little oil back to the boiler, but the main contamination is the oil introduced into the engine cylinders."

November 15, 1898.

AQUA DEST. (154/38).

OUR LAST BALL IN THE EIGHTEEN HUNDREDS.

Sir,—I am requested by my Committee to inform you that the Chemists' Ball will take place at the Portman Rooms, Baker Street, W., on Wednesday, January 18, next. The Committee, consisting of Messrs. Atfield, Bowen, Bremridge, Carteighe, T. H. Francis, W. Hills, W. H. Mathews, A. J. Phillips, A. C. Preston, J. C. Umney, and W. Warren, was formally appointed at a meeting held on November 7. At the first Committee meeting, Mr. Walter Hills, President of the Pharmaceutical Society, was elected Chairman. A letter was received from Mr. T. C. W. Martin announcing his retirement from the Committee, and a resolution was passed expressing high appreciation of his services as M.C. over such a lengthened period. Intimation of these facts was duly sent to you last week, but I regret to find that my letter has miscarried in the post. I wish now, with your permission, to point out that this is the last time the Chemists' Ball will be held in the eighteen hundreds—a period which has been so marvellously full of history and progress in all directions, and not least in pharmacy. The Committee asks for the active co-operation of Stewards in getting together an assembly worthy of the occasion. I shall be glad, therefore, if all who may be willing to act as Stewards will intimate the fact to me without delay, as I wish to publish the first list of Stewards as soon as possible. The liability of each Steward is limited to the taking of two tickets—one gentleman's (17s. 6d.), and one lady's (12s. 6d.).

24, Russell Street,
Covent Garden, W.C.,
November 8, 1898.

W. WARREN,
Honorary Secretary to the
Ball Committee.

THE POSITION OF PHARMACY.

Sir,—I fully endorse the opinions of Mr. Jas. Reid in last week's Journal. The time has certainly arrived for the chemists throughout the country to unite and do all in their power to remedy the injustice under which they labour. It is against all common sense of justice and reason that unqualified companies should be permitted to do that which it is illegal for individuals to do. To remedy this evil ought to be the main object of the next "Pharmacy Bill," and the sooner steps are taken the better, especially as we have now some of the great legal authorities on our side. The very existence of the individual chemist is threatened by these limited but unqualified grocer companies, who thus call themselves chemists, and improperly impose on the public. It is the duty of every chemist, whenever he has the chance, to enlighten the public on these matters, by explaining the difference between the real chemist and the unqualified limited company who call themselves chemists and trade on other men's qualifications. It is surprising how qualified men can lend themselves to these limited companies and help to swell the coffers of the great capitalists, to the detriment of their fellow-craftsmen.

November 14, 1898.

A COUNTRY CHEMIST (154/3.)

THE SOLUBILITY OF BORIC ACID.

Sir,—I sincerely hope that all the solubilities of the new Pharmacopœia are as soundly practical as that given for boric acid. Chemists will esteem it all the more for this further—among several—concession to common sense which has appeared in the new edition. Assuming, with Martindale and Lucas, that boracic acid has an extreme limit of solubility 1 in 25, most dispensers will agree with Squire and the B.P., 1898, that 1 in 30 is the only standard by which their operations can be satisfactorily guided, and I have seen it despatched by the ounce and the gallon. But there is no reason that I can divine why such memoranda should not include at the same time the extreme and the practical limit of solubility of such substances, which, in the case of that under review, would read 1 in 25-30; due recognition being given to the fact that readers of a work on practical pharmacy naturally attach greater importance to a faithful indication of the practical limit.

November 14, 1898.

D. F. C. A. (153/44).

PHARMACEUTICAL PROBLEMS OF TO-DAY.

Sir,—I read with interest your admirable leading article in the current issue of the Journal, and am sorry it did not happen to be one of those numbers which are sent to every chemist and druggist on the Register. There can be no doubt that unless a considerable increase of membership takes place speedily the efforts made to procure the passing of the recent Act of Parliament will, to a large extent, be thrown away. Like the great majority of pharmaceutical chemists I was cordially in sympathy with the main feature of the Act, but as we all know, opening wide the door is unhappily not sufficient. We have excellent authority for saying that very many require much persuasion, and almost coercion, to make them enter, so, having a good deal of leisure this summer, I made a point of seeing several acquaintances in different parts of the country who are not connected with the Society and urging them to take advantage of the opportunity created and become members. Perhaps I induced half-a-dozen to promise definitely they would do so, and I hope, sir, it will not be thought egotistical or superfluous if I suggest that others should do likewise, and personally, if possible, or by letter, press those of their friends and acquaintances who content themselves with playing the congenial part of candid friend outside the Society to strengthen it by their membership and co-operation. One too often hears the remark, "What has the Pharmaceutical Society done for the great body of chemists and druggists?" Of course, the retort is obvious and just, "What have the chemists and druggists as a body done for the Society?" Grumbled at it—certainly, reviled it not infrequently, but as to helping it, by subscribing to the funds and becoming associated with it, that was the last thing they thought of. The state of things at present is an anomaly as discreditable as incomprehensible, and one may almost despair of the future if the number of those connected with the Society is not largely increased during the next few months. At any rate, let those of us who are members do our best to bring this about. As regards what is to come next, it is not easy to be sanguine. Those familiar with the practice of pharmacy in other countries have no difficulty in pointing out the scandalous laxity which exists in England. Unfortunately, the British public has for so many years been accustomed to the privilege of procuring, or at least of being able to procure, its drugs and medicines, with a few insignificant exceptions, from the grocer, draper, hair-dresser—in short, from anyone who chooses to supply them—that it is more than doubtful whether the sweet reasonableness of choosing the better part will appeal to it. I certainly think that one of the first steps in future legislation should be to give the Pharmaceutical Society power to set its own house in order and exercise proper disciplinary measures where its licentiates are concerned. Then, again, exemption from jury service can be claimed with a better grace by chemists than by any other class, since they are, after all, entrusted by the Legislature with certain functions, and the risks so plaintively enumerated by the chemist juror in the famous trial of *Bardell v. Pickwick* are not yet entirely removed. Of course, however, the question which suggests itself to everyone is that of what is loosely defined as company trading, and this, in spite of an easy optimism in some quarters which seems to think we have only to ask in order to have, bristles with difficulties. Vested interests are still precious and almost sacred in the eyes of a British House of Commons, and there are some wrong ones to be encountered. Be this as it may, however, it is

clear that a united and powerful society will be better armed, both for aggressive and defensive purposes, than a feeble and divided one. And to bring about the first-named state of things is the immediate object desirable.

Chard, November 15, 1898.

T. EDWARD BARRASS.

* * The article referred to by Mr. Barrass has been separately reprinted, and any reader who will undertake to distribute copies judiciously may have any reasonable number he chooses to apply for free of cost. [Ed. P. J.]

LOYALTY TO THE CRAFT.

Sir,—I was extremely disappointed with your last issue. I fully expected to be so utterly "pounded and pulverised" by Mr. Young's battle-axe that I should have been precipitated to the gutter never to rise again—and instead thereof he appears, like the Arab, to have folded his tent and silently (and valiantly) stolen away. With regard to my accusation of unfairness against you, you publish his *suggestio falsi* against me, but when I retort with a *tu quoque* you suppress that, and then you allow us to infer that your comments are based upon the parts of my letter that you have deleted. Is that fair? Is not my word as good as Mr. Young's? But if it is a question of accuracy I will make Mr. Young an offer. Warrington, Manchester, and Liverpool have together a population of something over 1,000,000; now, if out of these three towns Mr. Young will furnish (in confidence) the President of the Pharmaceutical Society with the names of six chemists' assistants in the receipt of £200 per annum, I will undertake to escort him to the "living room, about four feet square." I have not indulged in personal recollections out of vanity or egotism, but simply to show your readers how a fairly average specimen of an assistant, whose whole education and experience tended towards (or, if you like, prejudiced him in favour of) the legitimate trade, was absolutely forced out of it, against his most cherished convictions. Now, to turn from the personal to the general, I would ask your readers who know anything of the subject, who are the young men who keep the stores going, especially the big ones? I do not refer to counter-men, who are not chemists and druggists, and never will be, but to the qualified men. Heaps of them are men whose fathers are in business, and who go for a few months "just to get an insight into the store trade." And how about that ever-increasing body of individuals who long ago recognised that they must either do a store trade or go under, and how about that fairly large (and dishonest) class who put up "Drug Stores" outside their shops and charge the old-fashioned prices, and, moreover, where are the British public sending their boys to be apprenticed? Why, where they see the business being done, viz., the stores; and what is the consequence, that a large and constantly increasing body of men are growing up to whom the old traditions are a fond thing vainly invented; and do the authorities dream that abuse will ever induce them to enter the true fold? I trow not.

November 15, 1898.

C. P. (154/27).

IMPURE TARTARIC ACID.

Sir,—You go into considerable detail in discussing the reactions of sulphate of alum in the presence of carbonates (Nov. 5, p. 501). Have you ever experienced the difficulty of detecting alum in the presence of an acid like tartaric, where it may occur as an adulterant? Some of our students here were puzzled to obtain satisfactory proofs in the ordinary way, and the only solution of the problem at which we arrived was obtained by adding (1) liq. calcis and (2) liq. ammonia to the impure salt, which gave, when examined under the microscope, satisfactory indications of the presence of (1) tartrate of lime, (2) sulphate of lime, and (3) the amorphous hydrate of aluminium. In the case of the impure commercial crystals which formed the subject of the investigation, the presence of alum was distinctly evident to taste, but could not be discovered by the ordinary reagents of the text-books.

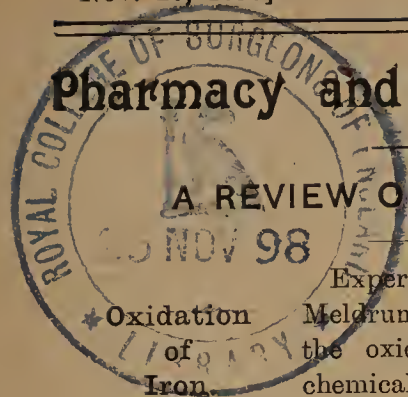
November 14, 1898.

STUDENT (153/43).

* * There should be no difficulty in detecting alum in tartaric acid, owing to the fact that barium sulphate is insoluble in hydrochloric acid, while barium tartrate is easily soluble. If to a solution of the tartaric acid contaminated with alum some hydrochloric acid be added and then barium chloride solution, a white precipitate of barium sulphate will be produced. If the tartaric acid be pure no precipitate is produced owing to the solubility of barium tartrate in dilute hydrochloric acid. It is safer to rely upon this test than upon any indications yielded by the taste of the substance or the microscopical appearance of a precipitate produced under the conditions mentioned. Our correspondent does not state what were the appearances under the microscope which led him to infer the presence of calcium sulphate and tartrate in the precipitate examined. [Ed. P. J.]

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.



Oxidation of Iron. Experiments have been performed by Robert Meldrum with the view of ascertaining whether the oxidation of pure iron takes place in chemically and biologically pure water; also if the general rule that iron is unacted upon by alkaline solutions holds good. Polished piano-wire was used for the experiments. It was found that the oxidation of iron takes place in the absence of bacteria and other forms of life, of ammonia, and of carbon dioxide. In the most carefully conducted experiments, however, oxygen and nitrogen must have been present in the water to a very small extent; it is therefore still an open question as to whether it is the water or dissolved oxygen that acts on the metal. The saline solutions were all alkaline, and prepared from pure substances. With saturated calcium hydroxide solution, the liquid was clear after four weeks, and a 1 per cent. barium hydroxide solution had no effect on the iron after ten days. On the other hand, a 1 per cent. sodium pyrophosphate solution had an immediate action; there was an orange precipitate in twelve hours, and in six days the wire was coated with a deposit. Hence all alkaline salts do not prevent the oxidation of iron. It is remarkable that sodium peroxide should have no action, whereas potassium carbonate in six days produced a large growth of rust on the metal. From this it appears that alkaline salts of potassium act on iron to a greater extent than those of sodium. The bicarbonates are decomposed very rapidly, with the formation of large white precipitates, which eventually turn yellow.—*Chem. News*, lxxviii., 202.

Selenium and Tellurium Compounds. An exhaustive examination of compounds of selenium and tellurium has been carried out by R. Metzner. In the case of tellurium he was able to re-determine the atomic weight by two different methods; (1) by the use of tellurium sulphate; (2) by the reduction of tellurous acid with carbon monoxide in presence of silver. He gives the atomic weight of tellurium as 127.9. Among the various new compounds which the author has prepared are two hydrates of selenic acid, well crystallised selenious sulphate, two oxyfluorides and the fluoride of tellurium, a hydrate of hydrofluoric acid, and a compound of tellurium bichloride and phosphorus perchloride. Methods are also given for preparing large quantities of selenic acid, either by electrolysing seleniate of copper or by oxidising selenious acid by means of permanganic acid.—*Ann. de Chim. et de Phys.*, xv., 203.

Free Hydrogen in Air. A. Gautier finds that free hydrogen is a constant constituent of the atmosphere; it is only present in very minute quantities, from 11 to 18 C.c. in 100 litres of air, or on an average about 0.015 per cent. by volume. Its volume is therefore nearly one half that of the normal amount of carbonic anhydride present in pure air.—*Comptes rendus*, cxxvii., 694.

Deodorised Opium Tincture. E. L. Patch reports on a process which has been suggested for preparing deodorised tincture of opium; it consists mainly in the use of benzine (petroleum ether) in place of the more costly ether for the removal of narcotine, etc., and the employment of a granulated opium

instead of the fine powder. The investigation was extended, in order to test the relative merits of acetone and methyl acetate as solvents of narcotine. As a result he considers that benzine is not adapted for use in washing narcotine, etc., from opium in making the deodorised tincture, on account of its uncertain character (*i.e.*, varying specific gravity, boiling point, etc.), its low range of solvent power (narcotine being scarcely soluble in it, whilst in ether it is soluble 1 in 166), and its disagreeable odour. Methyl acetate and acetone are better for the purpose in regard to their greater uniformity and higher solvent power, but they are inferior to ether on account of their objectionable smell.—*Amer. Journ. Pharm.*, lxx., 552.

Strength of Camphor Liniment. Norman Leonard and H. Metcalfe Smith have published a simple process for determining the strength of camphor liniment, which consists in finding the loss in weight experienced by the sample on heating. For this purpose 3 to 5 grammes of the camphorated oil are heated for two hours at 120° in a flat-bottomed dish or flask. Olive oil under the same conditions gains in weight to the extent of 0.15 per cent. This figure, therefore, should be added to the loss in weight on heating the sample in order to obtain the true amount present. An even simpler plan gives an approximate indication of the strength of the sample, *viz.*, by multiplying its specific gravity by 0.00045. The reason for this is that every 1 per cent. of camphor that is added to olive oil raises the specific gravity of the mixture by about 0.00045. It is important to note that this figure was obtained with olive oil of the specific gravity 0.9165, so that unless the gravity of the oil from which the sample was made nearly corresponds with 0.9165, the results will be of little use. Mineral oil, which is frequently used instead of olive oil, may be detected by its fluorescence, also by removing the vegetable oils by saponifying with alcoholic potash in the usual way.—*Analyst*, xxiii., 281.

Fluid Acetracts. Professor Remington has given an account of the keeping qualities of certain fluid extracts prepared with an acetic aqueous menstruum, to which he applies the name "fluid acetracts," the word acetract being a contracted form of acetic extract. The strength of the acetic acid menstruum varied, according to the drug; some were exhausted by a 5 per cent., others by a 10 per cent. menstruum; of the latter ergot is an example. Those, *e.g.*, of sanguinaria, which, according to the author, kept clear and in good condition for a period of about six years, were prepared with 60 per cent. acetic acid, while a fluid extract of ipecacuanha, prepared with the same strength of acid is in excellent condition after two years. He has received from Dr. Charles F. Squibb nine samples of similar preparations, including digitalis, cascara sagrada, aconite root, nux vomica, belladonna leaf, compound gentian, gelsemium, and coca. Those were made from coarsely powdered drugs by repercolation with dilute acid, the strength of which is not stated.—*Amer. Journ. Pharm.*, lxx., 543.

Gelatin in Gum. A. Trillat employs commercial formaldehyde solution to render gelatin insoluble, so that it may be detected and the amount present determined, in mixtures containing gum, sugar, or other bodies not precipitated by formaldehyde. The substance to be tested is dissolved in water, and the clear solution evaporated to a syrupy consistence; a little formaldehyde solution is then added and evaporation continued until a pasty consistence is reached. The residue is finally washed by decantation with boiling water, dried, and weighed.—*Comptes rendus*, cxxvii., 724.

IODINE IN THYROID GLANDS.

BY EDWARD C. C. STANFORD.

The paper on this subject by R. S. Swinton, published in your impression of November 5, p. 482, calls for some remarks from me. The author disputes my statement made at the Belfast meeting of the British Pharmaceutical Conference, that the B.P. process of making the liquor thyroidei does not dissolve out all the thyroidin. He endeavours to prove that it does. The method of proof does not appear to be conclusive. He takes the average usual estimated proportion of 0.3 per cent. of iodine, as present in the fresh gland. He then finds in one small experiment of only twenty-four glands, weighing 104 grammes, or 1605 grains, that the amount of iodine in the B.P. liquor made from these equals 0.293 per cent. of the fresh glands. He assumes, therefore, that all the organic iodine must have been removed from the glands, and that there could have been no iodine in the residue.

I need scarcely point out that this is a pure assumption, for these glands may be quite abnormal, as, indeed, they are, weighing only 15.43 grains each. In all my pretty long experience I have never met with any so small. In my B.P. Conference paper it is stated that in my experiments the weight of the glands differed as much as from 24.2 grs. to 136 grs. each, and that my average was 33 grs. This average was taken over 5000 glands. The iodine in each differs almost as widely.

He also finds, what was known before, that cold water dissolves out as much as the glycerin-phenol water of the B.P., but here he states that it completely extracts the iodine, and that he could find none in the residue.

I always find about one-fourth of the total iodine in the residue from cold water extraction.

In one lot of glands the following amounts were actually found, the amount of iodine being unusually high:—

In cold water extract	0.5358 per cent.
In soda extract of residue	0.1786 „
Total	0.7144 „

This is equal to 0.1786 per cent. in the fresh gland.

I must therefore examine and criticise the author's method of analysis, and see if it be fairly adapted to the detection and estimation of minute traces of iodine.

Having been continuously engaged in the pursuit and determination of these minute traces of iodine for about forty years, my experience in this subject is somewhat exceptional.

In this experience nothing has been more striking than the extreme ease with which small traces of iodine can be lost in the process of burning into ash.

In delicate experiments, where only small traces are expected, I never burn the sample into ash, but always into charcoal in the presence of a slight excess of caustic soda, and in a covered crucible. I certainly should never incur the risk of adding the No. 3 to promote oxidation, as in the experiment quoted. I consider the process of analysis adopted to be roundabout, cumbrous, and ill adapted for small traces of iodine. It offers means of losing iodine at almost every step. The mixture of the solution to be tested with concentrated sulphuric acid is objectionable, as it sets some iodine free, the use of phenol is also unnecessary and objectionable, as it floats on the surface, and ultimately reduces the gravity of the chloroform. Bromine water is not a good agent for setting iodine free; it often contains traces of iodine, which are very difficult to discover and eliminate, and it combines readily with the iodine set free. Chloroform is not a good solvent for iodine, as it is soluble in water, about 1 in 200. I find by experiment that after all the iodine has been apparently removed by chloroform in this process

it is quite easy to detect it in the solution. There is no occasion to titrate the chloroform solution with sodium thiosulphate, the comparison of the colour with a standard solution is more accurate. I consider, therefore, that this method of analysis for minute traces of iodine is misleading. My experiments with it give very low results.

I need not take up space by referring to the simple method I have long adopted. A reference to my papers on "Iodine in Cod-liver Oil and Other Marine Products" in the 'Year-Book of Pharmacy,' 1883, p. 528, and 1884, p. 568, will find a full account of it. The method had then been employed for many years, and it still leaves nothing to be desired. I described it there as "a delicate process of very general application."

I claimed that 1/250,000th part of iodine is easily detected and measured, and that up to 1/100,000th part the determination is very accurate. There is no other method so reliable, simple, sensitive and accurate. It is, of course, a colour process, but these are the most sensitive and accurate of all analytical processes if in experienced hands. The Nessler test is very accurate, although the colour is not a favourable one for comparison. In our largest copper producing works, although electrolysis is used to precipitate the copper, the last traces are left in the liquid, ammonia is added, and the blue colour is the final standard to complete the analysis; the accuracy of the result is extraordinary. But the crimson colour of iodine in carbon disulphide the solvent I employ, is capable of even greater accuracy, when compared with a standard solution.

In following carefully the B.P. process of making the liquor I find that thyroidin can be extracted from the residue, and that much iodine remains with it.

I would remark also that the B.P. liquor is not an elegant preparation, either in appearance or taste, and that it keeps badly. I think chloroform water as a solvent would be preferable. With regard to the vexed question as to whether the therapeutic effects of the thyroid gland depend on the presence of iodine, I think the balance of evidence goes to show that however small the proportion it is a necessary constituent. According to Baumann, the discoverer of iodine in the thyroid, it is proportional to the thyroidin—and therefore to the iodine—in it. According to other makers the therapeutic effects are entirely dependent on the peculiar principle which they prepare for sale. Probably none are altogether right.

Ernest Roos (*Journ. Chem. Soc.*, vol. 74, p. 612, November, 1898) has shown that the administration of iodine increases the amount contained in the thyroid gland, but that when the glands or thyroidin were treated with iodic acid and potassium iodide, substances containing a large amount of iodine were produced, but these were found to be "physiologically inactive."

TREATMENT OF ANÆMIA WITH URTICA DIOICA.—Fresh nettles eaten cooked as we eat spinach, or nettle tea prepared from the dried plant, are popular remedies in Sweden, where a form of anæmia is prevalent in spring-time. This has suggested to H. Agner to employ the remedy in the ordinary course of medical practice, and by its aid he has succeeded in curing cases of anæmia which were intractable to iron, mineral waters, and other treatments. He regards *Urtica dioica* as one of the best remedies in such cases. To prepare the plant for use the young tender shoots should be selected and gently boiled, then minced to a fine paste or made into a thick soup. The infusion is made from a handful of the dried herb in two litres of water; two or three glasses of this may be drunk per diem.—*Bullet. Gen. de Thérap.*

MYRRH AND BDELLIUM.

BY E. M. HOLMES, F.L.S.,

Curator of the Museums of the Pharmaceutical Society of Great Britain.

Myrrh and bdellium have been known from the earliest times as articles of Eastern commerce, and are mentioned by the oldest historians, but our knowledge of their exact botanical source is, even at the present day, exceedingly imperfect. From time to time specimens of plants supposed to yield myrrh have been brought to Europe, but in so fragmentary a condition that it has been impossible either to describe the plant or to determine whether it really yielded myrrh or one of the allied gum resins which are usually more or less mixed with it in imported packages of the drug.

As long ago as 1859 Mr. Daniel Hanbury directed attention to this subject in the 'Admiralty Manual of Scientific Inquiry,' and pointed out "the desirability of determining with accuracy the plants which afford the several sorts of myrrh" ('Science Papers,' p. 175). In 1873, this appeal having met with no response, he made another attempt to enlist the interests of travellers in the matter by publishing a paper in 'Ocean Highways' (April, 1873), with illustrations of the plant supposed to yield myrrh, at the same time indicating the state of our knowledge of the subject at that date. Further attempts to elucidate the matter have been published in the *Kew Bulletin* in 1878, 1880, and 1896, but the only advance really made has been to render more clear than before the source of Habaghadi, or perfumed bdellium.

Of late years an increasing number of travellers have visited Somali-land and Southern Arabia, and it may therefore be hoped that, ere long, the problem will be solved. It seems absurd that the botanical source of a product which has been in commerce for the last 3000 years should still remain unknown.

The failure to identify the drug with the tree producing it is probably due to the fact that some of the travellers who have visited the myrrh countries have not been botanists, and those who were botanists were not familiar with the appearance and physical characters of myrrh and bdellium and their varieties. In the hope, therefore, that some members of this Society may induce friends or acquaintances who are visiting Somali-land or Southern Arabia to bring home herbarium specimens in flower and fruit of the plants yielding myrrh and the allied gum resins, an attempt is now made to give such an account of the drugs and of the plants of the myrrh genus already known to occur in the districts producing myrrh as may enable travellers who are not botanists to know what to look for, and to identify the products with the trees yielding them. On this account botanical terms are as far as possible replaced by ordinary English words in the descriptions here given.

The Drugs.

Those included under the name of myrrh are :—

1. Somali myrrh ("mol-mol" of the Somalis) collected on the mountains between Zeila and Cape Gardafui.
2. Fadhli myrrh, collected in the Fadhli district to the east of Aden.
3. Yemen myrrh, collected still further east, in the province of Yemen.

Those included under the name of bdellium are :—

1. Perfumed bdellium, apparently collected in north-east Africa, between Harrar and Wady Nogal, south of Cape Gardafui, the tree extending probably much further inland than the myrrh tree.
2. African bdellium.
3. Opaque bdellium.
4. Hotai. The tree yielding it is found apparently growing with the Somali myrrh trees.
5. Non-aromatic acrid gum resin.

These drugs may be described as follows :—

1. SOMALI MYRRH.—This occurs in irregularly rounded pieces, one to three or more inches in diameter, brownish externally, often dull, with a brownish powder on the surface, having a translucent brownish fracture, often with white opaque streaks, and externally, sometimes, with exuded drops of oil, forming when dried concretions of minute tears of a reddish-brown colour. The flavour is strongly aromatic, and the taste very bitter. The almost immediate and powerfully bitter taste is characteristic of true myrrh. The name, indeed ("môr" or "mur"), is the Arabic, etc., for bitter.

So far as is known, Somali myrrh is collected between Zeila and Cape Gardafui, on the slopes of the Ahl and Serrut, and probably other mountain ranges near the coast line. It is brought to the great fair at Berbera in November, December, and January.

2. FADHLI OR ARABIAN MYRRH.—This differs from the first in occurring in smaller, more gummy-looking pieces, presenting a more polished and less powdery surface and in being more evidently made up of small tears. The pieces are rarely more than 1½ inches in diameter. The flavour is less strong than that of myrrh, but resembles it, and the taste is decidedly bitter. It never, however, presents white streaks on the fractured surface nor oily excretions on the exterior. It is said to be collected on the hills about Shugræea and Sureea, east of Aden, by Somalis, who cross over for the purpose, and carry it to Aden.

3. YEMEN MYRRH.—This myrrh is often in large pieces, like the Somali myrrh, 1 to 3 inches or more in diameter, and irregularly rounded. It is characterised by its dark reddish-brown colour and a reddish-brown powdery surface. Internally the fracture is also reddish-brown, and has an oily appearance, but there is no trace of external exudation of drops of oil nor of whitish streaks in the fractured surface. The odour resembles that of myrrh, but is stronger and ranker. The taste is very bitter and the flavour is strongly but somewhat disagreeably aromatic.

Yemen myrrh is exported from Makulla to Bombay and Aden.

4. PERFUMED BDELLIUM, OR "HABAGHADI" OF THE SOMALIS.—This drug closely resembles Somali myrrh in shape, size, and appearance. It has also white streaks in the fractured surface. The taste is less bitter and more acrid. The flavour is, however, entirely different, recalling that of some fungi, and once tasted, the flavour can never be mistaken for that of myrrh.

5. AFRICAN BDELLIUM.—This occurs in hard, roundish pieces sometimes of pale and sometimes of a dark greyish-brown colour (possibly derived from different species). The fracture is resinous without white streaks and is dotted over with glistening points, more evident in the dark pieces. The fragments are translucent. Externally, the darker pieces are often partially covered with an opaque powdery coat. It has not the flavour or odour of myrrh, but a slight flavour recalling that of cedar pencils. The taste is not bitter but slightly acrid.

6. OPAQUE BDELLIUM.—This is at once recognised by its dull opaque surface when broken. It is of a pale brown colour, in roundish pieces, usually 1 to 1½ inches in diameter, and rather tough. The taste is very bitter and slightly acrid, and the flavour is slight, but cedar-like.

7. HOTAI.—This resembles opaque bdellium, but is much more brittle. The taste is slightly soapy, but it has no aroma and is not perceptibly bitter.

8. TRANSLUCENT GUM RESIN.—This occurs in brownish-yellow pieces, like myrrh, but is more translucent and without white streaks. The taste is slightly bitter, but very acrid, and it has no definite flavour.

All the bdelliums here described, Nos. 4 to 8, are apparently collected in Somaliland, or perhaps also in the Shoa country, and as far south-west as Ogadayn.

The Plants.

The genus *Commiphora* (or as it is sometimes called, *Balsamodendron*) includes, according to Engler, more than sixty species, natives of Africa and Arabia only, so far as is known at present.

The plants are small trees or large shrubs, in some species thorny, and in habit and size recall the English hawthorn tree. The leaves, in the species from which myrrh and bdellium are supposed to be collected, are usually formed of three leaflets, of which the two lateral ones are in some species much smaller than the central one, or in others may be



FIG. 1A.—COMMIPHORA MYRRHA, NEES.—Collected by Ehrenberg near Gison, on the borders of Arabia Felix. Half natural size. After Nees.

minute or even not developed at all. In some species the leaves are hairy and in others free from hairs. The margin of the leaves varies considerably, being sometimes minutely and in some species strongly toothed, in others not at all. The flowers are small and inconspicuous, in most species forming small clusters in the axils of the leaves (Fig. 7), but in a few species the flower stalks are elongated and once or twice forked, and these are usually produced in tufts at the tip of the branchlets (Fig. 16). The fruits are small, usually more or less oval, often pointed, about one-third of an inch long or more, fleshy externally, and contain a hard stone enclosing a single seed when mature.

The shape and markings of the stone of the fruit are characteristic for each species of which the fruit is known.

The yellowish milky juice, which is apparently of buttery consistence when it first exudes, forms, when solidified, the gum resins of commerce. It appears to exude in the early autumn after the rains, since the drugs are brought to Berbera in November.

Owing to the thorny character of the branches in some species, they are very difficult to dry without the leaves, flowers, and fruits becoming detached. On this account, in collecting specimens, a few leaves, flowers, or fruits should be placed in an envelope marked with the same number as the twig from which they are derived, and a piece of the bark of the same tree with the gum-resin attached should be collected at the same time and labelled also with the same number. In this way only is it possible to positively identify the plants with the drugs. The character of the soil or rock should be noted, whether calcareous, silicious, or clayey. Some guide to the particular species from which the gum-resins are obtained will be afforded by the traces of scars on the trees where the bark has been incised by the natives.

The trees found in the districts producing myrrh and bdellium may be conveniently divided into groups as follows:—

- I. Leaves rarely exceeding 2 centimetres in length ;
flowers in small lateral clusters.**

This includes *Commiphora myrrha*, Nees, and its variety *mol-mol*, Engl. ; *C. playfairii*, Hook. f. ; *C. opobalsamum*, Engl. ; *C. quadricincta*, Schwf. ; and *C. robecchii*, Engl.

- II. Leaves rarely exceeding 4 centimetres in length ;
flowers in small axillary clusters.**

This includes *C. abyssinica* and its variety *simplicifolia* ; *C. schimperi*, Engl. ; *C. rostrata*, Engl. ; *G. gurreh*, Engl. ; *C. riva*, Engl. ; *C. samhariensis*, Schwf. ; *C. africana*, Engl. ; *C. hildebrandtii*, Engl. ; and *C. serrulata*, Engl.

- III. Leaves 4 centimetres or more in length. Flowers
on elongated branched flower stalks, usually at
the apex of the branchlets.**

This includes *C. kataf*, Engl., *C. erythraea*, Engl., and its var. *subpubescens*, Engl.

(To be continued.)

ARROW POISONS: THEIR HISTORY, SOURCES, AND CONSTITUENTS.*

BY RALPH STOCKMAN, M.D.,

Professor of Materia Medica in the University of Glasgow.

At the present time, except in the darkest places of the earth, the gun has completely ousted the bow as an instrument of warfare and of the chase. Even in those places which, by comparison with the darkest, we may call dark and darker, the enterprise of traders has introduced guns and gunpowder, and as soon as this happens it becomes the ambition of every savage to be the proud possessor of a weapon which at once gives him a superiority over his neighbour as a fighter and hunter. As with ourselves, superiority, or at least equality, of armament is a necessity for self-preservation and national existence, a state of matters which the savage is as quick to appreciate as his most civilised brother can possibly be. As a result, we are within measurable distance of a time when the bow and arrow will have disappeared as a serious weapon of offence and defence except in the most inaccessible parts of the world. This has already happened in many countries, and in some parts of Africa within living memory, while in others we can observe the process going

* Inaugural sessional address to the North British Branch of the Pharmaceutical Society, delivered November 23, 1898.

on. Already in certain nations and tribes skill with the bow is a thing of the past, the making of bows and arrows is a neglected art, the preparation of poisons to render them more deadly is no longer practised, and in many cases will have been forgotten before we have become accurately acquainted with their ingredients. Nevertheless, the bow and arrow have had a long and fateful career, and their history is intimately bound up with the fortunes of great nations.

The battles of Hastings, Cressy and Poitiers, not to mention others nearer home, were decided by superior archery, while English and Scottish kings and parliaments have in the past frequently taken measures, and enacted stringent laws with the view of developing and improving the national skill, and of ensuring throughout their realms a sufficient supply of well-made bows and arrows.

The arrow is a weapon of the greatest antiquity, as cave remains, the oldest sculptures, and its use at the present day by the most primitive tribes all go to show. Nor was it a weapon to be despised. The range of the English archer was from 120 to 360 yards, his accuracy was deadly, and the force such that the arrow easily penetrated an inch thick plank. Stanley, after an encounter with the Avisibbas, in which he lost several men, found that with one of their bows he could easily drive an arrow through both sides of a large biscuit box, and that he was able to shoot another over a high tree 200 yards distant. He adds that at short range such an arrow will go completely through a man, and it is said that in his palmy days the North American Indian occasionally drove one through a buffalo. Few of the tribes with which we are acquainted are capable of using them with deadly effect at longer ranges than from 50 to 100 yards, but their penetrating power is very great, especially if they have a heavy shaft, and they make a dangerous punctured and incised wound. The English archer drew the shaft to his ear and took deliberate aim, but savages, especially in the excitement of battle, hold both arms more or less extended and only draw the bow-string a certain distance towards the body. A number of arrows are held in the bow hand with a reserve in the quiver, and under these conditions they are able to fire off about six per minute with good aim. If the archers are numerous, therefore, a shower of arrows is not an exaggerated metaphor.

The typical arrow consists of three parts, the head made of iron, bone, flint or other stones, the shaft, in the fashioning of which great skill is necessary to have it straight and true, and some sort of clamp or cord to unite these. Many, however, consist of a simple wooden shaft sharpened at one end and hardened by fire, and the small darts used for killing birds and lesser game are always of this description. The head itself is often barbed, or barbs are placed behind it or are cut in the wood, to prevent extraction, and some of these look truly murderous weapons. As nowadays with gunshot wounds, so to the ancient surgeons arrow wounds were of supreme interest, and such authors as Hippocrates, Celsus, and even Ambroise Paré devoted a large space to the consideration of their effects and proper treatment.

The practice of smearing arrow-heads with poison to enhance their deadly effects must be very ancient, although until quite recent times the accounts given of it have been very vague and meagre. Lagneau states that in cave remains of the palæolithic period in France arrow and spear heads have been found made of bone and marked with depressions for containing poison. These, he thinks, were certainly used to destroy such large animals as the bison and reindeer, and were probably also employed in warfare. To the Greeks arrow poisons were well known. Their word "toxicon"—whence we derive "toxicology"—was a poisonous

substance into which the arrow—"toxon"—was dipped. Hercules is fabled to have used poisoned arrows; Homer mentions them in the 'Odyssey,' and Alexander the Great, in his conquest of Asia, met with peoples who employed such missiles against his troops.

Ovid, who lived on the shores of the Black Sea during his banishment from Rome, speaks of the bile and blood of vipers as being used to poison weapons, while Horace, in his ode to Aristins Fuscus, enumerates poisoned arrows among the evils which the man of upright life and free from crime need not fear. The widespread nature of the idea, however, may be better grasped from the prevalent belief that pestilence was due to arrows shot by one or other of the offended gods, while even such an impalpable feeling as love was conveyed into the heart by means of Cupid's darts. The Scythians were well known to use arrow poisons, and they and the tribes of the Caucasus were commonly supposed to use viper poison mixed with putrefied human blood serum.

As regards the use of poisoned arrows and other weapons in Europe, Aristotle and Strabo mention the practice as common among the Celts. In hunting, the Gauls are stated (Pliny) to have employed arrows dipped in hellebore juice, and before eating the animal to have cut out the part around the wound, a practice similar to that of African and Asiatic peoples at the present day.

Celsus states that the poison used by the Gauls was not deadly if swallowed, and remarks that in this respect it resembles the venom of serpents. If this be correct, it points to the use of snake poison rather than of hellebore, but both may have been employed. In ancient Germany similar customs seem to have been in vogue, for Quintilian (A. D. 338), having crossed the Rhine with his troops, was met in battle by the natives with arrows which caused mortal wounds, no matter which part of the body they struck.

Public opinion, however, in Europe early turned against the use of poisoned weapons, for in the fifth century we find the Salian Franks making it a crime to use such arrows, and in the seventh century the Bavarians passed a similar law. Up to the seventh century poisoned arrows were common among the Dacians and Dalmatians and along the shores of the Danube. As late as the thirteenth century, at least, poisoned daggers and swords were used in Europe for assassination purposes, and very much later, even to the sixteenth century, poisoned arrows and other weapons were well known in Spain. These, however, were probably prepared by experts in poisons, and their use was not common among the people.

There is also contemporary evidence that during the later middle ages poisoned arrows were occasionally employed for killing large wild animals in the remoter districts of France and in Switzerland.

It is very difficult at the present time to determine exactly what poisons were employed in Europe, as the meaning of many of the names has become totally lost. The different species of poisonous hellebore—*H. niger*, *Veratrum album*, *V. viride*—were certainly used, as was also aconite, and probably belladonna, besides the venom of the viper and other snakes. But none of the other plants named by different authors can be identified, the descriptions being for the most part rather vague, and probably derived from hearsay evidence only. In the sixteenth and seventeenth centuries it became widely known in Europe that the aborigines of South America and Western Africa were in the habit of employing poisoned arrows in warfare and in hunting, and now for a long time past these poisons have been objects of great interest to explorers and pharmacologists. A very large number of the different poisons used by tribes all over the world have now been more or less carefully examined physiologically, the botanical sources of many of

them have been accurately determined, and the plants have even in some cases been grown in Europe, while we have also, as regards a few of them, detailed accounts by Europeans of the exact methods of preparation in use among the savages. Such information has proved very difficult to obtain, as the secret is always most jealously guarded, and in some tribes is only known to certain families or chiefs, who pass it on to their successors. Some of the poisons are still quite unknown to us and others very imperfectly so, but in their mode of preparation and in the kind of ingredients commonly used there is a certain family resemblance all over the world. Thus we find that snake poison, poisonous insects, poisonous fish, and other animals are commonly employed, while plant juices or watery decoctions inspissated to the consistence of thick tar by heat form the basis or the sole ingredient of the majority. Many of them are mixtures of different poisonous vegetable products, some again are mixtures of animal and vegetable poisons, and this complexity of composition often makes it most difficult to determine the real nature of the poison. When freshly made they have generally the consistence of thick tar, and are carefully put up in neatly constructed receptacles made usually of vegetable fibre or in small calabashes, such as I now show you. In some cases the poison is smeared over the arrow-head, in others it is laid on thickly just behind the head for a distance of two or three inches. Among all savage tribes the head is very loosely attached to the shaft, so that the poisoned portion cannot be drawn or knocked out, but remains firmly fixed in the tissues, no matter what happens to the rest of the arrow. In the case of wooden arrows the shaft is sometimes partially cut through near the poisoned end, so that attempts at extraction by man or violent contact with bushes in the case of an animal which has been hit, snap it off short, and leave the poisoned part in the wound. I also show you some darts from Borneo, made of wood and poisoned at the point, these being shot through a blow tube. It is very noticeable that the quivers both for arrows and for darts are most carefully made with a cover for the poisoned heads, so as to avoid any accidental wounding of the owner or his friends. When carried in an open quiver they are either put head downwards or each head is wrapped in a separate leaf.

The poisons used by different tribes differ much in deadliness, and even the same poison is not always equally effective. The active principle may tend to decompose, and thus the virulence is lessened; if the poison be fresh and moist it is rapidly absorbed from the wound and is speedily fatal, but if old and dried it dissolves much more slowly in the body fluids. Its action is thereby more slowly developed, and if it can be removed in time the wounded man may recover. Some of them must retain their virulence unimpaired for a very long time, as Lewin found a Bushman arrow-poison still active which had lain for ninety years in the Museum for Anthropology at Berlin.

(To be continued.)

DETERMINATION OF NITRITES IN WATER.—L. Robin titrates the iodine set free by the action of nitrous acid on solution of potassium iodide acidulated with acetic acid. Fifty C.c. of the water is mixed with 2 C.c. of 20 per cent. solution of chemically pure potassium iodide and 2 C.c. of glacial acetic acid. After standing for exactly thirty minutes, the liberated iodine is determined in the customary manner with thiosulphate, using starch as an indicator. By this means 0.0001 gramme of nitrous acid per litre may be determined. Waters containing sulphuretted hydrogen should be precipitated with silver sulphate and then distilled, 50 C.c. of distillate being collected from every 100 C.c. of water taken.—*Journ. de Pharm.* [6], vii., 575.

ESSENTIALS OF VEGETABLE HISTOLOGY AS APPLIED TO PHARMACOGNOSY.

The Management of the Microscope.

ILLUMINATION.—Few pharmacy students have the opportunity of pursuing their microscopical studies during the hours of daylight. They must therefore, as a rule, have recourse to artificial light. The light reflected from a bright cumulus cloud is certainly

of exquisite quality for the microscopist; but so rarely is it to be obtained, and so rapid are the changes in the aspect of the sky, that he is quite reconciled for the most part to carry on his work with a source of illumination more uniform and rather more under control. A good petroleum lamp giving a small clear flame is a necessity, and may be obtained from any dealer in microscopical accessories. The most comfortable kind to use is one having a shallow glass reservoir attached to a lateral brass supporting column fixed in a heavy circular foot (Fig. 1). It may be raised or depressed by sliding on the column. The chimney is made of metal and pierced by an opening with side slots, in which can be placed either plain or coloured glass slips. The metal chimney screens the eyes from unnecessary light, and, of course, is not liable to the disasters which so frequently overtake glass ones. Upon a good supply of proper light depends not only

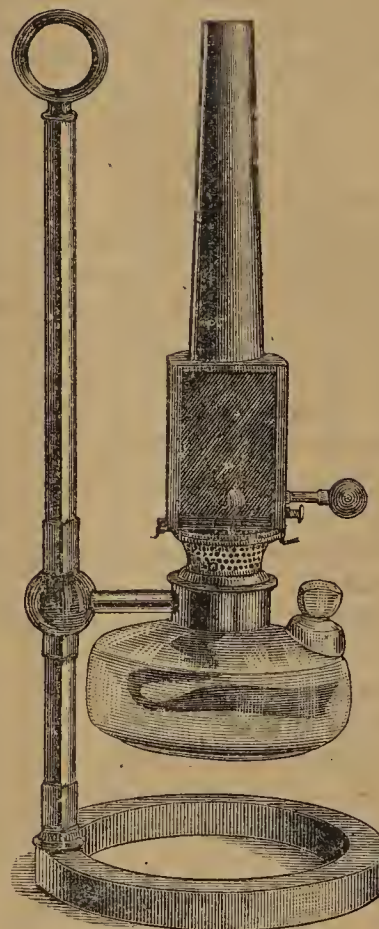


FIG. 1.

the worker's comfort, but also the continued efficiency of his eyesight. The light derived from an ordinary lamp or gas flame is intensely fatiguing and should be scrupulously avoided unless it has been passed through a suitable medium. A blue tinted glass slip in the lamp chimney may be used if care is taken that the colour is not so intense as to produce a decided blue field in the microscope. The aim should be to obtain a field in which the predominant yellow of the oil flame is just overcome, the result being a cool very faint blue colour which in a short time the eye accepts without being impressed with any colour sensation. Often it may be found desirable to concentrate the light upon the mirror by means of a condensing lens. A device which supersedes the blue glass chimney and the condensing lens may be made by taking a round-bottomed twelve or sixteen ounce flask and filling it almost quite full with a dilute solution of ammonio-sulphate of copper, adjusted to the proper tint, and securely corking the neck. This may be then placed upside-down in a wooden support slightly hollowed to receive the globe and having a cylindrical hole in the centre to receive the neck (Fig. 2). Judgment should be exercised in the use of the mirrors, the plane one being always used when it gives a sufficiency of light, and the concave one only when really necessary; the light from the latter may be nicely varied by adjusting its distance from the stage, when the microscope fitting permits of it. It is not always

desirable to have the light focussed upon the object, as better results are sometimes obtained by having the light diffused. It is often overlooked that a large amount of control over the light is to be obtained by an intelligent use of the diaphragms, and it is a pity that in so many microscopes these are not concentric with the microscope tube. A cheap iris diaphragm with a simple means of centering is a desideratum. That the object under the microscope is seen in only one plane should be constantly remembered; but

this drawback can be compensated for in some slight measure by examining the object under varying conditions of light, as by varying the distance of the mirrors as well as by throwing beams of more or less obliquity upon it. Dark ground illumination sometimes assists in the elucidation of obscure structures. It may be obtained by the use of the spot-lens, by the use of the

black central stops supplied with the Abbe illuminator, by paraboloid illuminators, or, in the case of low powers, by directing a beam of light upon the object, of such obliquity as not to impinge upon the front lens of the objective. Whatever the means used the end to be attained is to direct light upon the object at the same time that all other light than that refracted by the object is prevented from entering the objective. The appearance gained is that of an apparently incandescent object seen against a black ground.

DRAWING AND MEASURING.—Anyone who is proficient in free hand drawing will find but little difficulty in making satisfactory drawings of microscopical images; but something more than a pictorial representation is needed for pharmacognostical purposes. It is necessary that the drawings should bear a definite relationship in size to the original object. To secure this two pieces of apparatus are almost essential—a camera lucida and a stage micrometer. The latter, which is indispensable, should be ruled in the tenths and hundredths of a millimetre, because microscopic measurements are usually expressed as multiples of the micron (μ), the thousandth part of the millimetre, which was formerly and sometimes still is designated a micromillimetre (Mkm). For measuring purposes the micrometer may be used in three ways. The simplest and quickest, requiring some little practice, is to place the micrometer upon the microscope stage and accurately focus the objective upon it. Then place a piece of drawing paper upon some body elevated to exactly the same height as the stage upon the right-hand side of the microscope. After a little practice it will be found possible to view the micrometer through the microscope with the left eye and at the same time see the paper and a pencil with the right eye. It will then appear, if the microscope is sufficiently close to the paper, as though the micrometer were projected upon the paper, and the pencil may be used to mark the micrometrical divisions. Upon now replacing the micrometer with the object to be measured and viewing it in the same way it can be noted how many divisions of the scale on the drawing paper it covers and its measurements duly recorded. By applying a millimetre rule to the drawn scale and noting how

many millimetres are included in, say, the magnified tenth (0.1 Mm.) of a millimetre and multiplying by ten, the magnification in diameters of the particular microscopical combination (objective, ocular, and tube-length) will be obtained. Should it only be desired to measure the object without reference to the magnification of the microscope, it is not necessary to be careful to place the drawing paper upon the same level as the stage. In the same way drawings of small objects, such as starch granules, pollen grains, and crystals may be drawn. This method is not suitable for large objects, because of the difficulty of keeping the eyes in one position, and thus keeping the different parts of the object in register with the parts already drawn.

Several useful devices exist for the purpose of aiding the draughtsman to transfer to paper with accuracy a representation of the object. As a treatise on the microscope is not what is in contemplation, it will suffice to indicate the instruments which best accomplish the purpose.

The Abbe camera lucida (Fig. 3), makes it possible for the observer to see the magnified image and the pencil at the same time with one eye and, further, it causes no more fatigue than ordinary microscopical observation. Over the eye-piece is fixed a prism, the upper inclined surface of which is silvered, with the exception of a small round portion in the middle which allows

the magnified image to reach the eye. Suspended on a lateral rigid arm is placed a moveable plane mirror; the face of it is directed downwards towards the drawing paper at an angle parallel to the silvered surface of the prism which receives the reflection of the drawing paper and pencil. Thus the image of the object and the paper and pencil are seen coincidentally by the eye. The amount of light proceeding from both image and paper require the most careful adjustment if the two images are to be seen with equal distinctness. Smoke-tinted glasses are supplied with Abbe camera lucida for the purpose of regulating the brightness of the paper. For accurate work, it must be noted that when the mirror is not strictly parallel with the silvered surface of the prism, more or less distortion will occur. The amount of it, however, is so small as to be negligible for many purposes; but it cannot be ignored when making small measurements. For this reason it is preferable to have a camera lucida with as large a mirror and as long an arm as is convenient, and thus remove the tendency which sometimes arises to depress the mirror. Another piece of apparatus used for the same purpose is the camera lucida with two prisms. A type of this instrument (Fig. 4) is made by Messrs. Swift and Son. In this instrument the moveable mirror of the Abbe camera lucida is replaced by a prism, the long arm is abolished and no provision is

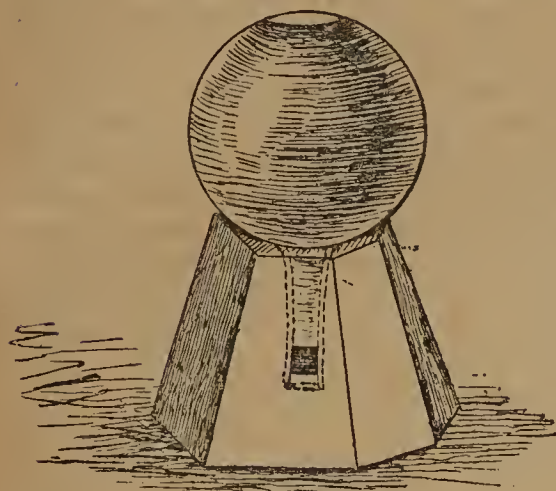


FIG. 2.



FIG. 3.

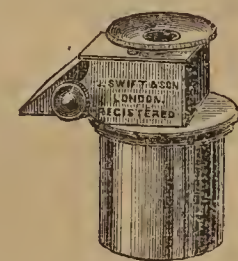


FIG. 4.

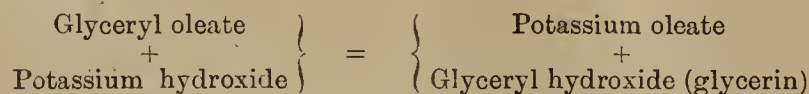
made for tinted glasses. In other respects and in principle the instruments are alike, total reflection of the paper being made by the inclined inner surface of the outer prism, whence it is received upon the inclined silvered surface of the inner prism. The outer prism it will be seen can be moved by means of a lateral milled head. In consequence of the close proximity of the two prisms distortion is always present when the microscope is upright and the paper horizontal. To obviate this defect the microscope may be inclined towards the observer at a proper angle and the drawing paper placed so as to be under the inclined instrument. Because of the difficulty of suitably lighting the drawing paper in this position a better plan is to use the microscope erect and have the paper placed upon a board inclined at an angle which is found to produce the least distortion.

CHAPTERS IN ORGANIC CHEMISTRY.

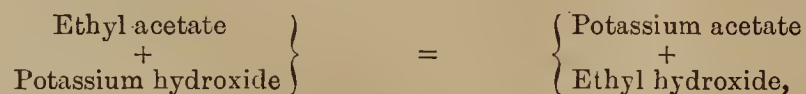
Æther Aceticus.—Ethyl acetate is one of the most familiar examples of the class of bodies known as esters. These are compounds derived from acids by replacing the characteristic hydrogen (or replaceable hydrogen) by organic radicles. They are, therefore, comparable to inorganic salts, which are similarly derived by replacement of the hydrogen by metals:—

Acid.	Metallic salt.	Ester (Ethereal salt).
ClH	ClK	ClC ₂ H ₅
CH ₃ COOH	CH ₃ COOK	CH ₃ COOC ₂ H ₅

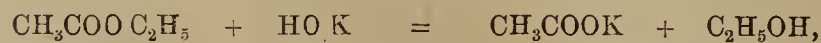
The organic radicles are less strongly basic (electro-positive) than the metals. They are, therefore, displaced by metals, and most easily by the strongest electro-positive metals, the alkali metals—when they are submitted, under appropriate conditions, to the action of the metallic hydroxide. This saponification of esters may also be produced by water alone, which may be regarded as hydrogen hydroxide H·OH. The process has quite a general application, and is known as “saponification” from its earliest application in the manufacture of soap. For example, olein, the glyceryl ester of oleic acid, and the chief constituent of olive and almond oils, is decomposed when boiled with solution of potassium hydroxide.



This is precisely similar to the action of potassium hydroxide upon other esters, *e.g.*, ethyl acetate.



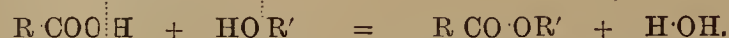
or in the form of an ordinary equation—



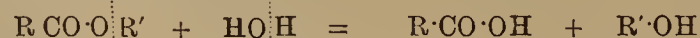
and hence the term is now of general application to such reactions. The product of saponification is therefore not necessarily a “soap” in the popular sense of the word: it resembles a soap only in chemical constitution. In a popular sense the term soap is applied to the alkali salts of the fatty acids having a high molecular weight, such as palmitic, stearic, and oleic acids, which are characteristic constituents of commercial soaps. Between formic and acetic acids, the first and second members of the fatty acid series, and the higher homologues, such as palmitic and stearic acids, there is a connecting series of intermediate acids, and passing up the series we observe a gradation in certain properties (as in all other homologous series of compounds). Thus, in the series of fatty

acids, the lower members are soluble in water, and this property decreases with increasing molecular weight, the melting and boiling points at the same time rising, while the specific gravity decreases. The alkali salts of the lower acids are neutral salts dissolving in water without decomposition and crystallising readily therefrom. On the other hand, the ordinary soaps, *i.e.*, the alkali salts of the higher fatty acids, do not crystallise from water, but form homogeneous amorphous solids containing more or less water. When dissolved in water they give an alkaline reaction due to a partial dissociation of the neutral soap into alkali hydroxide and fatty acid, the reaction of the fatty acid being much feebler than the opposite reaction of an equivalent amount of alkali. The use of soap as a cleansing agent depends partly upon this dissociation and partly upon the familiar emulsifying property of soap solution towards fats. For the dirt upon the skin and clothes is not removed easily by plain water, because it is surrounded by a protective film of insoluble oily or fatty matter. The free alkali of the soap solution attacks this grease, which is partly saponified and then emulsified, while the lathering of the soap removes the mixture of dirt, grease, and soap from the surface of the skin or fabric.

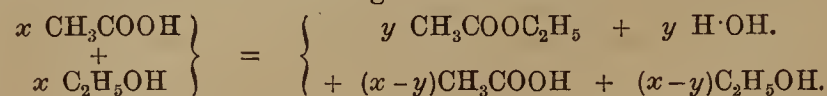
The process for the preparation of ethyl acetate mentioned in the Pharmacopœia is one of the general processes for the preparation of esters, *viz.*, the reaction between an acid and an alcohol with elimination of water.



The process, however, is not so simple as the equation indicates, because the production of water leads to a reversal of the reaction, *i.e.*, the reproduction of acid and alcohol by saponification of the ester.



If molecular proportions of an acid and alcohol be mixed, the formation of ester proceeds at first rapidly, then more slowly, and finally stops. This occurs when a certain proportion of the alcohol and acid have reacted, and the condition of equilibrium thus attained is explained by the statement that the rate of formation of the ester is just equalled by the rate at which it is saponified by the water already produced. Reversible reactions of this kind are much more common than the student may at first sight imagine. The subject is worthy of careful consideration in order to impress upon students the necessity of comprehending the course and conditions of a reaction, in addition to knowing the final products obtained. The use of equations without this sort of knowledge leads only to a superficial and slipshod acquaintance with chemistry. The general reaction for the formation of esters, given above, may be expanded to express the fact that the reaction has a limiting value. Thus:—



This shows that if x molecules of acetic acid react with an equal number of molecules of ethyl hydroxide a certain number, represented by y , of molecules of ethyl acetate and water are produced, leaving the remaining $(x-y)$ molecules of acid and alcohol unchanged. The actual value of x and y must be determined for each reaction. Confining ourselves to this reaction between ethyl alcohol and acetic acid, the “limiting value,” *i.e.*, the quantity of the mixture transformed, is equal to about 66 per cent. In this case, if $x=100$ $y=66$ and $(z-y)=34$. The limiting value is not

affected by the temperature of the reaction. The velocity of the reaction is increased by raising the temperature; that is, the higher the temperature the sooner is the limiting value attained. The term "initial velocity" is used to express the amount of the reacting substances converted during the first hour. In the case of equi-molecular proportions of acetic acid and ethyl hydroxide at a temperature of 154° C. the initial velocity is about 47 per cent., while the limiting value of 66 per cent. is only attained after seventy-two hours. It is therefore obvious that the velocity of reaction diminishes rapidly from the outset, since 47 per cent. of the mixture is transformed during the first hour, while the remaining 19 per cent. requires seventy-one hours for completion. In practice, however, we can realise almost completely the reaction expressed by the equation—



by adjusting the conditions so that the ethyl acetate and water are removed from the sphere of reaction as quickly as they are formed. This is accomplished by adding some dehydrating substance, like sulphuric acid or zinc chloride, to combine with the water while the mixture is heated to remove the ethyl acetate by distillation. By this means we can obtain about 97 per cent. of the acetic acid in the form of ethyl acetate, since the reverse reaction cannot take place owing to the removal of the substances on the right hand side of the equation. In the process mentioned in the Pharmacopœia the sulphuric acid serves a double purpose: it removes the water and also furnishes acetic acid by reacting with the sodium acetate. This salt is directed to be previously dried, to expel for obvious reasons the water of crystallisation which the ordinary salt contains ($\text{CH}_3\text{COONa}, 3\text{H}_2\text{O}$).

With regard to the reverse reaction, viz., the saponification of ethyl acetate by means of water:—



it is obvious that the limiting value of the reaction will be attained when 34 per cent. (100-66) of the mixture of equimolecular proportions of ethyl acetate and water have been so transformed, under the conditions already discussed. If, however, we can remove the products on the right hand side of the equation, this reaction will proceed until the whole of the ethyl acetate has been decomposed. We can accomplish this by adding an alkali hydroxide which combines with the acetic acid, forming potassium or sodium acetate, which do not react with the ethyl hydroxide. Under these conditions the equation holds good. The equations for such reversible reactions are sometimes written thus:—



The arrows are used to show that the reaction may proceed in either direction, according to the conditions under which it is carried out.

DETECTION OF YELLOW AZO DYES IN ARTIFICIALLY COLOURED FATS.—Geister states that ordinary Fuller's earth gives a pink-red colour with certain azo dyes, which have now largely superseded annatto in the colouring of dietetic fats. The dye may be precipitated from the fat by the earth as a violet-red precipitate; this is washed with naphtha to remove the fat, and the dye may then be extracted by boiling alcohol and identified.—*Journ. Amer. Chem. Soc.*, xx., 110.

HOW TO MAKE SILVER MIRRORS.*

BY FRANK EDEL, DES MOINES, IA.

Some time ago, in a short article on silvering glass, I gave the formulæ for making two solutions which, when mixed in equal parts and immediately poured on the glass, had been found by experiments to give most satisfactory results. By using the formulæ then given I have succeeded in plating perfectly hundreds of feet of glass for mirrors. While never having experienced trouble with the process, I have long been convinced that the reducing solution, while depositing the silver without the application of heat much more uniformly than any other I have tried, did not reduce the full amount of the silver held in solution. In this belief I was borne out by experiments made both before and after adopting the formula recommended. In my earlier experiments I had used Rochelle salt alone, and had been able to cover the glass with less than half the amount of silver I was obliged to use with the other reducing agent, but the deposit was not even and it also varied in colour, although at times I had on small work secured some very good results. While with Rochelle salt alone I had succeeded in covering the glass with a solution which contained only 100 grains of silver nitrate to 26 ounces, with the reducing agent given in the article above referred to it required 200 grains. But however much I tried, I did not succeed in getting uniform results with the Rochelle salt alone, while with the other solution I had no trouble in plating glass of any size.

On one or two occasions my attention has been called by those who have tried the process to the fact that the plate was streaked and full of black spots. This, in my opinion, was due to some imperfection in the solutions or to the fact that the glass was not chemically clean, for I have on at least two occasions made as much as 20 gallons of the solutions in lots of 1 gallon and over in a week's time, and never had any trouble with it from this source.

Lately, however, a Russian Jew has been travelling around this part of the country and plating mirrors, doing the work from house to house, and while his work was no better than that which I had succeeded in doing for a prominent furniture dealer, I was satisfied that he did not use nearly the amount of silver which was required by my own process. I satisfied myself that he used exactly the same chemicals, so that in order to do the work more economically he had to combine them differently. I asked him about the combinations used, but he did not have the slightest idea of the chemistry of his process. He was very uncommunicative, but I found that he had no knowledge of the proper methods of cleaning glass, and so I gave him full instructions. Later on he came to me and thanked me for the information, saying that he now had no more trouble in getting his glasses clean. He then wanted to know what kind of solution I used to reduce the silver, and when I told him, he said it was nearly the same as his own, only he used more Rochelle salt and less silver, and that he calculated to use only one-fourth as much salts in the reducing solution as there was silver in his silver solution. He also told me that he made up his solutions in concentrated form and diluted them with distilled water to the proper strength when ready to use them.

As this was exactly the information I was looking for I began to experiment again, with a view of securing a solution which would precipitate the whole amount of silver. While I have not had the time to give the matter the fullest attention, I have found the following solutions to be, to all appearances, just what I desired. I have only tried them on small glasses, but they did the work nicely and at the same time economically.

* From the *Western Druggist*.

SOLUTION No. 1.

Silver Nitrate.....	1 oz. av.
Distilled Water	8 fl. ozs.
Ammonia Water	enough.

Dissolve the silver in the water and add ammonia water gradually until the brown precipitate that is thrown down at first is just dissolved, being extremely careful not to add too much ammonia. But for fear that too much ammonia has been added, drop into the solution a crystal of silver nitrate and shake; if this makes the solution turbid, it is all right; if not, and it clears up, add more silver until it remains turbid. Then filter through a double paper filter, turning back until clear, and add distilled water through the filter till the filtrate measures 16 fluid ounces. Place this in a clean bottle, cork, and keep in a cool, dark place over night.

SOLUTION No. 2.

Sodium and Potassium Tartrate	$\frac{1}{4}$ oz.
Distilled Water.....	10 fl. ozs.

Dissolve the salt in the water, place in a porcelain-lined dish and heat to boiling; then add 10 grains of silver nitrate and stir thoroughly with a clean glass rod; then boil gently for ten or fifteen minutes or until the solution becomes a grey colour. Filter this through a paper filter and turn back until it comes through clear; then add enough distilled water through the filter to make the filtrate measure 16 fluid ounces. Put in a clean bottle and cork, then place in a dark place for five or six hours.

When wanted for use, mix:

Solution No. 1.	1 fl. oz.
Solution No. 2.	1 fl. oz.
Distilled water	4 fl. ozs.

Immediately pour this mixture over the glass, which has been previously cleaned and levelled on some firm support. Then allow to stand until the solution has deposited its silver, about one hour being long enough. Then dip off, rinse by sprinkling, and stand on edge to dry. Lastly, protect with a coat of asphalt varnish.

PYROXYLIN VARNISHES.*

Solutions, the main constituent of which is a nitro-cellulose, have long held an important place in photographic technics, the now almost superseded bromo-iodised collodion being, it need scarcely be said, the most conspicuous example. Since the comparative disuse, however, of this once indispensable liquid, nitro-cellulose as a varnish base has come into very general favour, the particular form most affected by photographers being the amyl-acetate solution of celluloid, which, as is well known, consists mainly of so-called gun-cotton and camphor. Incidentally, it may be remarked that the extent to which photography has become a power in the land may be gauged by the effect which the demand for celluloid (largely photographic) has had upon the market price of camphor. One grave defect of this particular solution is the penetrating odour of the amyl solvent, which, not by any means unpleasant of itself, becomes very objectionable when the presence of its vapour pervades the whole of the premises where it is used. It may be argued that, if the odour is objected to, there are many other solvents free from any offensive character of this kind, and such an argument would be sound were it not for the fact that other defective qualities are attached to many of the solvents. We may take, for example, the di-methyl-ketone, usually known as acetone, the substance so recently introduced as a developer constituent

it will readily dissolve celluloid, but, when the liquid is then tried as a varnish, it will be found wanting, from the fact that it dries to an opalescent or papery-looking film, quite useless for the purpose.

As some of the lore of the old collodion-workers is in danger of being lost to modern workers, it may be well to point out some of the peculiarities of pyroxyline when dissolved. This chemical has been termed a tri-nitro-cellulose, but its exact formula varies according to the degree of nitration it has attained, and its physical properties are equally varied, according to the heat at which it was made and the extent of dilution of the acids. With a maximum dilution the fibres of the cotton will be short and powdery and soft to the touch. With less water the fibre is stronger and quite unbroken, and feels quite harsh when handled. An expert can almost tell with his eyes shut what kind of solution a particular sample of the gun-cotton will make. The first described will give a beautiful limpid solution, flowing well and showing no structure when dry. If a certain maximum of water has been passed in its manufacture, the film left after drying will be dead and papery-looking. When the other class of pyroxyline is dissolved, it will be found that a far smaller quantity has to be dissolved before the liquid becomes too thick to pour and flow. Further, the harder and harsher the fibre of the cotton, the more will the film dry with a "grain" or structure, though it will be very clean and brilliant. Exactly the same peculiarities attend the collodion, as the solution in ether and alcohol is called by photographers, and upon the nice adjustment of these various qualities depends the working character of the collodion. A mixture of this liquid with ordinary alcoholic varnish will also not dry clear—will produce, indeed, a dead white film, which has been proposed as a substitute for ground glass.

If we now pass from these better-known solvents to others of more recent introduction, we find very marked differences in the solutions of the nitrated celluloses. Thus Herr Hugo Flemming, in a foreign journal, finds both dichlorhydrin and epichlorhydrin excellent solvents for the pyroxyline and for such compounds of them as celluloid. Herr Flemming explains that gun-cotton (presumably the photographic kinds, as the true gun-cotton—di-nitro-cellulose—is quite insoluble) is readily soluble in epichlorhydrin, but that even a 20 per cent. solution is so thick that it requires diluting with alcohol before being used as a varnish, though the resulting varnish possesses several advantages over the usual solvents for nitrated cellulose products; but in this regard it is necessary to draw attention, before arriving at any decision on this point, to our remarks upon the nature of the pyroxyline and its effect upon the solution. An ether-alcohol solution would be, with the very best sample obtainable as regards free-flowing character and complete transparency of film after varnishing, very thick indeed, and quite useless as a varnish. Hence Herr Flemming's objection is really without grounds.

In conclusion, we may now recapitulate the characters a good nitro-cellulose should possess if it be desired to use it as a varnish. It should have short, broken fibres, and feel soft to the touch. Such a kind dissolved to the extent of five grains to the ounce will give a clear, limpid liquid, free-flowing and bright-drying.

MYDRINE.—Under this name a mixture of the hydrochlorides of ephedrine and homatropine has been introduced by Merck. Stevenson has experimented with this as a mydriatic, and finds that it acts well. Dilation of the pupil satisfactorily reaches its maximum in thirty minutes, and quite disappears again in three hours. The accommodation was not affected.—*Pharm. Zeit.*

* From the *British Journal of Photography*

THE PHARMACEUTICAL SOCIETY AND ITS PRESIDENTS.

MICHAEL CARTEIGHE.—1882-96.

THAT this is not an obituary notice, *Deo gratias*. But to say something, in short compass, about a living man who for more than thirty years has had a directing share in the fortunes of the Pharmaceutical Society is a yet more difficult task. An appreciation of Michael Carteighe should be drawn with strong lines and not toned down to an average depth of colour. Capable, self-reliant, vigorous in body and mind, gifted with keen perception and generous sympathies, his fervid masterful energy would have ensured him prominence in any capacity. A leading actor amongst British pharmacists, he has played many parts well elsewhere, and to say that, in his whole pharmaceutical career, he has typified the ideal of the Society's founders, is neither flattery nor mere compliment.

Mr. Carteighe's connection with pharmacy may very probably be traced to the circumstance that his elder brother, the late John Carteighe, while engaged as assistant to Michael Faraday at the Royal Institution, accepted the offer of a position in the establishment of Mr. Charles Dinneford, somewhere about the time that the Pharmaceutical Society was being founded. After the death of Mr. Dinneford in 1846, John Carteighe entered into partnership with his friend John Edward Stuart, and the Bond Street business was continued by them under the style of Dinneford and Co. Towards the end of 1863, Michael Carteighe was admitted into the firm after having in the meantime qualified as a pharmaceutical chemist. With a different object in view he had studied chemistry under Williamson at the University College, London, and after an apprenticeship of three years with Mr. C. J. Radermacher of New Cavendish Street, he entered the Society's School of Pharmacy under the impression that it was a necessary part of the pharmaceutical curriculum, and before the close of the session he passed both the Minor and Major examinations.

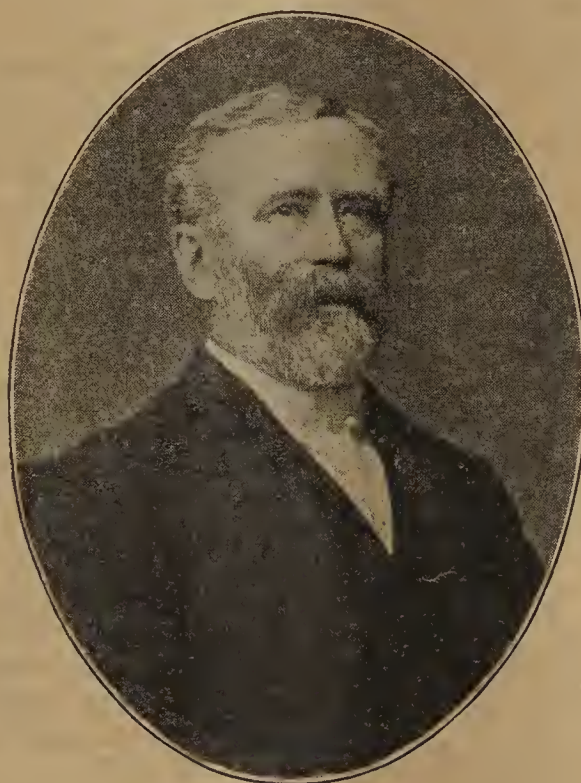
Let us now go back to a prize distribution at Bloomsbury Square in October, 1863, when Thomas Hyde Hills, as Vice-President, occupied the chair in the absence of Mr. Sandford. Redwood made his annual declaration. The School, he regretted, was numerically small; but the conduct and attainments of the students were all that could be desired. Two especially had entirely outstripped the rest—and were able to answer the questions given almost as well as the Professor. These were Michael Carteighe and Charles Umney. Then came Bentley with his familiar praise; he could endorse all that the previous speaker said, and he did so. Never had there been, it appeared, such an exhibition of devotion to school studies, and in his own department he had to mention first the subject of this sketch, of whom he predicted that his future career would bring him distinc-

tion. Mr. Radermacher also spoke of his late apprentice as deserving honour at his hands, as being a pattern for punctuality, attention and method in making the best of his time. The Pereira Medal was also won by Michael Carteighe. On that occasion, at the close of the proceedings, "Mr. Carteighe begged to say a word" and he proceeded to inform the assembly that he did not approve of the mode of action of the authorities in the conduct of the examination for the Pereira Medal. Moreover, he suggested to the Council how, in his opinion, matters should be conducted. Since that evening, when he made his first recorded speech, Mr. Carteighe has had to face many an audience and deliver innumerable discourses on pharmaceutical affairs, and he has always taken the same intense interest in every detail of the Society's work that he manifested on the occasion referred to.

In the early part of 1864 Mr. Carteighe became a member of the Pharmaceutical Society, and at the twenty-third anniversary meeting he was elected one of the auditors. In 1866 he was elected on the Council and appointed a member of the Board of Examiners, positions which he continued to occupy until 1870, when in consequence of the altered arrangements under the Pharmacy Act he resigned his seat on the Council, but continued to act as an examiner, until in 1881 he gave up that position on being again elected a member of the Council. There are still a few who can remember that when Mr. Carteighe first became a member of Council, the uncompromising candour with which he expressed his views, as representing the younger generation, rather shocked some of the more conservative members; but that impression did not last long, and his untiring capacity for work soon increased his influence.

About that period chemists and druggists, unconnected with the Society, were beginning to recognise the disadvantage of being unorganised, and were seeking to obtain legislative incorporation, while the attention of the Legislature was drawn [to the necessity of more efficient regulation of the chemist's business, in consequence of the public alarm occasioned by various cases of poisoning and by the publication of reports on that subject by the medical officer of the Privy Council and Dr. Swaine Taylor. Prior to the passing of the Pharmacy Act, 1868, Mr. Carteighe was actively engaged with Mr. Sandford, then President, in the difficult negotiations relating to that measure, and he thus acquired an intimate acquaintance with the intention and origin of its several sections. At the meeting of the British Pharmaceutical Conference held at Norwich in August, 1868, Mr. Carteighe was, on that account, requested to give an exposition of the new Act, and explain the manner in which its several provisions would operate.

When next elected a member of the Council in 1881, Mr. Carteighe soon took the position of predominant partner and, in



MICHAEL CARTEIGHE.

the following year, he was elected President. It is impossible in this place to enter into particulars of all the work carried out by him while acting in that capacity, but in regard to its general tendency it may be stated that—notwithstanding the liability of a democratic institution to lapse into despotism under prolonged individual control and notwithstanding ribald jokes about the “boss” and his “team”—Mr. Carteighe occupied the position of President for fourteen consecutive years without in the least degree losing the respect and esteem of his colleagues. No higher compliment could possibly be paid to him than is conveyed by the bare statement of that fact.

During his long term of office he has devoted himself chiefly to administrative work, and has materially helped to consolidate the organisation of the Society. The work of the Council has been carried out with harmonious concurrence, and though that condition does not imply absolute identity of opinion among twenty-one men of business, only a distorting mirror could reflect their unanimity as “deadly.” Mr. Carteighe’s great influence is largely due to a mastery of detail, a memory for precedents, and a perfect acquaintance with legal technicalities and matters bearing on legislation. His knowledge in that respect is complete and places him at a perpetual advantage. One of his greatest triumphs, of which he may reasonably be proud, is the readjustment of conditions relating to the Society in Scotland. It was altogether to the credit of both North and South. The informal presentation of an address to Mr. Carteighe at the Liverpool Conference (1896) embodying the terms of a resolution passed by the Executive of the North British Branch, forms a happy conclusion to this page of Scottish history. Mr. Laidlaw Ewing, Chairman of the Executive Committee, supported by Mr. W. L. Currie, Vice-Chairman, speaking on behalf of the other members of the Executive, acknowledged their indebtedness to Mr. Carteighe for the efforts he had successfully made in order to advance the interests of the Society, to promote loyalty to one another, and a cordial feeling of unity and sympathy among pharmacists both north and south of the Tweed.

Mr. Carteighe’s Council work includes the various transitions and remodelling of the scholastic and examination systems, the better organisation concerning local secretaries and the establishment of a body of divisional secretaries in the metropolis. He has encouraged a bolder and more liberal award of annuities from the Benevolent Fund and greater reliance upon the generosity of those who can contribute to it. He has succeeded in persuading the Privy Council to agree to the increase of the fee for the qualifying examination. The reconstruction of a large portion of the building at 17, Bloomsbury Square, and the provision of suitable premises for the Society’s work in Scotland furnish material proof of the activity characterising the period referred to. The curriculum scheme has for the present been withdrawn, waiting for a more convenient season when the interests of students shall be more benevolently considered. During Mr. Carteighe’s reign the official Journal was reconstructed, and has emerged in a more attractive form, conserving its scientific character, but better representing general interests. The later years of his presidency have been marked by more vigorous enforcement of the provisions of the Pharmacy Act, and one decided indication of Mr. Carteighe’s useful personal influence is the enhanced regard and consideration shown for the Pharmaceutical Society as an important public institution.

During the course of Mr. Carteighe’s presidency, he has undertaken missionary work, not exactly in dark places, but at such reputed centres of light and leading as Manchester, Liverpool, Birmingham, Edinburgh, Sheffield, Exeter, Plymouth, Cardiff,

Dover, Carlisle, Hull, Leeds, Aberdeen, and various other English and Scottish towns. On those occasions his personal popularity has generally secured him a cordial reception, and he has invariably preached the doctrine that there is an essential difference between the trade service to be expected from an intelligent, well-informed chemist and druggist, and that rendered in the mechanical sale of packeted goods by the grocer or general store keeper. He has contended that if protection of trade interests be possible, it must be provided from the point of view and through the agency of the Society, as an organisation—co-extensive with the register of legally qualified persons—by which education is promoted, so that the claim to the title of chemist in connection with the exercise of their business may be justified. He has always strenuously urged upon chemists that—in place of sacrificing the advantage of personality in their business, for the sake of running branch shops, or enabling executors to carry on the business of a deceased chemist indefinitely; instead of assimilating their business to that of the bazaar or general store, and instead of assisting, or taking the designation of, the most destructive form of competition the chemist has to contend with—the true policy of protection is to establish a distinct line of demarcation from other traders and to show that its maintenance is obviously conducive to the safety and general interest of the public. That teaching has probably not been wholly ineffective though there is too much reason to believe that the good advice given has been less followed than is desirable.

The various ways in which Mr. Carteighe has taken an active part in promoting a feeling of good fellowship and social intercourse among chemists are minor, but by no means unimportant, instances of the good service he has rendered to the pharmaceutical community. Besides the Chemists’ Ball, of which he has been a constant supporter, the anniversary dinner of members and friends of the Pharmaceutical Society is another established institution which owes its existence mainly to the contagious enthusiasm with which he took up its organisation in 1872. The Pharmacy Club, in like manner, established very largely through Mr. Carteighe’s initiative, has acquired success by the zeal with which he has, as a member of the Committee, assisted in its management. Lastly, as the first “corner-stone” of a Masonic Lodge founded especially for promoting fraternal principles among pharmacists, Mr. Carteighe has helped to give the bonds of fellowship wider reach and efficacy.

As a speaker Mr. Carteighe is both ready, logical, and effective, rarely failing to impress his audience, though sometimes rather weakening the force of his argument by reiteration. Never is he heard to greater advantage than when giving an account of the career of some departed friend—the remarks convey a surprising amount of information, while the commendation is in excellent taste. One of his most effective efforts was an address at an opening session of the School of Pharmacy Students’ Association; it was wholly unpremeditated, genial in expression and sensible throughout. He spoke as oneudent to another, and won the affectionate esteem of his young audience. It is matter for regret, that being extemporaneous and unexpected, the address was not reported verbatim.

Mr. Carteighe’s attention was attracted at an early date to the yearly provincial meetings inaugurated mainly by Schacht and Reynolds, with the aid of their personal friends, as a collateral development of the Pharmaceutical Society, under the title of the British Pharmaceutical Conference. He attended the Conference meeting held at Nottingham in 1866, where opportunity was afforded for making the personal acquaintance of many prominent pharmacists. Under the fascinating influence of John Cargill Brough

a number of congenial spirits—including Brady, Carteighe, Ekin, Giles, Groves, Ince, Reynolds, and others—became more intimately associated, and for many years afterwards continued to assemble together at the Conference meetings. In the autumn of 1868 the meeting was at Norwich under the presidency of Daniel Hanbury, simultaneously with that of the British Association. The gathering was remarkable on its own account, and it became historical owing to the oration pronounced by Dr. Magee in the cathedral. One of the surviving members of the usual group of friends tells of their forming daily a social circle at a restaurant during the sitting of the Conference, and that at a final lunch Mr. Carteighe, after sitting for a time abnormally silent, suddenly rose, and saying that he had an engagement, left the room. Half-an-hour afterwards, Schacht came in and announced that their departed friend's engagement was of a permanent character—it was one which made the domestic happiness of his life. In 1867 Mr. Carteighe was elected a member of the Conference Committee at Dundee, was a Vice-President from 1883, Southport, to 1896, Liverpool; and in 1874, when the Conference meeting was held in London, under the presidency of T. B. Groves, he was Local Secretary.

The friendships formed at these Conference Meetings were in several ways productive of good results, and one of the most immediate was the publication in the *Chemist and Druggist*, then under the editorship of Brough, of several articles, which had for their object to familiarise English readers with French pharmacy based on the Paris 'Codex' of 1866. The contributions towards this end, commencing January, 1867, were meant to give an insight into Continental usage, specially when differing from that adopted by ourselves. The essay on "La Matière Médicale" was written by Henry Bowman Brady; "Chemistry," by the Editor, and "Pharmacy," by John Watts. The "Explanatory Introduction," written by Mr. Carteighe, was a commentary and review of the chapter entitled "Notions Préliminaires." The concluding sentences may be quoted as conveying a sentiment in which most are now agreed. "We would express our great satisfaction" (observed the writer) "that in such a work as the French Pharmacopœia one uniform system of weights and measures has been introduced, to the exclusion of every other—the metrical system, admitted to be at once the most simple, accurate, and complete that has ever been devised; one which has been in actual use for many years in a considerable part of Europe; which is rapidly extending and will become, before many years, the one recognised system in use throughout the world. . . . Nor must a fact be forgotten which the most casual acquaintance with the Continent will demonstrate, that the use of the decimal system brings the practice of computation within the reach of the humblest individual." An active life has led Mr. Carteighe astray from literature, but he has occasionally ventured upon authorship. In a letter addressed to the *Pharmaceutical Journal* in March, 1865, he informed his brethren that unless they carefully considered the nature of their fire insurances, complications might ensue, and they were warned not to distil ether unadvisedly. At the Exeter Conference Meeting in 1869 he read a paper on "Syrup of Iodide of Iron," and continued the same class of subject on March 25, 1871, when there appeared in the *Pharmaceutical Journal* a communication on "Syrup of Phosphate of Iron and other Syrups Containing Phosphoric Acid." Mention may also be made of a lecture on "The Diffusion and Occlusion of Gases," delivered before the Bristol Pharmaceutical Association in April, 1873, being a summary and explanation of Graham's researches in that department of physics.

When the Fifth International Pharmaceutical Congress was held in London, in 1881, Mr. Carteighe was the English Secretary, a

post which involved great personal work and proved no light task. So many details, both as regards the conduct of the deliberations and superintendence of the social arrangements, were sufficient to try the most determined energy. The Congress was a strange gathering of all manner of nationalities. The leading feature of its proceedings was the establishment of uniformity in the preparations of the various national pharmacopœias, of which a complete and permanent record was printed and published. The concluding banquet, when each delegate spoke in his own language, was a study curious in the extreme.

On numerous occasions Mr. Carteighe has been the recipient of appreciative tokens of recognition. In addition to the address presented at Liverpool and a complimentary dinner in his honour at Edinburgh in 1891, his portrait, painted by Mr. Foster, was presented to the Society in October, 1890, having previously been exhibited in the Royal Academy, and it now hangs in the Council room with those of other officers of the Society. Honorary membership of a number of societies has been conferred on Mr. Carteighe. He has been twice on the Council of the Chemical Society; in 1877 he was one of the Founders of the Institute of Chemistry, and in 1885 one of the signatories of its Charter; Vice-President, Censor, and Councillor until 1896; Visitor, for two periods of three years each, of the Royal Institution; Member of the Council of the Society of Arts, 1888-91, then Vice-President, 1890-96, and as such constituted a member of the Royal Commission to the Chicago Exhibition in 1893.

No trace of weakness mars the full enjoyment of his later years or has diminished his varied and remarkable activities. His strong vitality remains as fresh as ever; long may it contribute to advance the public interests and the social standing of the community with which the career of Mr. Carteighe has been so conspicuously identified.

RECENT WORK IN BOTANY.

FORMATION OF ALBUMINOIDS.—According to Dr. B. Jacobi, the synthesis of proteids in plants is effected in the leaves. Under otherwise normal conditions of growth this process may commence in the dark, a reaction taking place between the carbohydrates and nitric acid, ammonia, or amides. The extent to which this process can proceed in the dark depends on the amount of disposable carbohydrates. If these are present in large quantities, proteids are formed, but if the supply of these substances is small, the process is arrested in the dark at the production of amides. Light contributes only indirectly to the formation of proteids by increasing the supply of carbohydrates. The true source of energy, therefore, is in the carbohydrates.—*Biol. Centralblatt*, vol. xviii., p. 593.

POLYPOROID FORM OF MUSHROOM.—M. N. Patouillard describes (*Bull. Soc. Mycol. de France*, 1898, p. 46) a specimen of *Agaricus campestris* bearing, on the under side of the pileus, a polyporoid hymenium, closely resembling that of a *Polyporus* or *Boletus*. The basids and spores were normal in size and structure. He believes that many so-called species of the Polyporeæ are really polyporoid forms of Agaricineæ.

STREAMING OF PROTOPLASM.—Herr M. Heidenhain has made a series of observations on the streaming of protoplasm in the hairs on the flower of the common gourd, from which he concludes that the ordinary statement that solid particles are passively carried along in the currents is incorrect. The streaming of the granules is a phenomenon quite distinct from the local movement of masses of protoplasm, though the two kinds of motion may take place in the same cell. The movement of the granules may, however, take place equally when the protoplasm is at rest. *Sitzber. phys. med.-Gesell. Würzburg*, 1898, p. 116.

NOTES OF NOVELTIES.

The "Fram" Microscope.

A high-class microscope, the "Fram," which is admirably adapted for the purposes of the bacteriologist, student and amateur, has been recently introduced by Messrs. W. Watson and Sons, 313, High Holborn, W.C. It has been designed to yield at a very moderate cost the advantages that are usually associated with the most expensive instruments. It is exceedingly strong, solid, and rigid, while the working parts, being all skilfully fitted and finished by hand with the utmost care, yield the smoothest and most precise action.

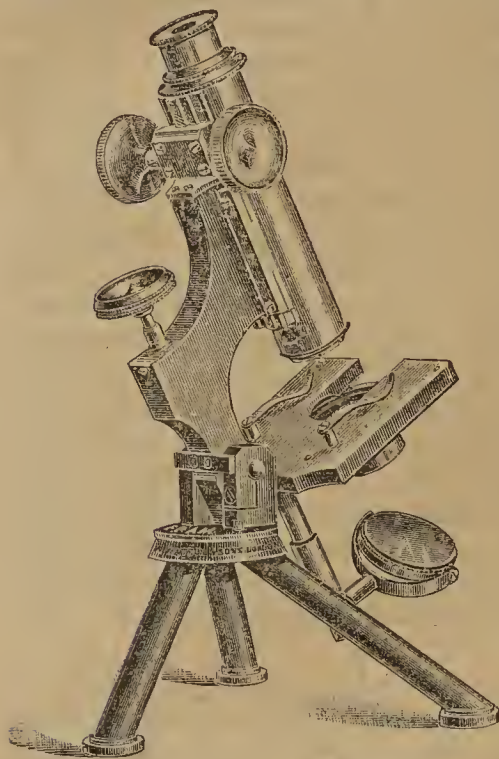


FIG. I.—THE "FRAM" MICROSCOPE.

The foot is of the well-known tripod pattern, having a spread of seven inches, so that the instrument is absolutely steady at whatever working position the body may be inclined. It has Watson's diagonal rack and pinion coarse adjustment, which ensures an exquisitely smooth movement, and an entire absence of backlash. The fine adjustment is of the Watson noted lever pattern, as applied to all microscopes of their manufacture. One revolution of the milled head moves the body $\frac{1}{300}$ th of an inch, rendering it exquisitely exact for high power work. It is unexcelled for its accuracy of working and freedom from lateral motion, while it is not subject to depreciation in consequence of use, because all the dovetailed fittings of this movement and of all working parts in the microscope are provided with compensating screws working through spring slots, by means of which any slackness that may arise after an extended period of use can be at once remedied by the worker.

The stage is of the Nelson's horse-shoe shape, size $3\frac{3}{8}$ in. by $3\frac{3}{8}$ in. But if desired this may be of the usual pattern with central aperture. The fittings are of universal size throughout, so that objectives, condensers, and eye-pieces (0.92 in. diameter) by other makers can be employed. The body length is 152 m/metres, or with the draw-tube extended 250 m/metres. Objectives corrected for both the Continental and English tube-lengths can therefore be used. The fitting for under-stage apparatus is attached to a strongly-constructed collar, upon which it may be turned aside out of the optical axis (leaving the mirror free for use) and replaced as required. If desired, a compound sub-stage may be had instead of the under-fitting, or this can be adapted subsequently by the user, the fittings being interchangeable. The mirrors are both plane and concave, with sliding tube fitting for adjusting. The height of the instrument when placed vertically is 11 inches; to underside of stage, $3\frac{3}{4}$ inches. The Watson Parachromatic Series of objectives are used, which are constructed almost entirely of specially selected and durable Jena glass. Having a

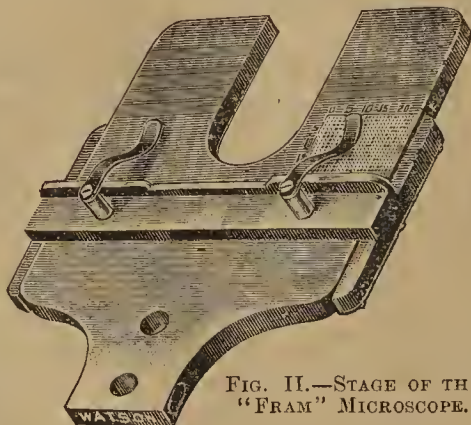


FIG. II.—STAGE OF THE "FRAM" MICROSCOPE.

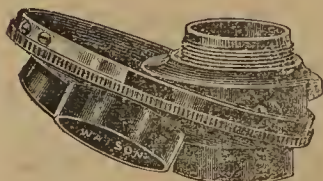


FIG. III.—DUST-PROOF TRIPLE NOSE-PIECE.

large ratio of aperture to their power they are specially suitable for biological and general work, their performance being brilliant, crisp, and free from colour, whilst they are so mounted as to be approximately in focus when revolved on a nose-piece. The eye-pieces have nickel-plated tubes, and are all arranged to work in the same focal plane, the initial magnifying power being engraved upon each eye-piece. The price of the microscope stand only, as figured, with one eye-piece (no objective) and mahogany case is £4 15s. With objectives of the Watson Parachromatic Series ($\frac{1}{6}$ th in. and 1 in., or $\frac{1}{2}$ or $\frac{2}{3}$ rd in.) eye-pieces (Nos. 2 and 3, or 4), the Abbé illuminator with iris diaphragm and carrier for coloured glass and darkground, etc., stops; in mahogany case £8 5s. If in addition it is fitted for bacteriological work with a $\frac{1}{2}$ th in. oil immersion objective 1.25 N.A., and Watson's dust-proof triple nose-piece for three objectives, as shown in the illustration, the price complete with case is £14 5s.

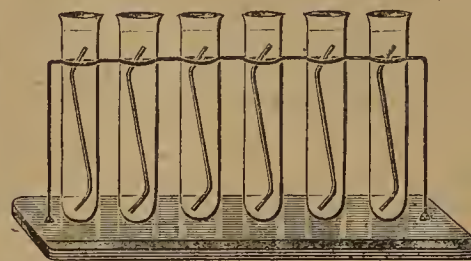
A New Concentrated Toning Bath.

Mr. J. E. Lockyer, 87, Evelyn Street, Deptford, S.E., has recently brought out a new specialty in toning baths. The composition is identical with "Lockyer's 1s. 6d. Concentrated Toning Solution," which has been in the market for some years. The bath (sulpho-cyanide of gold) is put up in 2-drachm bottles, this quantity requiring to be diluted with 10 oz. of water for use. The baths are neatly packed in small cartons, and sent out 1-dozen in box to retail at 4s. per doz. Each separate bath is priced $4\frac{1}{2}$ d., and should make a good selling line to introduce to beginners and junior photographers. The "Concentrated Toning Solution" mentioned was primarily introduced for the convenience of amateur photographers and others wishing to tone only a small number of prints at a time; it also obviates the necessity of weighing small quantities of gold and sulpho-cyanide of ammonium. It has been well spoken of by the photographic press.

A New Concentrated Toning Bath.

Aseptic Catheter Stand.

Messrs. Reynolds and Branson, Ltd., have specially designed an aseptic female catheter stand for use in female hospital wards. It consists of a heavy plate-glass slab with nicely rounded corners, having a $\frac{1}{2}$ inch frosted strip running along the whole length of it, upon which the patients' name may be easily written with a pencil. The ringed support for holding the six strong glass test tubes is made of metal thickly tinned, so that the whole apparatus is quite aseptic.



New Quarter Plate "Frena."

The "Frena" cameras of Messrs. R. and J. Beck, Ltd., of 68, Cornhill, E.C., are known to everyone who is interested in photography. Messrs. Beck have now introduced another of the series of $\frac{1}{4}$ -plate size at the price of £5 8s., and this price includes the forty celluloid films with which it is loaded. The new camera is equal to the others in design and workmanship, and practically it differs from the ordinary one for $\frac{1}{4}$ -plates in having a single achromatic lens fitted instead of a rapid rectilinear. This form of lens allows the price to be reduced, and the only disadvantage is that theoretically straight lines falling at the margins of the picture are represented as slightly curved. This distortion is, however, so slight that unless attention were drawn to it, it would escape notice. The definition given is equal to that of the more expensive lens, and there is naturally a gain rather than a loss of brilliancy of image. The new cameras are fitted with a patented form of brilliant view finder in which the prominent defect of the usual "brilliant" finder has been eliminated. With the latter there is some uncertainty as to the actual picture that the camera lens will record, on account of the fact that the view shown on the finder varies according to the position of the eye in viewing it, and unless the eye be exactly above the centre of the finder it will not represent exactly the amount of view included on the plate. In the present finder this defect is remedied, and the image is stationary and the same from whatever position it is viewed, and moreover, it is sunk in the case so that unpleasant reflections are avoided.

New Quarter Plate "Frena."

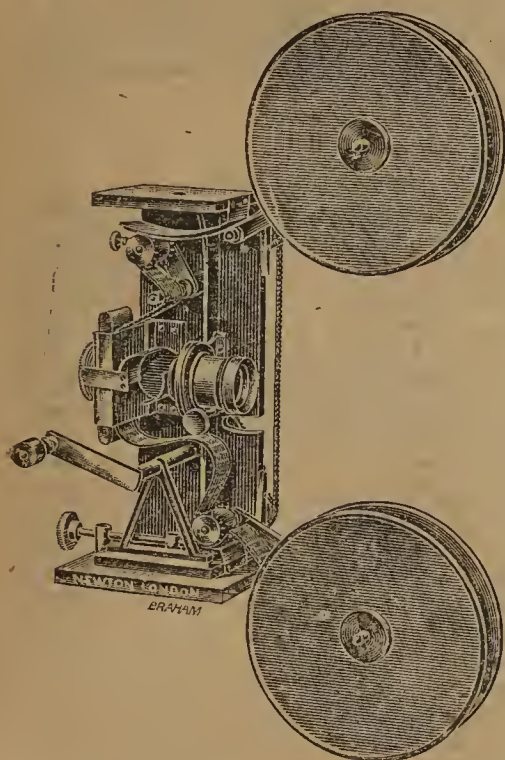
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Bacteriological Lantern Slides.

We referred recently to an admirable work 'The Atlas of Bacteriology,' by Charles Slater, M.A., M.B., etc., and Edmund J. Spitta, L.R.C.P., M.R.C.S., and had occasion to praise the photo micrographs with which the volume is illustrated. Messrs. Newton and Co., of 3, Fleet Street, E.C., are now prepared to supply lantern slides printed direct from the original negatives made by Mr. Spitta for illustrating this work. The series consists of 111 slides. In pointing out that, for the purpose of the study of such a subject as this, a lantern slide shown by optical projection is far more valuable than a printed impression, however good, we must not be taken to depreciate the illustrations which appear in the book, which, as we have already acknowledged, are very fine.

The "English" Kinematograph.

An instrument of this kind is naturally extremely difficult to describe in detail, but a good idea of its general appearance may be obtained from the illustration. Some of the points

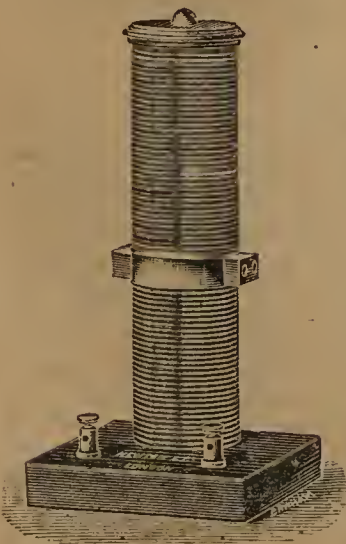


claimed for it are:—By the use of a substage condenser, which is fixed, and therefore gives no trouble to the manipulator, a much more brilliant illumination is obtained. The difficulty of adjusting the film so that the picture shall coincide with the mask is overcome by an eccentric movement, which allows adjustment to be made even while the film is running and without altering the position of the disc on the screen. The apparatus allows the film to be reversed without the introduction of a prism. It can be worked from either side, and the films are wound up automatically as they are used, and the spools are made large, so that several films may be joined together and run through without the delay of removing the exhibited

film and fitting and adjusting a fresh roll of film and a receiving spool. No one, so far, has made a perfect instrument, or perhaps we ought to say a perfect set of instruments, for the production and projection of kinematographs, but in this apparatus Messrs. Newton and Co., of Fleet Street, E.C., have certainly overcome some of the difficulties which had to be surmounted, and if we cannot say their results are absolutely perfect, we can at least say that they are well abreast of the times.

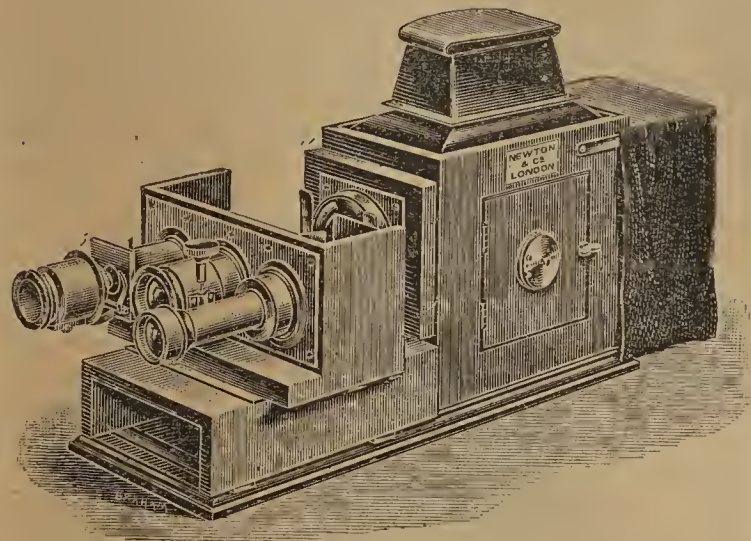
Table Resistance for Arc Lamp.

This is an adjustable resistance bobbin mounted on a slate bed, and in such a form that it can be placed on a table or anywhere else that may be convenient. The resistance is regulated by means of a brass contact maker, which slides up and down, and according to its position the resistance is increased or diminished, so that the amount of current supplied to the lamp is perfectly under control. Newton and Co., of 3, Fleet Street, E.C., are the makers. The price of the single bobbin, 2 ohms resistance, is £1 15s. For a greater resistance two or more are mounted together on the same base at proportionate price.



Newtonian "Universal" Science Lantern (Newton and Ive's Patent).

This lantern, which is also manufactured by Newton and Co., of 3, Fleet Street, E.C., is designed for the use of science lecturers. On reference to the illustration it will be seen that there are three fronts. These are mounted on a stage which slides horizontally across the condenser, thus allowing whichever is required for use to be brought into position in the simplest possible manner. The central front consists of a lantern objective of the usual kind, and is for showing lantern slides. The second front, that on the far side in the woodcut, consists of a microscope attachment fitted with a sub-stage condenser and a microscopical objective. That supplied with the apparatus is of low power, but higher powers can be used, and if required polarising prisms and other apparatus can be fitted. The third front is for spectroscopic work, and is fitted with a slit, direct vision spectroscope, and achromatic focussing lens, which enables a spectrum to be projected directly on to the screen



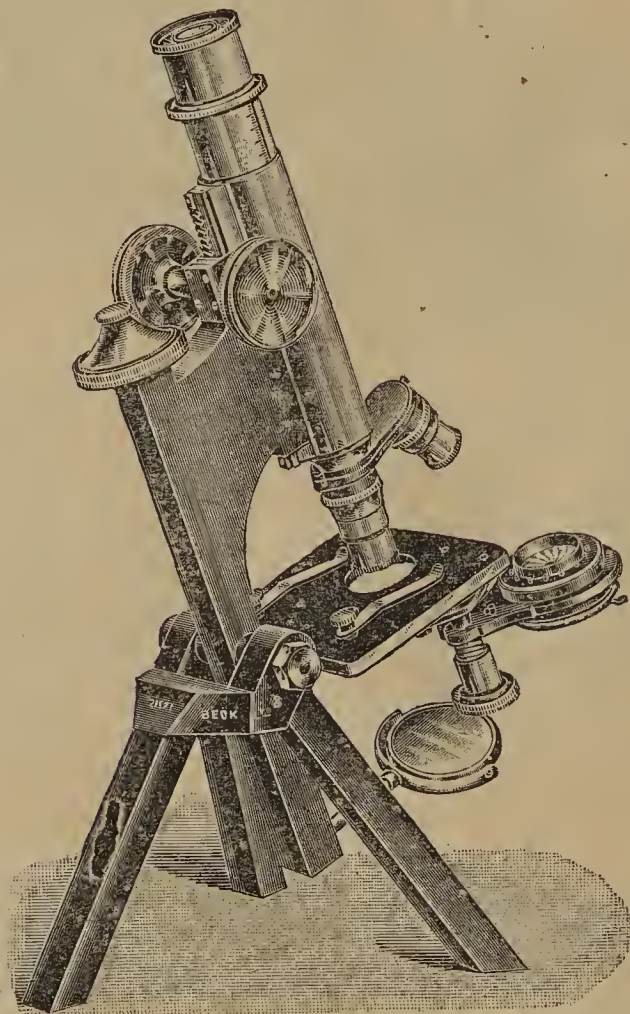
without the necessity of placing the lantern at an angle. By the side of the slit a comparison prism is fitted, and, by an ingenious arrangement provided, the beam from it is projected by means of the central objective on to the screen, thus allowing a direct image of any medium of which the absorption spectrum is being shown to be also shown by alternately uncapping the spectroscope and the lantern lens. The stage carrying the fronts can be removed, and, if necessary, the platform upon which it stands, leaving the space in front of the condenser clear for any purpose. The condenser is mounted on a hinge, and can be removed or put into position instantly. Either limelight or the electric arc can be used. We have no hesitation in saying that this is an admirably designed piece of apparatus, every detail seems to have been carefully thought out, and the workmanship is of very high class. The price of the lantern with the three fronts, etc., as illustrated and described, is £18.

Marion's New Quick-Print Paper.

This paper is put on the market by Messrs. Marion and Co., 22 and 23, Soho Square, W. It is not, as its title would suggest, a paper that will print out, but more of the nature of an extremely slow bromide paper. Its distinguishing feature is that it can be opened and handled by ordinary gas-light, or even by weak daylight, provided the latter be filtered through a yellow medium. Placed in a printing frame behind a negative of average density the exposure required by diffused daylight is from one to ten seconds, or, when printing by gas-light, two to three minutes when the negative is held about 4 inches from the gas flame. The developer recommended is either metol or amidol, and the operation of development may take place by gas-light; of course, not too close to the light. As it is not necessary to employ non-actinic light a dark room may be dispensed with, and all the operations carried on in an ordinary room. With a correct exposure the image appears a few seconds after the application of the developer, and development is completed in about sixteen seconds. Fixing and washing are conducted in the usual way. The paper is supplied in packets and in two grades—glossy and rough mat; 1s. being the price of thirty carte de visites, twenty-four quarter-plates, twenty 5 x 4's, sixteen cabinets, or twelve half-plates, other sizes in proportion.

The British Students' Microscope.

Messrs. R. and J. Beck, Ltd., of 68, Cornhill, E.C., having spent a large amount of capital in the most modern forms of labour-saving machinery, are now enabled to manufacture instruments for which there is a large demand at prices which would otherwise be impossible. The British Students' Microscope in its simplest form has for its stand a heavy tripod with a spread of six inches between each foot. It has a joint for inclination, and the form of the stand allows the tube to be brought into the horizontal position for photo-micrography, etc., without becoming unsteady. The coarse adjustment is a sliding tube, and a micrometer screw with milled head is provided for fine adjustment. The large square stage has a distance of $2\frac{1}{2}$ inches from centre of stage to limb, thus allowing a large culture plate to be examined. The understage is provided with a fitting of the full size, and is furnished with an iris diaphragm with a handle for enlarging or contracting. There is both a plane and a concave mirror. The price of this instrument, that is to say, the stand as described, with iris diaphragm, in mahogany case, but without eye-piece or object glasses is £2 11s. 6d. With an eye-piece, a $\frac{3}{8}$ rd-inch (14 Mm.), and a $\frac{1}{6}$ th-inch (4 Mm.) object glass, the price is £4 18s. 6d. In this simple form it is a very useful instrument. The addition of an Abbé condenser converts it into a very efficient microscope for bacteriological and other high-power work.

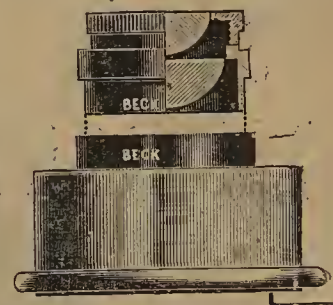


The second form, illustrated here, in addition to the micrometer screw fine adjustment, has a spiral rack and pinion for coarse adjustment. The draw tube is engraved in the Mm. scale for recording the exact amount of mechanical tube length in use. The tripod stage, stage fittings, and mirror, are the same as last described. The price is £3 12s. 6d., or £5 19s. 6d. with eye-piece and $\frac{3}{8}$ rd and $\frac{1}{6}$ th objectives. The third form differs from the second only in having a focussing and swinging substage arm to carry condenser or other apparatus. Price £4 7s. 6d., or £6 14s. 6d. with eye-piece and object glasses. The fourth form is an instrument which will efficiently do the work of the advanced student and the medical man. The various adjustments and fittings exactly correspond to those of the last-mentioned form, but, in addition, there is a rack and pinion focussing and screw centring substage. The requirements for the highest power work are here met, and the best condensers and highest power object glasses can be successfully manipulated.

Price for stand as described, in mahogany case, £5 12s. 6d. For use especially with these microscopes Messrs. Beck have designed a new cheap double nose-piece, somewhat smaller than the ordinary model but in every way as good, except that, not being provided with a loose collar, the entire nose-piece must be turned round to screw it on the microscope; with sliding adjustment microscopes this is no detriment, but with a rack and pinion adjustment it may



screw up into an inconvenient position unless specially fitted. No extra charge is made for fitting if ordered with the microscope. Price 9s. Messrs. Beck and Co. have also designed and introduced a new cheap form of Abbé condenser, especially suitable for the medical student. It has an aperture of N. A. 1.0. The iris diaphragm shown in the figure is that supplied with the microscopes we have described, and the condenser fits in a fitting provided for the purpose. Price 10s.



Baron Hubl's Developing Powder.

Messrs. Isenthal Potzler and Co., of 85, Mortimer Street, W., have submitted a sample bottle of a new developing powder for gelatin plates prepared from a formula of Baron Hubl, for which they are sole agents for the United Kingdom. The powder, when dissolved in water, forms a complete developer, and requires the addition of neither bromide nor alkali. It is claimed that the various constituents are presented in such a form that even in moist air there is hardly any reaction between them, and when kept dry in a well-corked bottle no change whatever takes place. Each bottle is supplied with a metal capsule which serves as a measure, so that no scales and weights are necessary. This is, of course, a great convenience, especially in travelling. The instructions for use are: For correctly exposed plates, dissolve 2 capsules of the powder in 100 C.c. of water; for extreme over-exposure use 1 capsule of the powder to 250 C.c. of water. The same solution may be used for a larger number of plates. This is not a very favourable time of year for experiments in developing, but having made up a quantity of developer according to instruction, we tried it first on an extremely rapid plate which had had barely sufficient exposure in a bad light and obtained a negative, which was very satisfactory under the circumstances. We do not think we should have obtained a better negative with any other developer with which we are acquainted. We next made a couple of lantern slides, using the same solution. These were admirably clear and of a pleasant colour. The solution was then left in the developing cup, uncovered, and freely exposed to the air for three days. At the expiration of this time the solution was found to be quite clear and hardly coloured. On using it to develop some plates we could not detect that any deterioration had taken place. It seems, therefore, in practice this would not be by any means an expensive developer, although the initial cost appears rather high. The price is 2s. a bottle.

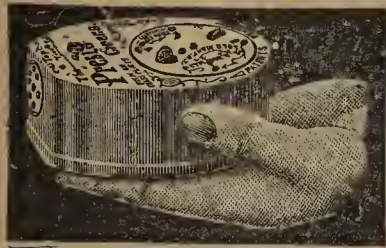
Photographic Chemicals.

The tendency of modern photography is towards the employment of some of the newer reducing agents in the development of plates and paper and the abandonment of our old friends, pyroferrous oxalate, etc. The new developers are almost invariably the subject of patents, and are not obtainable except through their special agents, but we have no cause to complain that they are not obtainable in convenient forms to suit all classes among those who practise photography. Messrs. Fuerst Bros., of 17, Philpot Lane, E.C., have submitted a number of samples comprising some of the newer developers and various combinations, or rather mixtures in which they form part, and other chemicals. As ortol, the newest developing agent, seems to possess properties which unite the advantages of the older and the newer reducers of silver, we will mention that in addition to the simple substance, which is packed in 1, 4, 8, and 16-oz. bottles, we have ortol cartridges, each containing a definite quantity of the substance, tubes containing ortol

and metabisulphite of potass., each tube containing sufficient, when dissolved in water, to make 20 ozs. of stock solution, and soda cartridges similarly making 20 ozs. of the stock alkaline solution. We have also concentrated pyro solution and acetone solution for Lumière's acetone pyro developer. The acetone solution is also supplied alone in 16-oz. bottles. There are also toning and fixing cartridges, a convenient form for those who prefer toning and fixing in one operation. The cartridges are supplied in two sizes, to make 5 and 10 ozs. of solution respectively. We were glad to have the opportunity of experimenting with persulphate of ammonia as a reducer of over-density. The ordinary reducing methods have the disadvantage that they attack the half-tones more strongly than they do the high light, and when the negative already possesses too much contrast the result is that the contrast is increased rather than diminished. We found persulphate of ammonia to have the opposite effect; the solution distinctly reduces the high lights in greater proportion than the half-tones. This valuable property will no doubt bring the salt into common use in every photographer's laboratory.

The Pocket "Presto" Camera.

There seems to be a great demand just now for cameras of diminutive size and the apparatus manufacturers are not allowing the demand to exist without a corresponding supply. One of the neatest cameras of the kind is the "Presto" supplied by Messrs. Marion and Co., of 22 and 23, Soho Square, W. Its general appearance may be judged from the illustration. The whole of the camera is of metal, oxidised on the outside, and the mechanism consists of an exceedingly simple form of roll holder capable of carrying sufficient film for twenty-five exposures. The roll holder, however, can be removed and a "magazine" holding four glass plates substituted. The magazine is supplied with the camera.



The outside measurements are $3\frac{1}{4}$ by $2\frac{1}{8}$ by $1\frac{3}{8}$ inches, and the pictures made $1\frac{1}{4}$ by $1\frac{1}{4}$ inches. The shutter is both novel and ingenious. To set it the camera is held upside down and the button pressed. After turning the camera back to position, pressure on the same button releases the shutter and makes the exposure. By inclining the camera in the direction of the arrow indicating "time," the shutter adapts itself to time exposures. The price of the camera, fitted with a roll of film for twenty-five exposures and including a plate magazine, is 10s. Half-a-crown more will purchase a solid leather case with sling strap. Extra rolls of film for twenty-five exposures 1s. 6d.

CHEMICAL SOCIETY.

A meeting was held on Thursday, November 17, at 8 p.m., the PRESIDENT, Professor Dewar, in the chair. The attendance was fairly good, and the papers dealt with a variety of subjects. The first paper was by A. W. CROSSLEY, Ph.D., and H. R. LE SUEUR, B.Sc., on

The Determination of the Constituents of Fatty and other Organic Acids.

The process briefly consists in obtaining the free acid by hydrolysis from the mono-bromo derivative, and then treating with quinoline or diethylaniline. The product (an unsaturated acid) is oxidised first with potassium permanganate, which yields a dihydroxy acid, then with chromic acid, by which the molecule is split up at the double linkage, giving a fatty acid or ketone containing two carbon atoms less than the original acid. The process has been employed, with satisfactory results, in the case of valeric, iso-valeric, iso-butyl-acetic and other acids.—The PRESIDENT, who considered the method an ingenious one, hoped that the authors would carry their investigations further.—W. J. POPE read a paper on

A Crystalline Form of Iodoform.

The author pointed out that satisfactory crystals of iodoform cannot well be obtained from ether, alcohol, or benzene. He had, however, been able to produce large, well-developed crystals of this substance from acetone. He had studied the crystals so obtained in the hope of throwing light on a question which had in years often recurred to his mind, viz., "Is there any relation

cal composition?" His conclusion was that at present there is no foundation for pressing this theory beyond a certain point, owing especially to polymorphy.—There being no discussion, the PRESIDENT congratulated the author on his zeal in the study of that branch of chemical research, and requested him to read a paper by Dr. Kipping and himself on

Racemic Compounds.

The investigation dealt with the conditions under which certain salts crystallised in racemic forms. Thus a mixture of the dextro and lævo sodium ammonium tartrates, $\text{Na}\cdot\text{NH}_4\cdot\text{C}_4\text{H}_4\text{O}_6\cdot 4\text{H}_2\text{O}$, gave a racemic compound above 27°C , and the sodium potassium tartrates above 0°C .—This communication also provoked no discussion, and it was left to the PRESIDENT to testify to the value of such investigations to organic chemistry and to physical chemistry in its broadest sense.—The next paper was on

The Occurrence of Ortho-Hydroxy-Acetophenone in the Volatile Oil of *Chione Glabra*.

by WYNDHAM R. DUNSTAN, M.A., F.R.S., and T. A. HENRY.—Mr. DUNSTAN, who read the paper, remarked that the investigation was commenced on some of the bark of *Chione glabra* in the collection of the late Daniel Hanbury, which was possessed of a curious smell, partly aromatic and partly fetid. On distilling the small amount at his disposal he succeeded in isolating a minute quantity of ortho-hydroxy-acetophenone. *Chione glabra* is a large tree indigenous to Bonare, and has gained a reputation in Trinidad on account of its medicinal properties. The oil distils at 163°C , and by analysis seems to have the composition $\text{C}_8\text{H}_8\text{O}_2$. It dissolves in alkalis, forming salts. On fusion with an alkali it yields salicylic acid and phenol. The authors have applied to Mr. Thiselton Dyer, of Kew Gardens, for samples of other woods having the same smell, and have already examined many such samples. As a general rule the oil is more aromatic than the wood from which it is prepared. No reference was made in the paper to the work of Paul and Cownley, who actually discovered the presence of volatile oil in the bark of *Chione glabra* (see ante, p. 51).—In the discussion that followed, Dr. HARDEN asked whether, seeing that indole, scatole, and phenol are now generally considered to be decomposition products of proteids, ortho-hydroxy-acetophenone might not be produced in a similar manner. It was asked whether the trees possessing an unpleasant odour were normal or diseased.—In reply, Mr. DUNSTAN stated that undoubtedly the trees were normal; they bore large flowers yearly, having an aromatic and not at all a disagreeable odour. There were objections, from the botanist's point of view, to the idea that such bodies as indole resulted from the breaking down of proteid matter, seeing that they are present in the tree long before the proteids show signs of decomposition.—The PRESIDENT next asked Dr. Wynn, as Secretary, to read an abstract of a series of six papers by E. Divers, M.D., F.R.S., and, in the case of the first of the series, in conjunction with T. Haga, B.Sc., the authors being resident abroad.—The first gave a method for preparing "Hyponitrites from Nitrites through Oxy-amido-sulphonate." The yield is 60 per cent., and the operation is conducted at 60°C .—The second paper dealt with the "Absorption of Nitric Oxide in Gas Analysis." This method consists in absorbing the gas by concentrated sodium or potassium sulphite, with formation of a nitroso-sulphate. The titles of the other communications were as follows:—"The Interaction of Nitric Oxide with Silver Nitrate," "The Preparation of Pure Alkali Nitrites," "The Reduction of an Alkali Nitrite by an Alkali Metal," and "Hyponitrites: Their Preparation by Sodium or Potassium and their Properties."—These papers gave rise to an interesting discussion, in which Mr. DUNSTAN gave an account of a research on the nitrites published by Dymond and himself in 1884.—Mr. GROVES thought the author's method of preparing nitrites by passing nitrous gases (excepting NO_2) into potassium hydroxide or carbonate was not generally adopted on a commercial scale. It early was superseded by the fusion together of sodium nitrate and sodium sulphite, which method has itself given place to the lead process, by which sodium nitrate is treated with lead. He gave a ready method for preparing a solution of nitrous acid, viz., heat together arsenious oxide and nitric acid (sp. gr. 1.3) to 70°C . Pure N_2O_3 is evolved, and on passing into a mixture of ice and water gives a pure solution of nitrous acid.—The PRESIDENT expressed his satisfaction in receiving papers from members who had left the mother country, and considered it an example of genuine imperialism.—After the SECRETARY had read a paper by R. Meldola, F.R.S., on "Para-nitro Orthanisidine," the meeting was adjourned.

PHARMACEUTICAL SOCIETY.

EVENING MEETING IN EDINBURGH.

The first evening meeting of the present session was held in the Society's Hall, 36, York Place, Edinburgh, on Wednesday, November 23, Mr. J. LAIDLAW EWING in the chair. There was a very large attendance, and apologies were intimated from Professor Balfour and Messrs. Aitkin, Davidson, Seron, Nesbit, Paton, and Storrar.

The CHAIRMAN said Professor Stockman had honoured them by agreeing to give the opening address of the session. He required no introduction to a pharmaceutical audience in Edinburgh. To none did his recent appointment to the chair of materia medica in Glasgow University give greater satisfaction than to the pharmacists of Edinburgh. They had often been indebted to him, and they felt that their loss had been Glasgow's gain. He had great pleasure in calling on him to address them.

Professor STOCKMAN then proceeded to deliver his address on

Arrow Poisons,

which is printed at page 548. At the conclusion,

Professor GIBSON said he had listened, as all had done, with great interest to the address, and he had learned almost all he knew about arrow poisons that night. He moved that they accord to Professor Stockman a hearty vote of thanks.

Mr. BOA, in seconding, said they were greatly indebted to Professor Stockman for the interesting and very complete way in which he had treated the subject.

Dr. SILLARS, in supporting the motion, said the subject had a peculiar interest for him at present, because he was engaged in revising the proofs of the important research on some of these arrow poisons by Professor Fraser and Dr. Tillie. It seemed there were at least four different substances which went under the generic name of ouabain. With regard to the crystalline ouabain, it was hoped that it might become a very important therapeutic agent, and they proposed to call it "acokantherin." He was much interested in the description of the aborigines who used these poisons. They seemed highly trained in diabolical ingenuity, and had found out all the most powerful poisons, as well as in many cases the appropriate antidotes. In the case of snake venom, for instance, in regard to which Professor Fraser had discovered the antitoxic serum and the immunising influence of bile, it was found that these things were well known to some natives, and when a request was made for serpent livers and gall bladders they showed reluctance to supply them, and said we were beginning to know too much. One reason why those arrow poisons were sometimes inert was due to this reluctance to divulge secrets. Those men were not only medicine men, they might be called "patent" medicine men, and when poison was asked for they made up and palmed off on the purchaser a compound resembling in appearance the poison, but with the active constituents omitted. That was a difficulty they had always to guard against. He felt very grateful to Professor Stockman, and cordially supported the vote of thanks.

The CHAIRMAN having put the vote to the meeting, it was carried with acclamation, and Professor STOCKMAN briefly replied.

The CHAIRMAN next moved a vote of thanks to those who had sent specimens, especially Professor Balfour, who had sent a most interesting exhibit, and Mr. E. M. Holmes who had taken great pains with the specimens sent from the Society's Museum in Bloomsbury Square, London.

The ASSISTANT SECRETARY then directed attention to the books recently added to the Library, and on the motion of the CHAIRMAN, votes of thanks were awarded to the donors, and the meeting then closed.

"NATRI" AS A SOURCE OF SOLANINE.—The Chilian drug "natri," a mixture of *Solanum crispum*, *S. gayanum*, and *S. tomatillo*, contains, according to Kamdohr and Neger, a considerable amount of solanine, and not, as Vasques stated earlier, a new alkaloid, natrine or hueveline. "Natri" is richer in alkaloid than native solanaceous plants, and is, therefore, recommended as a commercial source of solanine.—*Pharm. Zeit.*, xliii., 563.

REVIEWS AND NOTICES OF BOOKS.

CLINICAL LECTURES ON DISEASES OF THE HEART AND AORTA. By GEORGE W. BALFOUR, M.D., LL.D., F.R.C.P. Edin., F.R.S. Edin. Third edition. Pp. xxiv. + 479. Price 12s. 6d. London: Adam and Charles Black, Soho Square, W. 1898.

It is twenty-two years since the first appearance of Dr. G. W. Balfour's now classical work on diseases of the heart and aorta, and the present edition, the third, has been revised and entirely rewritten by the author. The titles of the various chapters are retained, but a considerable amount of new matter has been incorporated so as to bring the work thoroughly up to date. The book is divided into seventeen chapters, each chapter representing a clinical lecture on some form of cardiac affection and containing one or more fully recorded illustrative cases. Great attention is paid to the recognition and interpretation of the physical signs of cardiac disease, the author evidently laying special stress on the importance of an accurate diagnosis. He is alive to the benefit of treatment both by rest and by exercise, but objects to any routine course in cardiac disease, and considers that "the neat little diagrams we so often see propounded as proofs of the diminution of a dilated heart after a bath are most delusive. The heart is so mobile an organ, and varies so incessantly in size that any attempt to define its degree of dilatation by percussion alone, auscultatory or otherwise, cannot but be entirely untrustworthy."

The chapter on Curable Mitral Regurgitation is a specially valuable one, and cheering both to physician and patient on the question of prognosis. Treatment is described shortly with each variety of disease, and there is a lecture on the therapeutics of cardiac disease. This will be found specially valuable, as the preparations, doses, and methods of administration of the various drugs are fully described. The author has his own methods, but based as these are on a prolonged experience and careful observation, they will no doubt prove in the future, as they have proved in the past, of extreme value to the practitioner. The results obtained may be slow, but they are sure. He mentions the case of a gentleman aged seventy-seven who presented all the signs of extreme cardiac debility. "After taking for four years ten minims of tincture of digitalis night and morning, he developed a firm forcible apex beat, and an excellent pulse, and he also ceased to alarm his friends by fainting. In short, instead of dying from a so-called fatty heart, as had been predicted, he lived to be over ninety years of age, and finally did not die from his heart at all, but from senile asthenia." We do not know whether to admire more the patience and perseverance of the physician or of the old gentleman.

There is a charm of style about Dr. Balfour's writing which makes the book pleasant reading, and even difficult subjects are handled in a manner which enables the reader to follow easily the argument. We heartily commend this work both to the student and the practitioner as one of the best works on the subject of heart disease in our language.

NEW SUGAR SUBSTITUTE.—Under the name of "sugarine," methylbenzene-sulphinide, which is stated to possess five hundred times the sweetening power of sucrose, has been patented in this country as a dietetic sweetening agent. It is obtained by saponifying toluol-cyano-sulphamide with caustic potash, and liberating the new product with sulphuric acid; the crystals which form are then purified by crystallisation from dimethylbenzene.—*Pharm. Zeit.*, xliii., 573.

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NATURAL VERSUS ARTIFICIAL PERSONS.

As is well known to our readers, the break-down of the Pharmacy Act, 1868, eighteen years ago, was due to the fact that joint-stock companies and other corporate bodies were held by the House of Lords to be outside the scope of the first fifteen sections of the Act. But, judging from the reports of meetings that have recently been held, it is not at all clear to the minds of many registered chemists why that judgment was given. For example, at the meeting of the Nottingham and Notts Chemists' Association on October 26 last (see p. 468*a*), an idea seemed to prevail that joint-stock companies are outside the Act because the word "person" is used throughout the Statute instead of the plural "persons." But that is not so; if that had been the case Lord BROUGHAM'S Act—providing that in Acts of Parliament "the singular shall include the plural"—would have applied. Neither is it correct to imagine that, in law, the word "person" cannot include a corporation, for, in Act 7 and 8, Geo. IV., c. 28, it is definitely provided that, in any statute relating to an offence punishable upon indictment or summary conviction, the word "person" shall include bodies corporate. A similar provision is found in the Interpretation Act, 1891. But offences under Section 15 of the Pharmacy Act are not punishable upon indictment or on summary conviction; the penalties must be sued for by civil process. Offences under Section 17 are punishable upon indictment or on summary conviction, and companies are undoubtedly amenable to the provisions of that section. But though such bodies can be sued by civil process in other instances they cannot be so sued by the Pharmaceutical Society for any of the offences created by Sections 1 and 15 of the Pharmacy Act, 1868, the reason being that a corporation—or artificial person—has been held not to be a person within the meaning of those sections.

The idea that prevailed most with the judges in the House of Lords was that the object of including corporations within the scope of the measure was not avowed on the face of the Act. Lord BLACKBURN said he had no doubt the word "person" might very well include both a natural person—a human being, and an artificial person—a corporation. Moreover, he expressed the view that unless there be something to the contrary in an Act of Parliament, the word ought probably to be held to include both. He did not think, however, that the Legislature thought of bodies corporate at all when considering the Pharmacy Bill, and he held that—inasmuch as a corporation could not possess the competent practical knowledge of the business of a chemist and druggist

mentioned in the preamble to the Act, or be examined—there is reason for the inference that only natural persons are referred to in Sections 1 and 15. Whether those who promoted the Act had any idea of preventing unqualified persons from benefiting by the profits to be derived from selling, dispensing, or compounding poisons, Lord BLACKBURN said he could not tell, but they certainly had not brought that intention forward, or put it in such words as would at all lead the Legislature to think of it. He also thought that it was exceedingly improbable, if the promoters of the Act had boldly said "bodies corporate and joint-stock companies shall not deal in poisonous drugs," that the Legislature would have agreed to the measure in those terms. But that was pure assumption on Lord BLACKBURN'S part, though his suggestion that the Legislature was not thinking at all of bodies corporate when the Bill was being considered was most probably correct, but for a reason that does not appear to have occurred to the learned judge.

When the Bill was under consideration, and for long after it became law, no incorporation of unqualified persons was known to carry on the business of a chemist and druggist; considering, then, that the Houses of Parliament are not in the habit of legislating for conditions that do not exist or appear likely to come into existence, it would have been somewhat surprising if bodies corporate had been mentioned in the Act. Undoubtedly, companies were not thought of at all in connection with the measure and, as argued before the House of Lords in July, 1880, this particular case of a corporation was a *casus omissus*. In acquiescing with that argument, the judges were very largely guided to their decision by the reflection that, inasmuch as the actual seller of poisons must in any case be a person duly qualified under the Act, no harm could accrue to the public, in the case of a joint-stock drug store, from the fact that its proprietors were unqualified persons. But, if that be a correct view of the matter, there would be equal reason for raising the question—What harm could arise if the "open shop for retailing, dispensing, or compounding poisons" belonged to a firm of unqualified persons, or even to a single unqualified person, so long as a duly qualified person was in charge? Yet the Legislature has definitely provided that individuals keeping open shop for the sale, etc., of poisons, as well as the members of firms, must be duly qualified, even though they employ qualified assistants. Where, then, is the logic of that provision? Why should proprietary qualification be insisted upon in one case and not in another? It cannot be because duly qualified proprietors are allowed to delegate their duties to unqualified persons, for the judges, in the House of Lords case referred to, were unanimously of opinion that the actual seller must, in all cases, be a duly qualified person. Accepting the view that the lack of reference to corporations in the 1868 Act was an omission, the logical conclusion to be arrived at is that it was an error, and one leading to results so inconsistent with the admitted object of the Act, that it should have been remedied by the Legislature as speedily as possible. It is, of course, unfortunate that chemists have not resolved upon seeking a remedy earlier; but at no time within the past eighteen years has the Pharmaceutical Society been sufficiently strong to move in the matter with any prospect of success. Whether the requisite strength and agreement will now be forthcoming remains to be seen; but it will certainly be impossible to proceed far, if at all, without those conditions.

WORK FOR LOCAL PHARMACEUTICAL ASSOCIATIONS.

THE local pharmaceutical associations of this country are to-day faced with two important tasks—first, the taking of such steps as may best serve to bring within the Pharmaceutical Society the chemists and druggists now outside the ranks; and, second, the holding of trade conferences in their respective districts with a view to devising the best possible means of securing satisfactory regulation of the exercise of their business. The Pharmaceutical Society offers the only available nucleus for complete organisation, and it must of necessity take the lead in any attempt to amend the existing pharmacy and poison law. But, for its attempts to be effective, its leaders must be in a position to say that they represent the great bulk of the trade. The Society cannot reasonably approach Parliament with a comprehensive scheme for regulating the practice of pharmacy and remedying all the defects in the Pharmacy Acts, until it comprises at least twice as many registered chemists as belong to it at present. That position attained, the drafting of a satisfactory Pharmacy Acts Amendment Bill need not be long deferred.

An ideal Bill would contain a clause making the word "person," wherever it occurs in the Pharmacy Acts, include a corporation, and no unqualified persons acting as trustees to a deceased chemist would be permitted to carry on the business of a chemist and druggist in perpetuity. It would also provide that registration as a student must precede entrance for the qualifying examination by at least three years, and that a definite term of pupilage should be spent with a registered chemist actually conducting a pharmacy on his own account. Attendance at certain courses of lectures and laboratory instruction would also be made compulsory in the case of all persons seeking qualification as chemists and druggists. Provisions would be made to extend the list of scheduled poisons sold for medicinal purposes, and to enable the Pharmaceutical Council to strike off the Register of Chemists and Druggists the names of any individuals proved guilty of "covering" unqualified persons, or other conduct "infamous" in a professional sense. Then the dispensing and compounding of medicine and the sale of pharmaceutical preparations would naturally, as suggested by Mr. WALTER HILLS, be restricted to duly qualified persons, and other useful provisions would be included in an ideal Bill, with the two-fold object of establishing the practice of pharmacy on a right basis, and so providing for the public safety in the matters of dispensing or compounding and retailing medicines.

Such an ideal Bill, though pleasant to contemplate, may never be wholly realised in Great Britain. But some of its provisions—especially those relating to interpretation of the meaning of the word "person," the registration of students, a curriculum of study, and the prevention of "covering"—may with advantage be recommended to the thoughtful consideration of all registered chemists. A Bill containing those clauses, at least, should prove fairly popular in the trade; but it would require strenuous efforts to carry it through Parliament, such efforts indeed as the most zealous support of the entire trade would be required to justify. A favourable opportunity now presents itself and it remains for the registered chemists of Great Britain to take advantage of that opportunity. Will they do so or not? The local associations must reply.

ANNOTATIONS.

THE PHARMACEUTICAL PROBLEMS recently referred to in the Journal are evidently occupying a prominent position in the minds of many registered chemists in all parts of the country, judging from the numerous applications received for copies of the article reprinted from our issue of November 12. The whole of the copies printed had been disposed of by Saturday last, but as applications continue to arrive a further supply has been prepared, including, as additions, the article entitled "The Chief Problem for Chemists," printed in last week's Journal, together with the recommendations for the keeping, dispensing, and selling of poisons, adopted at a general meeting of the Pharmaceutical Society on May 17, 1871, and reprinted in the *Pharmaceutical Journal* for July 2 last. A reasonable number of copies of this reprint will be supplied gratis to any local secretary or other member of the Society who will undertake to distribute them among registered chemists not at present connected with the Society. There is obviously not the same necessity to distribute copies to persons already in touch with the Society and receiving the Journal regularly, as they can refer to recent back numbers—those for July 2, November 12 and 19—for the whole of the matter now reprinted.

THE CLEAN SWEEPING of the Society's Council Chamber—suggested by a correspondent in this week's Journal—is sufficiently heroic to create a suspicion that the proverb relating to new brooms might be applicable in that case. We cannot say that it is so, but since there is some reason for believing that the view expressed may be entertained in other quarters, it may not be inappropriate to point out that, before the task of selecting men capable of effecting the objects specified by our correspondent, a preliminary proceeding would be desirable and even necessary, viz., that of ascertaining how many among the number qualified to undertake the onerous task of carrying on the business of the Society and the administrative work connected with the Pharmacy Act, may be willing to give their time and attention to the performance of those duties. Another point to which attention may be directed, is the mention of the Society as though it were merely an official metropolitan establishment and not really an organisation of members spread over the entire kingdom. This is a common mistake, but it is one which should be displaced by a more correct appreciation of the real nature of the Pharmaceutical Society.

THE NORTH-EAST LANCASHIRE CHEMISTS' ASSOCIATION appears to be in a condition of exceptional activity at the present time and the good work of organising chemists and druggists is proceeding apace in various busy towns in the district included within the Association's sphere of influence. The report of the Committee, published last week (p. 534a), was a somewhat remarkable one, and if the chemists of North-East Lancashire can manage to keep up to the concert pitch which they have now attained, much good to the craft ought to result. One not unimportant feature of the Lancashire meetings is that chemists in different towns exchange visits, and thus do much to widen their ideas and secure unanimity of action within a wider area. There is one thing, however, which the North-East Lancashire Association omitted to do at the meeting—that is to indicate on what lines the proposed Pharmacy Acts Amendment Bill should be drafted. The President and Council of the Pharmaceutical Society await the views of the trade on that point, as well as some indication of what measure of support they may look for in promoting fresh legislation. It is

not enough to wait for the Pharmaceutical Council to draft a Bill, and then "promptly back it up or veto it as it deserved," but possibly at the next meeting of the Association the deficiency referred to will be remedied.

THE NORTH STAFFORDSHIRE ASSOCIATION is to be congratulated upon the excellent speech in which Mr. Edmund Jones supported his proposition that the Association should strongly recommend all registered chemists, not at present connected with the Pharmaceutical Society, to join at once and so increase the ability to promote legislation for the good of pharmacy. Mr. Jones pointed out, as clearly as ever has been done, the one obvious remedy for the grievances under which registered chemists now suffer, and he showed how much greater the chances of success would be in approaching Parliament or Government Departments upon matters of special interest to the craft, if the membership of the Society were double or treble what it now is. Increased parliamentary powers, as Mr. Jones indicated, can only be obtained by a larger membership, and now that every registered chemist can enter the Society on an equal footing with other members, there should be no hesitation in deciding to join what is, after all, the only national body that makes for progress in pharmacy.

ANOTHER NOTEWORTHY SPEECH was that delivered at Liverpool on the 17th inst. by Mr. R. C. Cowley, Secretary of the Federation of Local Pharmaceutical Associations. The pharmacist of the present day, he pointed out, starts life under much more advantageous circumstances than his predecessors, and he will not have done his duty if he does not assist in further elevating the calling to which he belongs, emulating his predecessors in the attempt to leave his profession in a better position than he found it. The "policy of drift," as exemplified in the career of so many individuals, was severely criticised. Thus, allusion was made to the folly of young men who "have entered the calling, passed their examination, and have become old men, often before their time, without ever attempting to inquire whether they themselves could do more than lift the spoon to their own mouths." In an attempt to answer the question why pharmacy should have fallen into the condition it has, Mr. Cowley referred to the fact that we are accustomed to hear of the lack of energy on the part of the body "which, to a certain extent, presides over our own destinies, and which should by right play the part expected of Hercules by the woman in the title." Some critics, he pointed out, have made a strong point of want of suitable pharmaceutical education, as tending to produce the effect complained of, and others suggest various defects in our system, but the great necessity of the time is that "the parent Society must be fortified by a majority of the chemists throughout the country."

MYRRH AND BDELLIUM are exhaustively dealt with in a monograph by Mr. E. M. Holmes, the first instalment of which appears in the present issue of the Journal. The intention of the author is to supply a comprehensive summary of what is known on the subject, in the hope that it may interest travellers visiting the myrrh districts, and assist them in securing such fresh information as may throw light on many obscure problems. Myrrh as imported into this country, it may be pointed out, consists of a mixture of true myrrh with several other gum-resins obtained from trees of the same genus. Those impurities are picked out when the myrrh arrives in England, "gum myrrh elect" being free from them. The chief foreign gum-resins so found in myrrh are opaque bdellium, African and Indian bdelliums, and "bissabol," known in commerce as "opoponax," and used in the production of oil of opoponax. Bissabol also goes to China, and is the kind of

"myrrh" usually found in that country. Bdellium, especially the African and Indian varieties, is sometimes in demand among varnish makers.

THERE WAS A LARGE GATHERING at Somerset House on Tuesday afternoon last, when Mr. Richard Bannister was the recipient at the hands of Dr. Thorpe, the Chief Chemist to the Inland Revenue Department, of a handsome testimonial, subscribed for by numerous friends, on his retirement from the position of Deputy Superintendent of the Laboratory at Somerset House. Dr. Thorpe, in making the presentation, gave a résumé of the distinguished career of Mr. Bannister in his official position at Somerset House during the last forty years, not only referring to his championship for the removal of official grievances, but to his efficient control of an important State Department. Mr. Bannister, in returning thanks for the honour done to him, sketched out the important changes that have taken place in the duties of the Somerset House Laboratory since he entered the Laboratory under Mr. George Phillips, who was then Superintendent. The enormous amount of scientific and analytical work now required in the Laboratory, not only in connection with the Excise but with other State departments, has been added to by official references under the Foods and Drugs Act. Referring to the last matter, Mr. Bannister showed how his anxiety had always been, like blind Justice, to hold the scales righteously between advocates who would prejudicially strain analytical results, on the one hand, and the honest trader on the other hand. Amongst those present were Dr. Thorpe, Dr. Jas. Bell, Dr. Paul, Mr. George Lewin, and the heads of several departments. Mr. Bannister on his retirement deserves the thanks of scientific men, chemists in particular, who have always received at his hand courteous assistance on any point with which, from his great experience, he was familiar, and of public analysts generally, in guiding them and restraining them in many difficult cases of reference under the Food and Drugs Act.

DR. STOCKMAN'S ADDRESS to the North British Branch of the Pharmaceutical Society (see p. 548), deals with a subject of peculiar interest, but as it is being reproduced at length in the Journal there is no need to refer to it in detail here. It may be pointed out, however, that the address was illustrated by specimens from the Society's Museum in London, from Dr. George Smith, C.I.E., Foreign Missions Secretary, Free Church of Scotland, from Dr. Woodhead, Dr. Felkin, and the lecturer. In addition, living plants of *Strophanthus*, *Acokanthera*, *Strychnos*, *Antiaris*, *Tanghinia*, and *Erythrophloeum*, were kindly sent by Professor Isaac Bayley Balfour, Regius Keeper of the Edinburgh Botanic Garden.

THE GENERAL MEDICAL COUNCIL met this week, and the President—Sir William Turner—in his opening address, said that since the previous meeting, he had been in communication with the Lord President of the Council with regard to the practicability of obtaining such an amendment of the law as would effectually prevent the holder of a medical diploma or degree from using the title thereof after his name had been erased from the Medical Register, for so long as the erasure continued in force. Certain clauses have been drafted, in regard to this matter, and may be embodied in a Bill. Meanwhile, however, it becomes necessary to ascertain if the universities would offer any opposition to amendment of the Medical Act, 1858, in the direction indicated. It was also explained by Sir William Turner that the committee appointed to take steps to induce the Government to insert a clause in the Companies Act Amendment Bill, with the object of preventing the registration of companies to carry on medical, surgical, and

dental practices, had again met and arranged that suitable clauses should be drafted and placed in the hands of the Lord Chancellor. That had accordingly been done. It is much to be desired that the registration of companies to carry on the business of a chemist and druggist might be prevented in a similar manner to that proposed by the medical authorities.

THAT THE BRITISH PHARMACOPEIA, 1898, is not absolutely free from error is well known, and it is doubtful whether the official list of corrections, just published, includes all the inaccuracies that exist in the book. Limited, however, as they are in number, the official "Corrigenda" are here placed on record, in order that readers of the Journal may mark their copies of the new Pharmacopœia accordingly:—

Page 237, line 31, for 0·0235 read 0·0233.

Page 266, line 3, omit chlorides.

Page 462, fourth col., line 6, for 1 grm. read 0·5 grm.

Page 495, third col., line 12, for 5 to 10 m. read 2 to 8 m.

Page 511, first col., line 35, insert Compound after Tincture of.

Page 519, first col., line 25, for Spirit Compositus read — — Compositus (=Spiritus Ætheris Compositus).

We are informed that, as the 20,000 copies of the British Pharmacopœia, originally printed, have already passed into circulation, a reprint has been ordered, and the opportunity has been taken to indicate the above few manifest errors and misprints. Anyone desiring to possess a copy of the corrigenda slip may obtain one on application to the publishers of the Pharmacopœia—Messrs. Spottiswoode and Co., 54, Gracechurch Street, London.

PRESENTATION TO THE SOCIETY'S LIBRARY.—We are requested to note that Professor Dr. August E. Vogl has presented to the Library of the Pharmaceutical Society a copy of his work, 'Nahrungs- und Genussmittel.' The distinguished donor is K. K. Hofrath und Universitäts Professor and Präsident des Obersten Sanitäts Rathes. He was elected Hanbury Medallist in 1895, and is an honorary member of the Pharmaceutical Society.

A UNIVERSITY FOR BIRMINGHAM is Mr. Joseph Chamberlain's latest idea. He has suggested that the well-known Mason College should be absorbed in a new University, and at a meeting held at Birmingham on Friday last a resolution was adopted authorising the Council of the College to take the necessary measures to obtain a Royal Charter for a great academic institution in the Midlands, to be called the University of Birmingham. Provincial colleges and universities, which are fast becoming a common feature in the educational life of the country, discharge a valuable function, such as the older seats of learning at Oxford and Cambridge cannot fulfil. But Mr. Chamberlain's design for the Birmingham University, as the *Daily Telegraph* remarks, does not run on merely familiar lines. Whilst there is to be room for all the more ancient disciplines, a great trading centre requires novel features in addition. Naturally, science, in all its branches, is to be encouraged, and a school of medicine is to be organised with thorough-going completeness. Apart, however, from this, commerce, for the first time on record, is to take its place as a distinct faculty, with an equipment of professors and lecturers and special schools of instruction. There is to be systematic instruction in all the theoretical and practical aspects of that great industrial expansion of which Great Britain has been in the past the conspicuous example. Modern languages are to be studied in accordance with definite principles and a clearly-recognised aim, and lectures are to be given in commercial geography, in commercial law, in commercial economy, and other kindred subjects, so that the whole province

of industry may be surveyed by precise and scientific methods. The provisional scheme shows that, in addition to the endowment of Mason College, a further endowment of about a quarter of a million pounds will be required, but subscriptions already promised amount to about half that sum.

THE 'YEAR-BOOK OF PHARMACY' FOR 1898 is now published, and appears altogether in a more healthy condition than its immediate predecessor, including as it does forty-four pages more than the volume for 1897. The introduction is briefer than usual, but that is no loss, for it is doubtful if many persons ever trouble to read that portion of the book. The abstracts are as good as ever, and practically as numerous as formerly; the notes and formulæ are up to the usual standard, and the proceedings of the Conference at the Belfast meeting are reported in full. The general verdict will certainly be that the 'Year-Book' is now steadily improving again, and that the latest addition to the series of handy green volumes is in nowise inferior to any of its predecessors.

THE RÖNTGEN SOCIETY appears to have scored a distinct success with the conversazione held in St. Martin's Town Hall on Monday last. The President of the Society and Mrs. C. Mansell-Mouillon received the members and their friends, among those present being Admiral Sir John Dalrymple Hay, the Hon. Sydney Holland, Sir William Crookes, F.R.S., Mr. W. H. Preece, C.B., Sir J. N. Dick, Sir Gervase Glyn, Sir Thomas Smith, Professor Gladstone, F.R.S., Major-General Jameson, Mr. Justice and Lady North, Mr. John Aird, M.P., and Sir F. and Lady Carden. All the latest improvements in the apparatus concerned in the production of the mysterious X rays were on view, as well as some of the most successful of recent radiographs, indicating the extent of injury to bones or presence of foreign substances. Professor Gladstone showed an apparatus for testing the grade of rays; and although not exhibited for the first time, much interest was manifested in the experiments conducted [by] Professor Sylvanus Thompson with the Tesla Oscillator, by which luminous phenomena are produced in vacuum tubes placed within the scope of its electrically-charged field. Among other demonstrators and exhibitors were Messrs. Watson and Sons, Mr. Dean, Mr. Apps, Mr. Watson Baker, Mr. Conrad Cooke, Mr. Cossor, Professor Gladstone, Dr. Maw, Dr. Schwind, and Mr. Wimshurst. Among the radiographs were several of the human body, sent from Munich by the Voltohm Society. Mr. E. Payne, of Brighton, showed the results of an examination of rheumatoid arthritis, in which the bone, which ought to have been black when in a healthy state, came out in the radiograph as white. Mr. Swinton's radiographs were taken with a pinhole Röntgen Ray camera, and a series of radiographs of hands was shown by Mr. Griffith Wilkins to illustrate the application of the X rays to the identification of criminals.

PHARMACY ACT CASE.—In the case of the Pharmaceutical Society of Great Britain v. Hogben, which came before the Registrar at the Westminster County Court, on November 24, the plaintiffs sued the defendant, Howard Hogben, of the Palace Drug Company, 8, Bridge Street, Westminster, for three penalties of £5 each, for having sold poisons, contrary to the provisions of Section 15 of the Pharmacy Act, 1868. Upon the case being called it transpired that defendant had confessed judgment for the penalties claimed, and had made an offer to pay by small instalments. Mr. Flux, on behalf of the Society, stated that the offer could not be accepted, and an order was made for the payment of the full amount with costs within three months.

CHEMISTS' ASSISTANTS' ASSOCIATION.

At a meeting of this Association held at 73, Newman Street, W., on Thursday, November 17, Mr. F. W. GAMBLE, President, took the chair. There was a good attendance. In the absence of the Hon. Secretary the minutes of the previous meeting were read by Mr. J. FOTHERGILL and were confirmed. The President then called upon Mr. T. Morley Taylor to read a paper written by Mr. W. ANDERSON on

Advertising.

The author commenced by observing that the word advertisement—from the French *advertissement*, a giving notice or announcement—denotes in a general sense any information publicly communicated through the press or otherwise. The first known to have been published in a newspaper occurred in the 'Mercurius Elenticus' of October, 1648, while it was reported that posters made of vellum and painted in various colours have been found in the mummy cases of Egypt dating as far back as 3800 B.C. In England, previous to 1853 they were subject to duty at so much per advertisement. He did not propose to go further into the history of advertisements, although it in itself would form the basis of a very interesting paper. In pharmacy there are two classes of advertisers, (1) one whose business is largely dispensing and high-class retail and (2) the other who supplies the multitude. The best advertisement of the former was said to be the class of people who trade with him. The second class, however, which comprises the great bulk of the trade, has a great opportunity for using advertisements, inasmuch as his business consists largely in distributing proprietaries, with a varying amount of dispensing. There are, said the author, few chemists of this class but have some proprietary article or articles upon which they pin their faith. It was that article or series of articles he wished to consider. He then proceeded to show that they should be articles in daily demand, neatly and attractively got up, and that the advertiser must not be disheartened if the sales at first did not come up to expectation. The preparation of the advertisement was discussed, and the would-be advertiser was told never to despise a suggestion, no matter from what source, as a chance phrase very often proved a most attractive headline, and it must be remembered that the first point of an advertisement was to attract attention. The use of bold type, borders, illustrations, photographs, etc., was referred to, and the importance of giving reasons why such and such an article should be purchased, showing, if possible, why it is better than others of the same nature in the market. The language of an advertisement should be convincing, not flowery, plain, not ambiguous, and the whole sense of it should be directed straight to the point, and not devoted to generalities. The use of testimonials was referred to as a strong point in connection with convincing arguments. Another point was that the price should always be stated, as the omission stops all purchasers through the post, while of course the address should in all cases be given. A list of "What not to do" was then given, and the advantage of booklets as a paying investment when well got up and distributed was mentioned. In regard to newspapers, the best medium was said to be the one with the largest circulation among the class it was desired to reach. But wherever an advertisement was placed, it was of the greatest importance to ensure that it stands out well. Amongst the various methods of advertising quoted as helping to bring good results, the first place was given to neat and effective window dressing with frequent change; then a plain price put on goods where it can easily be seen. That attention to customers pays was illustrated by the words of an American specialist, who said: "Remember that the tongue of a well-pleased matron is always a good advertising medium." A neat and clean shop was the last-mentioned method of effective advertising. The author then concluded by quoting a number of amusing advertisements, mostly from America, which he said must be taken *cum grano salis*.—The PRESIDENT said Mr. Anderson's paper had been not only instructing but extremely amusing. Personally he was not an authority on advertising, so he should leave it to several gentlemen present, whom he believed did know something about it, to adequately discuss the paper.—Mr. JAMES felt that he was not competent to criticise the paper, but he thought several points in advertising had been missed by the author. In his opinion, the distribution of free samples, although very expensive, was a method which paid. Then in advertising in magazines, such as the

Strand, he believed that an advertisement placed in the centre of the advertisement pages was of little use; to be effective it should be either near the text or the cover. The advantage of catch lines and testimonials from public personages of repute and good standing were other points worth noting. With regard to manufacturers and wholesale dealers in pharmaceutical preparations, he thought it was of no use to advertise unless they got the co-operation of chemists by offering a good profit and by a certain amount of supplementary work.—Mr. G. PEARSON suggested that as advertising has become such an art that it is almost expert work, it was next to impossible for them to advance views on the matter. Still, if he were a retailer, he thought he should try to create a style of his own, and he was of opinion that at the present time there is a good opening for chemists to push really good quality toilet preparations, as he believed the trade in such articles is largely in the hands of French chemists.—Mr. BURRELL pointed out that the author of the paper had not dealt with counter advertisements, such as handbills.—Mr. CURRY was inclined to think that advertising in newspapers and magazines is of secondary importance, and that the future of advertising lies in some more unique and novel method than has hitherto been adopted. Free samples, illustrated books, etc., are, in his opinion, good methods.—Mr. GEORGE ROE seemed to think that advertising has been a curse to pharmacy in the past, and he regretted that now-a-days it is almost a necessity for chemists to advertise, for no body of men, he said, have suffered more from advertising than chemists. He referred, of course, to proprietary articles and so-called patent medicines. He found no fault, however, with chemists bringing their own toilet preparations before the public.—Mr. FULLERTON found himself perfectly in accord with Mr. Roe with regard to the injury done to chemists by advertisements of proprietary articles. He did not think, however, that legitimate advertising is undignifying and derogatory to chemists, but he was of opinion that many of the advertisements of the present time are simply endeavours to trade upon the gullibility of human nature.—The PRESIDENT strongly condemned misrepresentation in advertising. He approvingly referred to that style of advertisement posters which were at one time used asking, "Who's So-and-so?" and the subsequent reply. He expressed his regret that the author of the paper, Mr. Anderson, had not been present to hear the whole of the discussion, but as he was now in the room he would ask him to reply to such points as he had heard raised.—Mr. ANDERSON having replied, a vote of thanks was accorded by acclamation, and the meeting terminated.

NORTH-EAST LANCASHIRE CHEMISTS' ASSOCIATION.

The annual meeting of this Association was held on Thursday night the 17th inst. at the White Bull Hotel, Blackburn.—Mr. COUNCILLOR CRITCHLEY presided, and there was a very good attendance.—The TREASURER (Mr. Howarth) reported that there was a balance in hand of £6 10s. 8d. against £7 8s. 0d. last year, but they had had a very busy and expensive year, in which good work had been done. He proposed the adoption of the balance sheet.—Mr. GRIMSHAW seconded, and the motion was agreed to.

THE WORK OF ORGANISATION.

The HON. SECRETARY (Mr. Gifford) reported that Mr. Williamson, Secretary of the Preston Association, had written, stating that, although he could not get any Preston members to that meeting he would try to secure a meeting of Preston chemists on December 1, if he (the Secretary) would go over with a few members of the Blackburn Association and lay their views before them. He tendered his fullest sympathy to the Blackburn Association in its endeavours to unite the trade. Mr. J. Rymer Young, of Warrington (one of the Lancashire members of the Pharmaceutical Council) wrote that he would try to conform to the wishes of the Committee and give them an address during the winter, but not before Christmas.—The CHAIRMAN stated that on the previous Thursday Mr. Gifford and he visited Accrington and Burnley, having previously asked the chemists of those towns to meet them, so that an interchange of views might take place on the question of professional combination. At Accrington, Mr. Furness had called a meeting of all the chemists in the town, and they were all present except three, and things went so well that the same night they resolved to form an association, and only the night before they had held their inaugural meeting. The chemists in Accring-

ton had previously been almost fit to cut each other's throats, but at last Thursday's meeting they got the principal cutter of the town in the chair, and he was quite agreeable to conform to their wishes. At Burnley Mr. Brown had got together about twenty chemists from all over the district, and the meeting was most enthusiastic, a resolution being passed in favour of forming a local association before the deputation left. That alone was very good work for the Association, independent of all the other good work done throughout the year. During the last few months their Secretary had been pushing things ahead and the prospect was much more favourable.

PHARMACY ACT AMENDMENT.

Mr. GIFFORD read the annual report of the Committee, which was published in these columns last week.—Mr. GRIMSHAW proposed a vote of thanks to the Committee for their excellent report, which was seconded by Mr. HARRISON.—Mr. GARLAND, referring to the report, said that if Mr. Gifford would try to draft an amended Pharmacy Bill he would find it a difficult task. He would have to encounter the opposition of all such places as the Army and Navy Stores, and the big firms, whether Liberals or Tories were in power.—Mr. HOWARTH said he thought Mr. Garland wanted to give the Committee a hard job. As to drafting a Pharmacy Bill, he quite agreed with the Secretary that it was not work for them. If the Pharmaceutical Council would do its duty and draft a Bill, they would promptly back it up or veto it as it deserved.—Mr. GARLAND thought the times were hardly ripe for such a Bill.—Mr. HOWARTH: Have you read the leader in this week's Journal.—Mr. GARLAND: No.—Mr. HOWARTH: Then do so, and tell me if you ever knew the *Pharmaceutical Journal* so well express the views of country chemists before. Burnley is going to affiliate with us, Accrington may do the same, and when we have Blackburn, Preston, Darwen, Accrington, and Burnley all united together, we shall be able to speak with no low voice.—Mr. GARLAND: I quite agree with action on those lines.—Mr. HOWARTH: As to our drafting a Bill and expecting the Council to follow us, I do not think it will. The new Committee, however, may follow your advice, but for myself I have had three or four years' service on the Committee, and I decline.—Mr. GIFFORD said he might remark, as an illustration of the work of the Committee during the year, which was not mentioned in their report, that during the agitation on the Poisonous Substances Bill they had an interview with Mr. W. H. Hornby, M.P.; and their explanation of the chemists' position was nothing less than a revelation to that gentleman. Personally, he thought every chemist ought in private life to discuss this question of pharmacy with his intelligent friends, as by that means they could quickly secure public appreciation of their position, and so do a great deal towards obtaining relief from their grievances. To show the earnestness with which the Committee had worked he might say that while the matter of drafting resolutions on the Belfast report was before it, the Committee held seven meetings before they finally decided upon their wording.

THE NEXT SESSION.

The HON. SECRETARY said that the Committee had drawn up a suggested list of fixtures for the winter session for the guidance of the new Committee. In the first place they suggested a general meeting in December to discuss the resolutions drawn up by the Federation. Then they proposed that a member of the Pharmaceutical Council should be asked to address them. Mr. J. Rymer Young had kindly promised to do that, and it was suggested that a special meeting should be held for the purpose. The third item was the annual dinner. Then Mr. Councillor James Law, who took a great interest in the Society, had offered to conduct the members over the Corporation electricity and gas works, and also over the sewage works at Samlesbury—two most interesting excursions. Finally, Mr. J. D. Baxter, B.A., had offered to give them a paper later in the season.—Mr. LOMAX said he thought the programme very interesting. It was most important that the work of the Association should be maintained and that every effort should be made to unite the whole trade for the purpose of their agitation. If the chemists of the country did not now realise the necessity for combination when things were about as bad as they could be they never would learn. They would lose nothing by publicity—it was time they pushed themselves to the front without fear of other people. It had been the case in the past that they had been frightened of what the big companies

might do. They had such companies at Darwen. In this matter, as in the others, they had everything to gain by a bold attitude and speaking their minds. The North-East Lancashire Association had already been the means of doing good work. It set the ball rolling at Belfast, as several propositions were there brought forward on its instigation, and first and foremost the matter of company pharmacy. The public men of the country would, he was convinced, be on the right side when they knew the facts.

ELECTION OF OFFICERS.

—Mr. GARLAND proposed the re-election of Councillor Critchley as President for the year.—The proposition was seconded by Mr. PICKUP and supported by Messrs. HOLT and SHORROCK, and carried with acclamation. Councillor Shorrock (Darwen) was elected Vice-President in place of Mr. Wells, who retired owing to the distance he now lives away from Blackburn.—Mr. R. LORD GIFFORD was re-elected Hon. Secretary on the proposition of Mr. GARLAND, seconded by Mr. LOMAX.—Mr. GIFFORD, who was heartily applauded, remarked that the laws relating to pharmacy appeared to him to be altogether anomalous and senseless for a country like England. Such a state of things has been brought about by the apathy of the rank and file of the profession, and he accepted the position of Secretary determined to do his utmost to alter the existing condition of affairs.—Messrs. Howarth, Holt, Highton, Eatough, Lomax, Wells, Pickup, Pickworth, and Grimshaw were elected on the Committee, with instructions to form a sub-committee to deal with trade matters purely.

MIDLAND PHARMACEUTICAL ASSOCIATION.

A meeting of this Association was held at Mason University College, Birmingham, on the 17th inst., the PRESIDENT (Mr. Jeffrey Poole) in the chair.—Mr. JOHN BARCLAY, F.C.S., read the following notes on

Some of the New Standards of the 1898 Pharmacopœia.

PHENOL.—The acid of the new Pharmacopœia is a purer variety than the old, but a margin of impurity is still allowed.

CITRIC ACID.—A specific test for the presence of lead in this acid, as also in tartaric, is now included in the Pharmacopœia, but the test is worthless if a trace of iron be present. Sulphuretted hydrogen is directed to be added to a solution of the acid made neutral with ammonia. No doubt a better method of testing would be to add sulphuretted hydrogen to the acid solution, or to use Warrington's test, neutralising the acid with ammonia, and adding a little potassium cyanide.

AROMATIC SULPHURIC ACID contains the same proportion of acid as heretofore, but the percentage now stands at 13.8, the correct figure.

PURIFIED ETHER now "has most of the alcohol and water removed" instead of being absolutely pure as previously.

ABSOLUTE ALCOHOL is required to be purer than heretofore, the specific gravity being lowered from 0.797–0.800 to 0.794–0.7969.

WOOD CHARCOAL.—The amount of ash allowed to be present in this has been raised from from 2 per cent. to 7½ per cent.

CHLOROFORM has its specific gravity lowered from 1.497 to 1.490, which indicates the presence of more alcohol.

SAFFRON.—The Pharmacopœia now states that dry saffron yields about 7 per cent. of ash, and should not lose more than 12½ per cent. of moisture when dried at 212° F.

ELATERIUM.—There is an improved method for assaying elaterin, the chloroform solution being evaporated and the residue washed with ether instead of ether being added to the chloroform solution as formerly.

IPECACUANHA.—There is now a liquid extract, which must be made from Rio or Brazilian root only, and contain from 2 to 2¼ per cent. of alkaloid. That this alkaloid shall be at least half emetine is provided for by the exclusion of Cartagena root, which contains a larger proportion of cephaeline. The process of preparing the fluid extract is a somewhat tedious one, but the long-continued evaporation of acid alkaloidal solution involved in the 1885 process has been done away with, and undoubtedly a more perfect removal of alkaloid ensured. The wine of ipecacuanha made from the fluid extract now contains 1/10th per cent. of alkaloid. This is a decided improvement. It seems a pity that no standard for alkaloid in the root itself has been fixed, for the

powdered drug is, and will no doubt continue to be, largely used.

NUX VOMICA.—An advance has been made in respect of distinguishing between strychnine and brucine, the standard preparations being required to contain a definite percentage of the former. It is, however, a great question whether the liquid extract is in any way an improvement on the old solid preparation of the 1885 Pharmacopœia.

OPIUM.—The low limit of morphine allowed in opium from which tincture and extract may be made produces some peculiar results. For instance, the Pharmacopœia states that half a pound of extract made from a pound of this class of opium shall contain 20 per cent. of morphine, which, of course, is impossible. It is added that stronger extracts may be mixed with weak ones to obtain the right strength. Then, again, to make a tincture, any opium containing 7½ per cent. and upwards of morphine may be used, thus allowing an enormous variation in the amount of extractive present in the tincture. The further statement that for purposes other than that of making extract and tincture a 10 per cent. opium must be used, implies, of course, that morphine cannot be made from any drug deviating from that standard, which is also absurd.

EXSICCATED IRON SULPHATE.—The standard for this salt has been reduced, but the change appears unnecessary, as there is no difficulty in obtaining a salt up to the old standard if good sulphate be used.

REDUCED IRON.—The proportion of metallic iron required has been raised from 50 to 75 per cent., and there is here an improved method of assay. The standard might well be even higher.

GLYCERIN.—The specific gravity has been raised.

SOLUTION OF HYDROGEN PEROXIDE is a newly introduced preparation.

CINNAMON OIL must contain 50 per cent. of aldehyde, and adulteration with leaf oil and terpene-like bodies is thus prevented.

PEPSIN is now the soluble variety in the form of either scale or powder. The time of treatment with egg-albumin has been lengthened, and the temperature of digestion lowered from 54° C. to 40° C. It is notable that the new pepsin is at least ten times as strong as that of the old Pharmacopœia, whilst the dose is doubled.

ACID POTASSIUM TARTRATE is now required to be rather more than 5 per cent. purer than heretofore. The method of assay is also altered, direct titration with an alkali being adopted. The most satisfactory method of testing the salt is to use the new method and the old in conjunction.

QUININE SULPHATE.—Reference has been made to the new methods of testing this, by Cownley in the *Pharmaceutical Journal* of April 30 last. He alludes to the inutility of tests for cinchonine, quinidine, and cupreine alkaloids, which, as he points out, are rarely, if ever, present in the quinine of commerce. He also alludes to the fact that the official method of estimating cinchonidine present does not give the amount of that alkaloid actually contained in the salt, but the Pharmacopœia does not state that the whole of the cinchonidine is obtained by this method, and a more complicated process of assay is inadvisable.

SODIUM NITRITE has been introduced for the purpose of making a solution of ethyl nitrite.

SOLUTION OF ETHYL NITRITE.—This is a new preparation, somewhat stronger than the old spirit, and is required to be free from the aldehyde and those "other substances" said to be contained in the older preparation.

PRECIPITATED SULPHUR is required to be free from fixed mineral matter.

SYRUP OF IODIDE OF IRON.—The method of determination of the iodide present is not a very fortunate one, since any quantity of chloride and bromide might be present and escape detection.

TINCTURE OF CINCHONA is now required to contain a definite proportion of alkaloid, as also is the compound tincture.

BELLADONNA.—The method of standardisation adopted for belladonna preparations is far from satisfactory. A liquid extract prepared by repercolation is made a base for standardising all the galenicals. This liquid has, of course, to be prepared with rectified spirit, the use of which means loss. To make a methylated liniment of belladonna under the new regulations, a fluid extract containing rectified spirit has to be used. The new tincture is probably quite double the strength of an average tincture made according to the old Pharmacopœia, whilst the dose is only slightly altered. The liniment, too, is stronger than formerly. The variable green extract is allowed to remain, and no method of standardisa-

tion is given. This preparation is no doubt still largely used, and will continue to be used, in spite of the introduction of the 1 per cent. alcoholic preparation intended to supersede it. Seven samples of the liquid extract obtained from various first-class wholesale drug houses gave the following results on examination:—

No.	S.G. at 15.5° C.	Total Solids per cent. dried at 100° C.	Alkaloids per cent. by Weight.	Alkaloids per cent. by Titration.	Absolute Alcohol per cent. by Volume.	Relative Depth of Colour.
1.....	0.9180	14.07	0.801	0.772	72.08	144
2.....	0.8685	6.21	0.829	0.817	82.64	100
3.....	0.9190	13.00	0.710	0.688	73.40	163
4.....	0.9760	23.41	0.709	0.660	64.38	2530
5.....	0.9610	20.03	0.741	0.706	67.62	225
6.....	0.8775	8.73	0.816	0.816	82.64	125
7.....	0.9090	6.50	0.778	0.733	69.80	370

The official assay method was adopted in each case. The points to be noted in the table are the variations in the amount of solid matter, alkaloid, and alcohol present, and the variation in colour of the samples. It might be expected that the samples having the largest percentage of solids would show correspondingly high proportions of alkaloid, but that was not the case, nor did the relative depth of colour vary with the amount of extractive present. Samples 4 and 5 were remarkable for the very large proportion of sugary extractive matter present in them, and it was difficult to believe that the whole of it can have been derived from belladonna root. Although the extractive matter present in these two samples was approximately equal, No. 4 was more than ten times darker in colour than No. 5. The variation in the amount of extractive matter and in colour must have the effect of making the liniment, tincture, etc., vary in the same ratio, a state of things which might have been avoided if the standard extract had been of the solid class, as advocated by the author. With regard to alkaloid, the variation noted was much greater than should be permissible. The amount of alcohol present also varied more than it should, and samples 2 and 6 had evidently been prepared from an alcohol stronger than that required by the Pharmacopœia.

MISCELLANEOUS.—In conclusion, regret was expressed that advantage had not been taken of the opportunity of obtaining reliable preparations of many powerful drugs. Thus, the tinctures of aconite, colchicum, conium, henbane, jaborandi, lobelia, stramonium, and gelsemium are still allowed to vary according to the varying percentage of alkaloid present in the drugs from which they are prepared, and many important tinctures of the non-alkaloidal class, such as those of Indian hemp, foxglove, sumbul, ginger, and strophanthus, should have had standards fixed. The Pharmacopœia should also contain standards for total extractive in such articles as tincture of rhubarb, senna, etc. Though tolu is required to contain a definite percentage of acids, no such standard is fixed for benzoin, an equally important drug. Extract of Calabar bean is without a standard, as also are the liquid extracts of ergot and male fern. There is no doubt that our knowledge of the chemistry of drugs must be much further extended before thoroughly satisfactory standards can be fixed for galenical preparations, but such knowledge as we have should be made use of, and it can scarcely be denied that the compilers of the new Pharmacopœia have not made the most of their opportunities. The author expressed his thanks to Mr. E. W. Mann for help in preparing his paper.

Discussion.

Mr. A. W. GERRARD opened the discussion by congratulating Mr. Barclay upon the practical way in which he had dealt with the subject. Taken generally, he had little hesitation in saying that the new B.P. was a distinct advance from a pharmaceutical point of view upon any of those that had preceded it. As pharmacists they had very little to do with the preparation of previous B.P.'s, and it was a matter of congratulation that they had so much to do with the present one. Many pharmacists had been brought into association with members of the medical profession in the preparation of the work, and he hoped that in the future they would take a still larger part. Upon the question of standardisation, Mr. Gerrard said he did not complain of it as a whole. Where it could be carried out in a thoroughly practical manner he approved of it, but one tendency of it was to throw

pharmacy proper out of the hands of the retailer into the hands of the wholesale houses. Personally he should prefer to see a very much larger number of manufacturers throughout the country—men who would interest themselves in the manufacture of pharmaceutical productions. Then, again, they knew the drugs varied very considerably. There was great natural variation. They might, for example, have belladonna root which would give an extract containing 5 per cent. of alkaloids, and they might perhaps have another specimen which contained no more than 1 per cent. The extractive in both cases was the same. Supposing they had standardisation of these two extracts, in the one case they would have to add considerable foreign matter, whilst in the other none would be required. The result was a great variation in the appearance of the product, and the chemist and druggist who had to deal with variations in the drugs he dispensed knew the difficulty of the position. They looked for uniformity in the preparations. It was not always possible, but an effort should be made to avoid getting away too much from the natural to the artificial. If they were able to get natural products which would give alkaloids within a certain range, and made preparations from these, they were on as safe ground in the manufacture of the products as they would be if they attempted standardisation from drugs which varied considerably. Belladonna plaster was a preparation which had varied very much. He was constantly hearing complaints during his hospital career of the irritating effects produced by the application of belladonna. He had never seen an actual blister, but he had seen a good deal of redness and irritation, due in many cases to the fact that there was a large excess of alkaloid in the plaster, which became absorbed and produced the local therapeutic action of the drug. Looking at the figures in connection with alkaloids in Mr. Barclay's table, there certainly should not be the amount of variation which was represented between the figures 0.81 and 0.66. He was also surprised to find there was so wide a difference between the alkaloid yielded by titration and that determined otherwise; it might be due to the colouring matter. He did not attach so much importance to the difference in specific gravity. This would be accounted for by the amount of matter which it was necessary to add to bring the preparation up to the alkaloidal strength. With regard to phenol, it was a wise change in the B.P. to improve the quality of the article by altering the melting point and, of course, increasing its solubility; and there was no better test for the pharmacist in connection with phenol than the proportion in which it was soluble in water. The alteration of the specific gravity and variety of ethers was also very essential; they must be careful as to quality of ether produced in the market. So far as saffron was concerned he thought it proper that the Pharmacopœia should give a fair range, because however carefully storage might be carried out they could not avoid moisture getting away when parcels were opened. He did not think the public authorities should be too strict with the pharmacist on a matter like this. As to Mr. Barclay's statement that the old pepsin contained peptone, he should have thought it was the new pepsin, and that the old one was more likely to be free. The soluble pepsin was generally made by the self-digestion of the stomach of the pig. In that case they were dealing really with peptone, and he had found that peptone would digest almost as well as pepsin. With reference to precipitated sulphur and the old milk of sulphur, he observed that if a person asked for a certain article and preferred to have it with sulphate of lime in it, he was entitled to it; but if the chemist pointed out to the customer that in one case he was buying the pure sulphur, and that in the other the mixture contained sulphate of lime, the purchaser would generally prefer the pure product. The public wanted educating in this respect.

Mr. SPILSBURY concurred in the opinions expressed by the previous speaker with regard to standardisation. He did not, however, advocate the preparation of tinctures from liquid extracts, because the preparations did not represent the constituents of the drugs as efficiently as tinctures made direct. It was tending to dependence on the presence of the alkaloids only, whilst it was a prevalent opinion, especially with regard to cinchona and nux vomica, that the physiological effects of a well-prepared tincture were more satisfactory than those produced when the alkaloids alone were administered. The process for the liquid extract of belladonna was, in his opinion, incomplete and wasteful, and according to Mr. Barclay's figures, the results were subject to much variation, especially in the amounts of solids, the larger quantities of which, he pointed out, might probably be due to the presence of an excessive proportion of the

inorganic constituents of the root. He had prepared a standardised tincture direct from the root, and found it yielded 70 per cent. more solids, whilst its physical characters were more satisfactory than one made from the liquid extract. Nor could he conceive why the tincture of nux vomica had been increased in strength whilst the dose remained practically the same. Toxic effects had already been reported to him from its use, and he thought that for further security in both practice and dispensing it would have been preferable rather to decrease the strength and increase the dose than otherwise. The instructions for testing balsam of tolu he also considered somewhat indefinite. No percentage requirement was quoted, and the residue from the bisulphate of carbon solution remained an unknown quantity. Yet the Pharmacopœia added that it should require not less than one-third its weight of potassium hydroxide for its saponification, indicating the presence of a sufficient proportion of benzoates and cinnamates. Mr. Spilsbury concluded by expressing the opinion that until recent investigations were thoroughly corroborated by other and independent workers, it was inadvisable to extend the number of standardised tinctures.

Mr. ALCOCK considered the Pharmacopœia as an individual sitting side by side with pharmaceutical students. Although the student was not quite capable of discussing the new B.P., he must be looked upon as the future pharmacist, and see how he behaved with these processes. They had an instance that night of the difficulty the retail pharmacist would have in dealing with the determinations of the standards. It was ever thus, and there was no doubt that the battle of the standards would continue until the end of time. There could be no doubt that the Pharmacopœia was a bit in advance of the retail pharmacist, and this meant throwing difficulties upon the wholesale house. The pharmacist did not attempt such important things in his business as assays of tincture of opium, extract of nux vomica, and similar things. The pharmacist, he argued, ought to be able to make his tincture of opium. Otherwise he became a huxter, which would be a most deplorable state of things. If the pharmacist could not make the preparations of the Pharmacopœia, if he could not make his pilula hydrargyri and unguentum hydrargyri, he was not doing the right thing to himself. The figures quoted by Mr. Barclay called for serious attention. They related, he took it, to products of houses of repute, and there was a most remarkable difference which should not be found in preparations of the kind. Thoughtful men really did not know what to say concerning them. He agreed that specific gravity was not of much account, but it was one of the first things the pharmacist would ascertain. Take, again, the great difference in the amount of solids, yet the alkaloid was practically the same. In one or two instances there was a great variation, and one could scarcely understand how it was brought about. Some of the modes of determining the standards were open to criticism. For instance, the method of assaying extract of ipecacuanha would, in inexperienced hands, be a failure. The Meysey (?) process, again, took a long time, and if great care was not exercised they would not get the exact amount they anticipated, but that was the process which the public analyst would be obliged to follow. Then, again, the Pharmacopœia ordered very large quantities for the processes of assay, when, in his opinion, less than (as in the liquid extract of ipecacuanha) 20 C.c. could be used. By the use of a much smaller quantity—even 1 C.c.—in these days of good balances, fairly accurate results could be obtained. It should not go forth that the official solution of hydrogen peroxide was of 20 vol. strength, because half the oxygen obtained was produced by the test used. It was curious that a solution of ethyl nitrite of definite strength was introduced, apparently to supersede the spirit of nitrous ether, when that was acknowledged to be an article that would deteriorate, as the test showed. In the standardisation of extract of nux vomica they were told to take 11 ozs. of liquid extract, use 1 fluid oz. to ascertain the solid matter in it, and throw it away, and from the remaining 10 ozs. get the product. No doubt Mr. Barclay threw his 1 oz. away.

Mr. SHORHOUSE remarked that, looking at the figures Mr. Barclay had brought forward, showing the various analyses of the liquid extract of belladonna purchased from houses of repute, he thought it was very deplorable that there should be such a variation in composition. The specific gravities of the preparations they might completely overlook, but the percentages of alkaloids varied considerably. Was this due to errors in standardisation, or had they been carelessly prepared? Again, throughout his determinations had Mr. Barclay observed any standard of ratio between the determinations made gravimetrically

and the results obtained by titration? With reference to the percentage of alcohol contained therein, was it not more probable that the belladonna had been exhausted with alcohol of varying strengths rather than that the loss was due to evaporation or carelessness in manipulation? With Mr. Spilsbury's remarks that the amount found by different operators varied considerably he was not inclined to agree, as he had frequently made determinations against other analysts, and had invariably obtained concordant results. He thought it would be to the interest of pharmacy if such a preparation as fluid extract of belladonna could be made more constant in colour, as many people were apt to judge the strength of a preparation from the colour. In his own experience he had found samples to vary both in colour and strength, and in one or two instances he had found the preparations to contain more alkaloid than was specified in the B.P. Personally, he thought it was practically impossible for the majority of retail pharmacists to prepare their standardised preparations, inasmuch as they required considerable time and attention in the laboratory, and during this time the chemist had to leave his customers in the hands of his assistants or apprentices.

Mr. BARCLAY, in replying, said he thought that even if the use of standardised preparations should place the manufacture of galenicals more in the hands of the wholesale trade, standardisation was both desirable and necessary. Minor considerations should be sacrificed to public good, and it would be absurd to arrest the progress of scientific pharmacy because of the incompetence of retailers to perform the processes required by the Pharmacopœia. He, further, did not think that retailers should find the difficulties alluded to by Mr. Gerrard and Mr. Spilsbury, since if a man passed his Minor, he ought to be well able to undertake all the work required. It was true that standardisation of alkaloids in galenicals might, in some cases, produce a variation in the amount of extractive and colour present, but he did not agree with Mr. Spilsbury that these factors were of importance compared with the main point, viz., a uniformity in percentage of active principle. The difference between the figures obtained for alkaloids by weight and alkaloids by titration were unavoidable, and a reference to the figures would show that the relation between them was fairly constant. With regard to pepsin, when he referred to the presence of peptone and other animal matter in the preparation of the 1885 Pharmacopœia, it was because he wished to draw attention to the insoluble animal matter which it contained. Referring to Mr. Spilsbury's experiment with tincture of belladonna made direct from the root, instead of from liquid extract, he pointed out that the test would scarcely be valuable unless both tincture and liquid extract were made from the same sample of root. Furthermore, he did not attach any considerable importance to the presence of matters other than alkaloid in belladonna preparations. As to the researches of one worker not affording sufficient ground for the fixing of standards by the Pharmacopœia Committee, he did not agree with Mr. Spilsbury, since the Committee had it in their power to investigate any suggested process and determine its value before adopting it. He was surprised that Mr. Alcock thought the new Pharmacopœia in advance of the pharmacist. It was the pharmacist's fault if it were so, and the sooner he became competent to deal with it the better. He agreed with Mr. Alcock that the process of assaying liquid extract of ipecacuanha would be an expensive one, but here again the difficulties of individuals should, in his opinion, be subordinated to the public good. He was glad to find that Mr. Perry agreed with him in the matter of standardisation, and as a retail pharmacist was satisfied with the new Pharmacopœia in this respect. In reply to Mr. Shorthouse, he remarked that there was in the figures given in the table a certain amount of correspondence between the strength of spirit found and the amount of extractive present.

ALKALIES IN SKIN DISEASES.—P. G. Unna, commenting on the increasing use of alkalies in dermatology (*Monatsch. f. Prak. Dermat.*, 898, 27, 65), prescribes the following formula for a caustic paste:—Potassium hydroxide, lime, soft soap, and water (equal parts), to be made into a paste. This may be diluted with glycerin, so as to modify its action. Water should not be used to the parts while this dressing is being used. It is applied on a small piece of cottonwool, over which a bandage moistened with water is placed. To moderate the pain caused by the first application 5 or 10 per cent. of morphine alkaloid may be incorporated with the paste. This is found to be more efficacious than cocaine, eucaine, and other local anæsthetics.—*Pharm. Centralhalle*, xxxix., 562.

BOURNEMOUTH PHARMACEUTICAL ASSOCIATION.

The members of this Association met for supper on the evening of November 16 at the Grand Hotel, Bournemouth, Mr. JOHN TOONE, President, in the chair.—After the toast of "The Queen" had been given from the chair, and that of "The Pharmaceutical Society" by Mr. G. E. BRIDGE, "The Bournemouth Pharmaceutical Association" was proposed by Mr. E. WORTH, who commented on the advantage of a local organisation, not only from a social point of view, but also for purposes of discussing trade questions and of influencing proposed legislation. He thought men employed in common work, brought together by meetings of such an Association as theirs, could not fail to learn from each other.—Mr. TOONE, in reply, referred to the work the Association had recently done, a meeting being called, as members would remember, to discuss the Poisons Bill, and they had sent a letter to the local Member, pointing out objections to the proposed measure.—A good programme of music and recitation was provided by members and visitors, proceedings being closed by a vote of thanks to Messrs. Bilson and Williams, who had so well organised a successful and pleasant evening.

DERBY AND DISTRICT CHEMISTS' ASSOCIATION.

The annual general meeting of this Association was held at Smith's Restaurant, Derby, on Wednesday, November 16, Mr. J. A. COPE, President, being in the chair. All the retiring officers were re-elected, with the exception that Messrs. Stevenson and Readman take the places of Messrs. Heath and Hefford on the Committee. Three new members were elected, and the Hon. Treasurer's balance sheet showed cash in hand to the extent of £2 19s. 6d. This satisfactory state of things obtaining, it was decided that old members' subscriptions for the current year should be in abeyance.—The presidential address was one of true loyalty to the parent Society, Mr. Cope urging those present to join the Pharmaceutical Society as members, pointing out the main features of the new constitution, and how that, if chemists are to expect any legislation to effectually prevent company pharmacy and to control the sale of carbolic acid and other poisonous substances, they must all unite as one body, and that can only be by unanimously supporting the Society at Bloomsbury Square.—Other business on the agenda having been disposed of, the meeting resolved itself into a social gathering, the President greatly interesting and instructing the company by a practical exposition of the Freck tablet machine. Light refreshments and smokes being provided, a very pleasant and enjoyable evening was spent.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.

The opening meeting of this Association was held on Friday, November 18, at 7 p.m., Professor GREENISH in the chair.—Mr. E. W. LUCAS addressed the meeting on the subject of

Pharmaceutical Education.

Describing the course of instruction given in the School of Pharmacy fifteen years ago, he contrasted it with that at present adopted. Alluding to the changes that have occurred in the practice of pharmacy during the last few years, Mr. Lucas drew conclusions as to the probable tendency of the further changes that might be expected during the next few years, and based upon them his opinion that in the future the assay of crude drugs and galenical preparations will play a much more important part than it does at present, and that accordingly the education of the pharmacist should be extended in that direction. Mr. Lucas gave an encouraging account of the Minor examination from an examiner's point of view, and expressed himself in favour of students who have passed the examination taking a situation abroad, in order to extend their knowledge of their business and the world, before settling down to the life of a pharmacist at home.—Mr. Lucas' address, which was accompanied by amusing anecdotes, was listened to with attention, and received hearty applause. At the conclusion of the address, on the motion of Mr. F. A. UPSHER SMITH, seconded by Mr. H. PAYNE, a vote of thanks was awarded to Mr. Lucas for his interesting and humorous address.—The voting for the

ELECTION OF OFFICERS

for the ensuing session then took place, with the following result: President, Professor J. Norman Collie; Vice-Presidents, F. A.

Upsher Smith and J. Evans; Treasurer, H. S. Durbin; Secretaries, H. Finnemore and P. B. Gray; Committee, C. Battle, W. Ransom, E. W. Ewell, T. Wallis, E. Dyas, and H. Payne.—It has been thought that as this is a students' association it is desirable that students should fill all the offices except that of President. As will be seen, this change has now been effected, and it is hoped that the change will be beneficial.—After the result of the election had been declared, Professor COLLIE took the chair, and thanked the students for electing him as President. Subsequently a vote of thanks was accorded Professor Greenish for his services as Chairman during the past two sessions.

NORTH STAFFORDSHIRE ASSOCIATION.

A monthly meeting of this Association was held at the Copland Arms Hotel, Stoke, on Thursday last. Mr. J. Averill, J.P., presided, and there were also present, among others, Messrs. W. Poole, Treasurer (Newcastle), Edmund Jones, Hon. Secretary (Hanley), E. H. Croydon (Newcastle), W. Marson (Stafford), R. Prince (Longton), A. P. Tiley, W. Oldham and Bates (Burslem), T. H. Jenkins (Stone), and W. Allison (N. S. Infirmary).

NEW MEMBERS.

On the proposition of A. P. Tiley, seconded by Mr. Jones, Mr. W. Oldham, the father of the retail trade of the district, was elected a member of the Association.—Mr. OLDHAM, in reply, said he was a member of the first chemists' association in the district twenty-eight years ago. That was not a success, but with the young blood in it he did not see why the present Association should not be of great service.—On the motion of Mr. JONES, seconded by the PRESIDENT, Mr. William Hartle, of Shelton, was also elected to membership.—Mr. ALLISON then read a paper on

Emulsions.

which was listened to with the greatest interest. The author also described numerous experiments made by him on the subject, and produced varied samples of emulsions and white oils.—An interesting discussion took place on the paper, and on the motion of the PRESIDENT, seconded by Mr. JONES, a hearty vote of thanks was accorded to Mr. Allison.

EVENING CLASSES.

Mr. JONES stated he had made arrangements with the headmaster of the Hanley Higher Grade School, Mr. Wilson, M.A., and Mr. Audley, B.A., teacher of botany, for classes to be held in botany for the benefit of pharmaceutical students.—A vote of thanks was passed to the Hanley School Board, which had granted free use of a room, for its kindness in the matter.

The Advantages of Membership of the Pharmaceutical Society.

—Mr. JONES, in accordance with notice, moved—

That this Association strongly recommends every pharmaceutical chemist or chemist and druggist, who is not already a member, in his own interest to join the Pharmaceutical Society, and thereby increase its powers to legislate and operate for the good of its members and the progress of pharmacy.

Mr. Jones said: I move this resolution in accordance with a resolution passed by the Federation of Local Associations at Belfast, and supported by suggestions of the Editor of the *Pharmaceutical Journal*. The passing of the Pharmacy Acts Amendment Bill, in my opinion, has removed the gross inequality which caused much grumbling and dissatisfaction amongst those who were associates of the Society and many who remained outside the Society. Formerly the associates in business paid the same annual subscription as members, but had not the same privileges. This state of things is now altered, and the wise democratic policy of the Council will, I trust, be actively appreciated, and at the new year we shall, I hope, see a large increase in members. It is not my intention to-night to discuss the question, What has the Pharmaceutical Society done for the trade? I have very strong convictions upon that point with which you might not all agree, and should refer you to the condition of the drug trade prior to the foundation of the Society and the passing of the Pharmacy Acts, and tracing its history since to prove to you that the Society has done much to elevate and improve our calling. My object in moving this resolution is to plead to those outside upon the advantages now offered, and those we might possess by making the Society larger in numbers and more fully representative of the

trade. There are several very important questions which occupy the mind of the trade at the present time, and which many desire the Council to take up with a view to legislating on them. The one which appears to be most prominent is company trading, and the cry is, "Why doesn't the Society do something to try to stop this pressing evil amongst us?" Now, gentlemen, this cry comes mostly from those who have no connection with the Society and have no *locus standi* in the Society. I consider it unfair and unreasonable for such outsiders to so harshly and unpardonably criticise the Society. What would those gentlemen think if a stranger walked into their shops and commenced to criticise and find fault with the way their stock was kept, their poisons stored, their glass cases arranged, and the general conduct of their business? I think they would strongly and justifiably resent it; but the Society—and when I say the Society I mean not the Council only, but its rank and file—does not adopt such a resentful attitude, as is proved by its conduct of the Benevolent Fund, which is encouraged and employed for the benefit of all chemists on the Register. As a Freemason and a great believer in that grand and noble principle, charity, I feel that the trade has very greatly lacked in its support of the Benevolent Fund, which since its creation has been the means of administering relief and consolation to less fortunate members of our craft in their misfortune and old age. Surely this is a work which in itself ought to gain for the Society greater sympathy and support from the trade. Apart from this, is it not most desirable to increase the members and fighting strength in view of the legislative possibilities which the trade is devoutly wishing for? I take it that there is scarcely a chemist on the Register who does not desire to see an amendment to the present anomalous condition of the Pharmacy Act of 1868. This granted, how are we to get the Act amended to our satisfaction? The Pharmaceutical Society is a thoroughly democratic body, even more so now than hitherto. Every member of the trade who has a grievance which he would like to see remedied, or a policy carried out, can, by becoming a member of the Pharmaceutical Society, and in a proper and legitimate way, impress his grievance or policy upon the Council, which would be compelled, under pressure from the electorate, to carry out the desired reforms, if possible. Surely no one can wish for a more democratic constitution of the Society. In the face of these facts, can the Society be said to represent the trade? Although it is practically the National Pharmaceutical Society—I was hoping to see it made "Royal" this year—and has our best and brightest pharmacists on its roll of members, it does not contain a majority of the chemists on the Register, and many good and able men remain outside and appear to take little or no active part in pharmaceutical politics. If the Society, instead of a membership of about 4000, had 10,000 or 12,000, how much greater the chances would be of inducing the Privy Council and Parliament to take up Bills drawn up and submitted to them by the Society? The drug trade is certainly in a very unfavourable and lamentable condition to-day, speaking generally, and we frequently hear it spoken of as "rotten." Still, in spite of this, I for one believe in its future, and I love pharmacy so much that had I my time to go over again I think I should enter the same calling, but desire to see a better and happier state of things than at present prevails. During the passing of the Pharmacy Acts Amendment Bill and the introduction of the Poisonous Substances Bill in Parliament early this year it was evident what great advantages accrued from a united and active interest in those matters concerning the trade. We passed one Bill and successfully opposed another; how much greater our advantage would be if we had a stronger Society? It would be a good thing if we could form a society for dealing with the limited company question. These consolidated and increased powers can only, in my opinion, be obtained by a larger membership, and now that the Society offer additional advantages I trust that every chemist on the Register will seriously consider the advisability of becoming a member. Let me especially express the hope that every member of this Association will do his best to induce non members in the district of the town where he lives to avail themselves of the advantages and privileges the new Act confers. If this is done and done successfully we shall ere long see a happy and bright condition of pharmacy never dreamt of in our philosophy.—Mr. MARSON seconded the resolution. He endorsed every word Mr. Jones had said, and expressed his intention of joining the Society at once. He considered it the duty of every member of the trade to put forth every effort

and support the Society and local associations, which, if containing a majority of the members of the trade, could approach the local M.P.'s with some confidence, and almost demand that they should give their support in aid of the Association's aims.—Mr. CROYDON supported, and said that under the new constitution he would be glad to join the Society. Speaking of the low state of the trade, he considered that if the Society had a charter empowering it to strike members off the rolls who had been guilty of unprofessional-like conduct, it would do more than anything to improve the condition of the trade.—Mr. WESTON POOLE considered that reforms had to come from within as well as without. Nice conduct between chemist and chemist would do something, but when one tried to "best" the other it was not a matter for wonder that they could not get all they required from the public, and which the public, was prepared to give them if they acted in a consistent manner. He believed there was a time when the public was prepared to put them upon a professional footing. At the time they were getting reforms conceded to them he thought every chemist should try to purify the craft from within and live up to the privileges they were endeavouring to obtain.—Mr. OLDHAM further supported the resolution. He had been a member of the Pharmaceutical Society for twenty-eight years, and he was astonished that so few had entered its gates. There was no doubt that for the evils that existed they had themselves to thank in a large measure. Underselling had been encouraged and had grown, whereas, had the chemists put their foot down on the practice, it would not have increased to nearly its present extent.—The CHAIRMAN, in putting the resolution to the meeting, said: Gentlemen, you all know that during the last session of Parliament powers were obtained by which every registered chemist and druggist can become a member of the Pharmaceutical Society with all the advantages attached to former membership. It now rests with us whether we embrace that opportunity and elect a thoroughly representative Council, which will be able to state the opinion of the trade, and thereby have a more direct influence on legislation than at any former period during the history of the Society. It is absolutely necessary that a very large proportion, if not all, of the chemists and druggists should be members of the Society, and that the trade should be unanimous in any line of action which it may be thought desirable to take for the welfare of our class. No real good can be done unless we are united. The Council of the Pharmaceutical Society must have the support of the members of the craft, otherwise it is hopeless to expect any real benefit to accrue. One of the first things, I think, for the Council to take in hand is the enforcement of the statutory qualification in the case of all persons connected with the business, and that in Section 15 of the Pharmacy Act, 1868, the word person should include a "corporate body." The Lord Chief Justice, at the official reception of the Lord Mayor of London at the Law Courts, spoke on the necessity of further regulating company trading by special legislation. We have also had the opinion of the Lord Chancellor during the last session of Parliament, so that if we can speak as a body on our special grievance we may reasonably hope some good may result to ourselves. I ask you, then, to join the Society, and I hope every member of this Association will, and show to all similar associations throughout the country that the North Staffordshire Association is in earnest and determined to do the best it can to help the Society in bringing about such reforms as may be for the benefit of the trade generally.—The resolution was passed unanimously, and Messrs. Allison and Jenkins also promised to join the Society.

IRISH PHARMACISTS' ASSISTANTS' ASSOCIATION.

At Dublin, on Friday evening last, the usual fortnightly meeting of this Association was held at 67, Lower Mount Street, the PRESIDENT, Mr. Henry Hunt, M.P.S.I., in the chair. There was a good attendance, and amongst those present were:—Miss Ada Wyatt, M.P.S.I., Miss C. E. Jessop, Miss Walsh, Messrs. Yoxall, Savage, McCarthy, Preston, Bowles, Hogan, Dempsey, Taylor, O'Farrell, J. Jessop, etc., etc. The minutes of the last meeting were read and confirmed. The question of securing a club room and an employment agency office was discussed, and the report of the sub-committee on the matter was regarded as satisfactory. Two central places were agreed to be seen after, and a further report was called for. January 20 next was settled as the date of holding the first lantern evening of the session, and it was hoped this date would be convenient for the Pharmaceutical Society to allow the

use of the Examination Hall. A letter on the subject was directed to be written to the Council respectfully asking for the use of the large room on the occasion. It was stated that the limelight would be worked by a member of the Association, who had kindly promised his services as honorary lanternist.—The arrangements for the approaching concert in the XL Café, on December 14, were entrusted to Mr. Turner.—The following were elected to membership: Messrs. A. J. Byrne, R. D. Russell, J. H. Davis, C. E. Warner, P. Wright, and J. Winckworth. A discussion was then held on

The Proprietary Articles Trade Association and Its Influence on Pharmacy.

—Mr. TAYLOR led off the discussion by the statement that he considered the P.A.T.A. was an excellent institution, in that it helped to keep up the standard prices and enabled chemists to obtain a reasonable profit on their goods. Personally he had little to say as to the practice of that Association, but from what he gathered by hearsay its objects were laudable.—Mr. O'FARRELL spoke at some length on both sides of the question. Circumstances and locality, in his opinion, materially altered the cases, and what suited one class of house would be most unsuitable for another. In some instances it was absolutely necessary to make some reduction in prices of patents and proprietaries. Customers were apt to say they could get such and such an article in the house round the corner at so much cheaper, and if the public became possessed of the idea that high prices ruled all round they would simply transfer their custom to the stores. It was foolish to sell goods at starvation profit, but he thought if the vendor could get from 15 to 20 per cent. profit all round it would pay very well. To charge 1s. 1½d. for a box of pills and insist on getting the full price was to drive trade to the stores. It was a wiser policy to meet the public on reasonable terms than to send them to the cutters.—The PRESIDENT spoke on the influence of assistants in pushing a particular line of goods. The wholesale houses sometimes did not realise that the assistant had it in his power to recommend special remedies. He referred to correspondence on the subject which had recently appeared in print, and spoke on the gratuitous distribution of manufacturers' advertisements in the shape of hand-bills used as wrapping paper. He instanced a well-known wholesale house which sent out tons of advertising matter, and commenting on the splitting-up of regulation-sized packages of pills, saw nothing wrong in the proceeding.—Following this came a further discussion on "Infusions New and Old," in which most of those present joined, after which the proceedings terminated.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY.

The first general business meeting of the session took place on Thursday evening, the 17th inst., at the School of Pharmacy, Sandon Terrace, the PRESIDENT, Mr. R. C. Cowley, in the chair. There was a good attendance, particularly of the younger members, and useful miscellaneous communications were a strong point in the evening's work.—Mr. H. B. MORGAN led off with a relation of his experience of the want of solubility of much of the bicarbonate of soda used for seltzogene charges. He had experimented with various samples and found that they all became hard in the globe on contact with the acid and water, with the exception of one lot of Chance's make. This turned out to be the general experience of those present, and was considered to be due either to excess of soda or impurity in the acid or soda. Mr. Morgan was asked to work on the subject and report later.—The variability of calf lymph, both ordinary and glycerinated, was commented on by Mr. W. COOKE, who had a customer who was unaffected even after repeated trials of both varieties. It was thought to be a case of idiosyncrasy, the patient being possibly immune to vaccine. The new B.P. tincture of strophanthus, Mr. MARSHALL said, did not mix clear with water, showing that even the weaker alcohol now used dissolved some of the fixed oil present in the seeds, which in the B.P. 1885 was removed by percolation with ether previous to making the tincture.—Mr. DAVIES thought with Mr. Marshall that the opalescence produced on mixing with water was due to dissolved fatty matter.—Mr. PROSPER H. Marsden had made tincture of squill, B.P. 1898, and although it was bright when finished, on standing it deposited a heavy, gummy precipitate of a pectinous nature. Messrs. Kesterton and

H. B. Morgan had also noticed it, and Mr. Jenner said it was usual in the old B.P. tincture.—The President advised that the tincture should be allowed to stand at least twenty-four hours before filtering.—“A Note on Peroxides” was then contributed by Mr. COWLEY, who, after speaking of Mendeléeff’s classification of such oxides as superoxides and polyoxides, according to whether they yielded H_2O_2 or O on the addition of an acid, said that any peroxide when shaken up with dilute sulphuric acid and then with ferrous sulphate, starch paste, and iodide of potassium, would give a blue colour, due to iodide of starch formed from the action on the starch of the iodine liberated from the KI by the H_2O_2 in the case of peroxides, and nascent oxygen, or perhaps O_3 in the polyoxides. This was an extremely delicate test for peroxides, and would answer for all.

Mr. R. C. COWLEY then delivered an address on

Some Pharmaceutical Problems of the Present Day.

He said: Time works numerous changes. Years pass by and numerous new societies spring into existence. During our own experience we have seen considerable changes, and if the members of this Society were old men instead of young ones, what a store of useful experience we should have. The members of the present-day pharmaceutical students’ societies possess advantages that those of fifty years ago scarcely dreamt of. The pharmacist of the present day has become an educated man. Starting life as we do with all these advantages, we shall not have done our duty if we do not assist in elevating the calling to which we belong and in trying to leave it in a better position than that in which we found it. It therefore behoves us all to do what lies in our power towards furthering this end. The policy of drift has been too much in evidence ever since the calling of pharmacy possessed a charter. Young men have entered the calling, passed their examination, and have become old men, often before their time, without ever attempting to inquire whether they themselves could do more than lift the spoon to their own mouths, if I may speak figuratively. The folly of this is very evident, we must not expect everything to be done gratuitously for us. Now, the question arises, what has been the cause of this lethargy which permeates our body? Why should pharmacy have fallen into the condition it has? This question has arisen time after time, and has been answered as often, but I venture to think that no one has answered the problem correctly though many have expressed opinions containing no doubt a substratum of truth. We are accustomed to hear of the lack of energy on the part of the body which, to a certain extent, presides over our own destinies, and which should by right play the part expected of Hercules by the woodman in the fable. Some have made a strong point of want of suitable pharmaceutical education as tending to produce the effect complained of. We are now passing through an experimental stage which no doubt will produce good results in the future. This is a point on which I am myself very sanguine and one on which I should have something to say had I time this evening, but for the present I will confine myself to the business side of the question which, after all, is the most important. It would appear to me that this is a very suitable time, in a meeting of pharmaceutical students, to give expression to an opinion I have held for several years. As a young man I may be considered presumptuous in addressing remarks of the kind I am about to make to other young men, but I think for several reasons the occasion requires it, and in it may be found one of the reasons which tend to produce the present condition of pharmacy. I am sufficiently presumptuous in saying that it is worth your while this evening to sift the matter well in your mind, and to ponder carefully over it. A subject that is uppermost in the thoughts of every right-minded individual is the idea of bettering one’s position in life. At the outset of our career we are inclined to believe that the most rapid move in this direction is guided by an all-wise providence, and is certain of attaining the result aimed at. The endeavour to better one’s position is praiseworthy, but still young men are often without the experience and cool judgment which can only come from age. Unfortunately, we are unable to begin where our fathers left off, and since this can not be so, it is well for us to seriously consider the step we are about to take. I refer especially to the wild hurry some men are in to go into business for themselves and to enter matrimony. Business is a necessity to matrimony, and matrimony seems to be a necessity to business. We may have had a great deal of dispensing experience and we may have acquitted ourselves creditably during our student career,

but still, we may lack the business training that is necessary to become a successful business man. The “Minor” certificate is not a sufficient guarantee that a man is qualified to conduct a business. It is to be deplored that so many pharmacists are wanting in this essential respect. I have often heard it remarked that the pharmacist is the poorest business man in the street, and it often happens that the scientific pharmacist is the one most wanting in this respect. But I am at a loss to know why this should be so. I attribute this lack of business qualities to the hurry to become the proprietor of a pharmacy, which does not give the individual time to obtain the necessary qualifications, and he becomes handicapped. It is unfortunate that these shortcomings do not attain finality in the individual, but are always propagated and transmitted to future generations, and at the time they affect the interests of pharmacy in general, for with fewer men in business better salaries to the assistant would result, and many who at the present time are earning in their own business but a mere pittance would, without anxiety, be much better off as employés. If the much maligned store proprietor has injured pharmacy he has at the same time shown what a business training can do, for wherever has anyone found a thorough-going store chemist but who was a good business man. It is a fact which may at once be realised that the business of the future will not be the business of the past. Sharp, keen intellect will be required, and education alone will not do this. Another point I wish to emphasise is the necessity of insufficient recreation. I am justified in saying there are dozens of pharmacists throughout the country who leave their shop for bed and their bed for the shop. Man is a gregarious animal, and the society of our fellow men is good for us. It takes us out of ourselves, it cleans the cobwebs from our brains; we will have greater sympathy with our fellow creatures, and, what is more, it will make us better business men. The society of our pipe and the contents of our little back room make us misanthropic without the correcting influence of outside society, and this, I take it, is the best possible reason for the creation and continuance of such societies as ours, where from the particular character of our business, we are prevented, to a certain extent from enjoying the freedom allowed by more favoured callings. The lateness of business hours is another subject to be deplored, and this, I am sorry to say, is the fault of the pharmacist himself. It must be allowed that the lateness of the hours of business will depend on the character of the business catered for. The labourer, the clerk, the city man, and the fortunate individual possessed of sufficient means to please himself whether he works or not, may all have their leisure at different times, but the fact still remains that late hours are often cultivated by pharmacists themselves. Now, I am sorry to say, the young man who opens a suburban business is the individual most to blame. He begins life with the idea that keeping his shop open longer than the man along the street obliges customers, and he himself is cultivating a connection. We must remember that while we are young men we can do more than when we are older, and in a comparatively few years we shall begin to want the advantage of shorter hours of business. Servility is not business, and politeness is not servility. We can retain our individuality although our position is behind a chemist’s counter. Manliness and character are features which go to make a successful man of business. While we are engaged in business let us do it well, and when we are away from business let us endeavour to forget all about it. In all cases we must endeavour to become proficient pharmacists. This state cannot be arrived at by a course of instruction in a school of pharmacy only; systematic previous training is necessary, and this will count in an examination room. Slipshod pharmacy has led to the advantage of those who conscientiously followed the wishes of the medical man, and rightly so. It has been one of the factors that have led to the spread of factory pharmacy, which every right-minded pharmacist should discourage. I am not one who takes a pessimistic view of the pharmacist’s business but rather otherwise. I think we are turning the corner and are beginning to see the way the land lies. The utterances of the Lord Chancellor during the last session of Parliament on company pharmacy and of the Lord Chief Justice last week before the Lord Mayor of London, regarding company promoting, are hopeful signs, and it behoves us all to act simultaneously. The confirmation of the Bye-law in accordance with the Pharmacy Act, 1898, by the Privy Council places us in a better position than ever we were in before, as the

removal of an anomaly is likely to lead to increased membership of the Pharmaceutical Society; still I think a little consideration on the part of the Society's Executive would be an advantage, for I fear that many will not spontaneously give their support. The admirable suggestion of Mr. J. Smith, our local secretary to the Pharmaceutical Society, in his recent paper on "The Duties of a Local Secretary," would, I am sure, result in an immediate increase in the number of supporters of the Society. At the present time there is an appeal before the various local associations throughout the country to consider suitable subjects for pharmaceutical legislation. In considering the Federation programme we must weigh matters up carefully and not pass rash resolutions. The parent Society must be fortified by a majority of the chemists throughout the country. They have been wise during the last session in being modest in their demands. We all know what we want, but at the same time we must not ask for what we cannot have. Pharmacists themselves are not likely to have any special privileges granted to them, unless it can be shown that these privileges will at the same time benefit the public at large. Before we can ask to become the guardians of public welfare in the distribution of drugs, we must show that, by a justification of confidence reposed in us in the past, we are a suitable class in whom fresh confidences may be placed; in other words, we must show a clean sheet. Are we prepared to sacrifice any advantages we already possess? For instance, are we prepared to sacrifice the doubtful privilege of storing the laudanum bottle alongside the black draught? I fancy I hear you say "Yes," but this is a very crucial point, although seemingly so simple. Company pharmacy is a very difficult subject to deal with, and I will leave it for those better able to discuss it. It is sufficient to say that companies may be divided into two classes, viz., those conducted legitimately by qualified owners and those run by an association of individuals whose calling and station in life may be of the most widely divergent character. These individuals are very useful in their proper sphere of work, but I cannot see that they are suitable persons in whom to repose the responsibility of the distribution of drugs, even though whatever virtue in this respect they may possess be transmitted through a qualified manager. In the main I agree with Mr. Rymer Young respecting the second class of companies. At the present time there is no visible means of distinguishing the former class from the latter except through their historic associations. This, I think, is an anomaly that should be corrected, and which is likely to result in advantage to legitimate companies. I have introduced the programme of the Federation of Local Associations in my remarks, as this Society is one of the affiliated bodies, and the programme is before us for consideration during the present session. At the same time, as Secretary of the Federation, I wish, through this meeting, to place the Belfast resolutions before other associations in the light they were intended, hoping that they will receive the attention they deserve. I am pleased to notice that pharmaceutical politics are taking up the attention of associations throughout the country, and it points to the conclusion that pharmacists are ready to amalgamate for their combined benefit. I had intended to introduce some remarks on education, but trade subjects have taken up so much of my time I fear I cannot further trespass on your time and patience in giving expression to ideas that may be dogmatic. In conclusion, I congratulate this Society on the increased membership and new lease of life it has apparently taken, and on the programme that has been arranged for the social and educational advantage of us all by our energetic Secretary.—A discussion followed, and a vote of thanks was accorded the PRESIDENT on the motion of Mr. H. WYATT, jun., and seconded by Mr. T. H. WARDLEWORTH and Mr. P. H. MARSDEN, for the interesting and practical nature of his remarks.

PURITY OF VANILLIN.—Welmans states that the best criterion of the purity of vanillin is its melting point, which should be 82° C. Admixture with a considerable amount of vanillic acid may give a lower melting point than this, although the acid alone melts at 207° C. The amount of vanillin in a mixture of sugar or of acetanilide may be determined by direct titration. A known weight is shaken with alcohol, a measured volume of normal alcoholic alkali added in excess, and, as soon as solution is complete, the uncombined alkali is titrated back with normal acid, using phenolphthalein as an indicator. When acetanilide is present the mixture is less soluble in alcoholic alkali than pure vanillin.—*Pharm. Zeit.*, xlii., 633.

OPTICAL EXAMINATION OF THE WORSHIPFUL COMPANY OF SPECTACLE MAKERS.

The following is the list of successful candidates at the examinations held on November 1, 2, and 3 at the Guildhall, London, E. C., in connection with the new diploma scheme of the Worshipful Company of Spectacle Makers:—

Aitchison, J., London
 Bateman, F. W., London
 Bond, R., Morecambe
 Bunker, C. J. G., chemist, London
 Butterfield, H. H., Bradford
 Cæsar, J., chemist, London
 Campkin, F. S., chemist, Cambridge
 Cave, S. A., Deal
 Chalmers, R., Newcastle-on-Tyne
 Cooper, F. R., chemist, Manchester
 Cornell, H. C., Maidstone
 Cornish, J. R., chemist, Tottenham
 Crowhurst, H. A., Sheffield
 De la Cour, G. H., Chatham
 *Dixey, W. A., London
 Dixon, E. R., chemist, Leeds
 Ellis, G. E., London
 Francis, A. L., chemist, Wrexham
 Green, F., London
 Harris, A. T., London
 Hayden, E., Great Yarmouth
 Heywood, E. A., Leeds
 Holland, C. L., Birkenhead
 Horsey, F. S., chemist, London
 Hunt, J. F., Hull
 Jameson, W. R., London
 Knaption, E., London
 *Laurance, Lionel, London
 Lyon, H. M., London
 Mackinney, F. W., London
 Maker, T. M., Harrogate

* Passed with distinction.

Marlow, J. H., Harrogate
 Marsden, R. A., Preston
 Moles, R. S., London
 Mumford, L., London
 Overstall, J., London
 *Overstall, W. T., London
 Oxbrow, A. W., Norwich
 Palmer, S. W., London
 Percy, W., London
 Ranken, R., Kilmarnock, N.B.
 Read, F. J., Bradford
 Ritson, F., chemist, Carlisle
 Rossiter, A. T., Canterbury
 Selby, J., Nottingham
 Smith, E. T., Huntingdon
 Spiegelhalter, E. K., Malton
 Tilley, J., Manchester
 Troulan, Miss F. S., Torquay
 *Truscott, R. I., Tenby
 Turner, A. R., Crewe
 Turtle, W. G., chemist, Chatham
 Walmsley, A., Northampton
 Ward, J., Kirkham
 Werner, C. H. F., Australia
 Wood, A. A., Liverpool
 *Wood, A. E., London
 Wood, J. J., Liverpool
 Wood, W. R., London
 Woolley, S. W., chemist, London
 †Wright, T. H., chemist, Leeds
 Young, J. B., Newcastle-on-Tyne

† To be examined in full syllabus.

This was the first examination conducted by the Worshipful Company of Spectacle Makers, in accordance with their new scheme for the registration of dealers in optical goods. The *viva voce* examination on the first and second days was conducted by Dr. Lindsay Johnson, Professor Silvanus Thompson, and Mr. George Paxton, who examined the candidates in visual optics and practical lens work. This part of the examination occupied about twenty minutes in the case of each candidate. The time allowed for the written examination on November 3 was two hours. The questions set are given below, together with model answers furnished by Mr. Lionel Laurance, instructor in visual optics at the classes conducted by the Spectacle Makers' Company.

Question No. 1.

How would you determine the focal length of a simple bi-convex lens with faces of equal curvature? Give all the practical methods you know of.

ANSWER.

1. By means of a spherometer.
2. By measurement of the distance between the lens and the image on a screen of a luminous object placed at infinity.
3. By measurement of the distance between a flame and its image on a screen, when both are of equal size. The object and its image can only be of the same size when both are equally distant from the lens, and conjugate foci are so situated when the object is in front of the lens at a distance equal to twice the focal distance. Hence the distance between object and image divided by four gives the focal length of the lens. This is the most perfect although the longest method of those given.
4. By neutralising the positive refractive power with a negative lens of known focal length, that of the latter is equal to that of the former.

There are also other methods of great accuracy employed by scientific instrument makers.

Question No. 2.

In what way is the position of the principal focus of a lens dependent upon the choice of the curvatures? Illustrate your answer by reference to the positions of the front and back foci of a plano-convex lens of +20 D. Does it matter which surface you turn towards the source of light as regards definition?

ANSWER.

The position of the principal focus depends on the position of the two nodal points, but it is sufficiently accurate to consider that it depends on the position of the optical centre, and the latter depends on the nature of the two surfaces of the lens.

In a double Cx. lens of equal curvatures the optical centre lies on the principal axis midway between the two surfaces. In an unequally double Cx. lens it lies nearer to the more curved surface. In a meniscus it lies outside the lens.

In a plano-convex lens the distance of the focal point changes as the one or the other surface is exposed to the light. The anterior focal distance is calculated from the first nodal point and the posterior focal distance is calculated from the second nodal point; therefore, these must be located. Now, the first nodal point of a plano-convex lens lies at the apex of the curved surface, and the second lies at a point determined by the thickness of the lens divided by the index of refraction of the glass, which, taking the index as $\frac{3}{2}$, equals two-thirds the thickness of the lens.

A plano-Cx. lens may be considered as a series of rectangular prisms, their bases coinciding with the principal axis, and so that there be a minimum of spherical aberration these imaginary prisms should be in the position of minimum deviation. Then for parallel rays the Cx. surface should be exposed to the light, and for rays diverging from the principal focus the plano surface should be so exposed.

Question No. 3.

Are two lenses, say, for example, a + 3 D S and a + 5 D S (placed together behind one another in a trial frame), exactly equivalent to a single lens (in this case a + 8 D S) whose power is numerically equal to the sum of their separate powers? If not, why not?

ANSWER.

No. Two lenses added together cannot be exactly equal to the sum of their individual powers; the interval between them even if their centres be in actual contact prevents it.

Provided that the lens nearer to the eye be stationary, and if the + 5 D be in front, the combined powers would be equal to 8 D + the value of the distance, d , between the lenses. Let the interval be, say, 5 Mm., then:—

$$\begin{array}{r} \frac{1000}{5} = 200 \\ 200 - 5 = 195 \\ \frac{1000}{195} = 5.125, \text{ and} \\ 5.125 + 3 = 8.125 \text{ D} \end{array}$$

Question No. 4.

What proofs are there that the human eye is not achromatic? What kind of combination of lenses would be required to correct its chromatic aberration?

ANSWER.

Practically speaking the eye is achromatic, although not so actually. A proof very frequently met with is the perception of coloured fringes to the astigmatic bars, the rays from which are not in focus at the retina. This proves first, the chromatism of the eye, secondly, that it is only noted under exceptional circumstance.

The most notable proof is that of the chromatic disc which has the property of excluding the green ray and transmitting only the red and violet rays, the latter appearing as deep blue.

If a circle of flame—say, an Argand burner, covered by a screen, and having a round aperture of about the size of a shilling—be looked at through the chromatic disc by an ametrope, the light is seen blue with red border; or *vice versa*. Even in emmetropia the flame is seen as a light purple, a mixture of red and blue, with a distinctly blue border. The violet rays come to a focus in the vitreous and diverge impinging on the retina in a wider area than that occupied by the red rays which have reached the retina before coming to a focus. Hence the blue border. It is impossible with any single lens added to the eye to do away with the deeply coloured border, although it can be changed from blue to red.

Another proof is that a myope sees better through a red glass and worse through a blue glass. A hypermetrope sees better through a blue and worse through a red.

If red and green letters or lights be looked at, they do not appear equally distant.

If black bars against bright light be looked at, the lower half of pupil being occluded, coloured fringes to the bars will be seen.

For the correction of the chromatism in an emmetropic eye there is needed a negatively chromatic lens of no refractive power. For this purpose, I should think that a combination of pebble Cx. and crown Cc., both of the same radius of curvature, would serve.

Pebble has an index of refraction of 1.545 and an index of dispersion of .014. Crown glass has an index of refraction of 1.54 and an index of dispersion of .018. So while the indices of refraction are the same, the indices of dispersion vary, and solar rays converged by the pebble Cx and dispersed positively would after divergent refraction by the Crown Cc. emerge parallel as regards the mean ray, but slightly divergent as regards the violet ray, and slightly convergent as regards the red ray. The negative chromatism of the lens would correct the positive chromatism of the eye so that all the rays would unite in a single focus at the retina.

Pebble and crown glass should be selected in preference to crown and flint glass, because the former pair have practically equal indices of refraction, and so can be of equal radii of curvature, and the difference in their indices of dispersion is not so marked as between crown and flint glass.

Question No. 5.

A person requires for the R eye only - 6 DS for distance and - 3 DS for reading, but only wants one pair of spectacles. State the various ways in which this can be managed. Which method do you prefer?

ANSWER.

There is seemingly only one eye that has vision; therefore:—

1. A frame having - 6 in the one eye and - 3 in the other, and with an X bridge or perhaps a K bridge and with straight sides. This frame can be reversed so as to bring as required either lens in front of the one eye which has sight.

2. A frame with lenses as above and with a straight C or arch bridge, and with curled sides on reversible joints. This frame can be turned either side to the front.

3. A frame in the form of a D eye spectacle with lenses of - 6 for distance, and with + 3 in the flaps or wings, which can be brought forward in front of the distance glasses when required.

There are several other forms of frames which might be utilised for the same purpose.

The wording of the question excludes eye-glasses, pincenez, or grab fronts.

4. By means of split bi-focal lenses, - 6 above and - 3 below.

5. By means of perfection bi-focals, the large lenses being - 6 and the small ones inserted below being - 3, or the larger lenses - 3 and - 6 being inserted above.

6. By means of cement bi-focals, the whole lenses being - 6 and the added segments being of the power needed to reduce the - 6 to - 3. The segments would vary, as the - 6 are bi-concave, plano-concave, or periscopic concave; also the original lenses might be plano-Cc. - 3, and segments of - 3 added above.

7. By means of a solid bi-focal, the two curvatures being ground on the same piece of glass.

8. Also, perhaps, by grinding flat half of one surface of a bi-concave - 6. This would reduce - 6 to - 3.

I prefer No. 6 method, the cement bi-focal of the first form.

Question No. 6.

A prescription is given you as follows: - 3 DC axis horizontal \ominus + 1.5 DC axis vertical R and L. State the different methods of working such a lens and give reason for your choice of curves.

ANSWER.

1. - 3 D Cyl. Axis Hor. \ominus + 1.50 Cyl. Axis Ver.
2. - 3 D Sph. \ominus + 4.50 Cyl. Axis Ver.
3. + 1.50 Sph. \ominus - 4.50 Cyl. Axis Hor.
4. A toric lens—

$$\begin{array}{r} \text{On the one side} \quad - \quad 4 \text{ Sph.} \\ \text{On the other side} \quad + \quad 1 \text{ Cyl. Axis Hor.} \\ \quad \quad \quad \quad \quad \quad + \quad 5.50 \text{ Cyl. Axis Ver.} \end{array}$$

Or by other similar combinations.

I prefer for lightness and thinness No. 3 form, but if eyes or lashes were prominent, or nose flat, I would prefer No. 2, as with it I could obtain a closer location of the lenses to the eyes. No. 4 would also serve this purpose well, but the form is not in general use, and is expensive.

Question No. 7.

What are pebble lenses? State the relative advantages of pebbles over glass, or *vice versa*. How can you distinguish between them?

ANSWER.

Lenses made of rock crystal.

Advantages of pebble :—

It does not scratch.

It has a lower index of dispersion.

Disadvantages of pebble :—

It is more brittle.

It has a lower index of refraction than flint glass (about the same as crown).

It possesses double refraction.

To distinguish :—

1. By the polariscope. Light is transmitted by a pebble placed between two plates of tourmaline cut parallel to their axes and placed at right angles to each other; it is not transmitted by glass.

2. By a file. No impression can be made on pebble.

3. By contact with the tongue, pebble feels colder.

Also to a certain extent by the ring and colour, but these are not very definite or exact.

Question No. 8.

An emmetrope, aged 60, has had his lens removed for cataract. What glass would you give for reading, and what for distant vision? Could he see clearly with either glass at a metre?

ANSWER.

I would give for distance about +10 D Sph. placed at 15 Mm. from the cornea for distance, and +13 D for reading at 33 Cm. If visual acuity be lowered I would give $\frac{1}{2}$ or 1 D stronger for reading at respectively 28 or 25 Cm.

He could see clearly with neither glass at 1 metre, but by moving the distance lens out further from the eye to, say, 25 Mm., he would be enabled to see at 1 metre distance.

Question No. 9.

A boy aged 12 has vision = 6/9, but with a concave lens of 1.25 he has a vision = 6/6. What test would you employ to ascertain the nature of his defect?

ANSWER.

This might be a case of astigmatism or it might be spasm of accommodation. For the one, I should use the astigmatic chart, for the other, the near point measure. It cannot be M of 1.25 D because in that degree of M V cannot be equal to 6/9, in fact, it can safely be said that it is not M at all. It is a case, most likely, of simple myopic or of simple hypermetropic or even of compound hypermetropic astigmatism, and if not it is spasm of accommodation, and it is very likely, indeed, that there are both the refractive error and the accommodative trouble. The data are insufficient for just estimation, but generally I should think it is not a case for an optician.

Question No. 10.

An oculist has prescribed for a man, aged 60, for distant sight :

R	- 1.5 DS	L	- 4 DS
	- 2 DC Axis Hor.		- 0.75 DC Axis 45.

He requires glasses for about 15 or 16 in. reading distance; write the formula.

ANSWER.

Age 60. Amplitude of accommodation is 1 D. Of this I reckon half is available for constant near work.

For reading at 16 in. additional refractive power of 2.50 D is needed, and the accommodation providing .50 D the lenses to be added for close work must be +2 D, therefore the R for reading is

R	+ 0.50 D Sph.
	- 2.00 D Cyl. Axis Hor.
	- 2.00 D Sph.
L	- 0.75 D Cyl. Axis 45°

Some might prefer for the right eye :—

	- 1.50 D Sph.
	+ 2.00 D Cyl. Axis Vert.

Question No. 11.

A youth, aged 12, sees best with — 14 D S R and L. Would you give him this correction on your own responsibility, and if not state your reasons?

ANSWER.

This is a serious condition, as high myopia is a disease, and it is especially serious when found in a child, because the tendency to increase is great in proportion to the youth of the myope.

As an optician I should not think of supplying glasses except under the prescription of an oculist. The case requires medical and hygienic treatment as much as, or more than, optical correction.

Question No. 12.

A boy aged 10 has vision = 20/40, and with — 2.5 DS he sees 20/30, but on testing, his P.P. is found to be at 12 Cm. What is probably his defect? and give your reason.

ANSWER.

At 10 years of age amplitude of accommodation is 14 D, and the P.P. is at 7 Cm.

In M. 2.50 D at this age it should be at $\frac{100}{14 + 2.50} = 6$ Cm.,

but here it is found to be at 12 Cm. showing $\frac{100}{12} = 8.50$ D,

and $14 - 8.50 = 5.50$ D of hypermetropia. The M. is false and not real, and there is spasm of accommodation amounting to 8 D and causing 5.50 D hypermetropia to appear as 2.50 D myopia.

It could not require — 2.50 D Sph. to improve V from 20/40 to 20/30, and indeed in M of 2.50 D vision is equal to at best 20/200.

The case requires treatment with atropine, and advice to this effect should be given by the optician, so that the needed medical treatment be obtained.

Question No. 13.

What do you understand by the terms "Amplitude of Accommodation" and "Range of Accommodation"? Illustrate these terms in the case of an emmetrope aged 20, a myope of 3 DS, aged 20, and of a hypermetrope of 3 DS of the same age. Where would the P.P. be situated in each case?

ANSWER.

Amplitude of accommodation is the total accommodative power possessed by the eye. It varies with age, being greatest in youth and gradually decreasing. Amplitude is expressed in diopters.

Range of accommodation is the distance over which accommodation is exerted. That is, the distance between the P.P. and the P.R. The former being the nearest place to the eye at which any accommodation (the smallest quantity) is exerted, and the latter being the nearest place to the eye for which it can be adjusted, this being where the total amplitude of accommodation is exerted. Range is expressed in Cm. or inches.

The amplitude is the same in all the cases mentioned, viz., 10 D, as it depends (except in high M.) on age, but the range varies considerably, as the P.P. and the P.R. vary, both being more distant in hypermetropia and nearer in myopia than in emmetropia.

In Em. 20 years of age.

P.P. is at $\frac{100}{10} = 10$ Cm., and the P.R. is at (infinity),

In H. 3 D at 20 years of age.

P.P. is at $\frac{100}{10 - 3} = 14$ Cm., and the P.R. is at (infinity),

it being brought there by the exertion of 3 D accommodation for distance.

In M. 3 D at 20 years of age.

P.P. is at $\frac{100}{10 + 3} = 8$ Cm. (approx.), and the P.R. is at

$\frac{100}{3} = 33$ Cm.

With a full correction, the range becomes in all cases of ametropia of low degree the same as in emmetropia.

Question No. 14.

Explain the importance of having spectacle lenses correctly centred. What would (roughly speaking) be the effect on a customer of having his spectacle lenses of — 10 DS, each decentred 4 m.m. inwards, supposing that he had binocular vision?

ANSWER.

If lenses be not centred they act as if prisms were added to them and they cause heterophoria, and they may be the cause of strabismus and diplopia if strong enough and sufficiently decentred.

Cx. decentred inward and Cc. decentred outward act as prisms bases in and throw strain on the external recti.

Cx. decentred outward and Cc. decentred inward act as prisms bases out and throw strain on the recti.

— 10 D. Sph. decentred 4 Mm. has a prismatic effect (roughly) of

$$10 \times 4$$

$$\frac{\quad}{10} = 40 \text{ base out each eye.}$$

They would, therefore, cause exophoria, but as in M. of 10 D. there is almost certainly exophoria already, it is very probable that the decentration of the lenses would bring about a divergent strabismus and crossed diplopia.

NEW REMEDIES.

CREOSOTE IN CHRONIC CONSTIPATION.—Commencing with doses of single drops increased to 7 or 8 drops in a glass of milk or beer after lunch and dinner, Vladimir (*Semaine médicale*) has found creosote to be a valuable remedy in chronic constipation. Its use is not accompanied by any pain or discomfort, and it appears to act by neutralising an intestinal toxine which causes the malady by paralysing the digestive canal.—*Bull. Gén. de Thérap.*, cxxxv., 15.

LINIMENTUM EXSICANS, PICK.—Lupp recommends the following method of preparation, thus:—Take tragacanth, coarsely divided, 12, and cover with 15 of glycerin; rub down well with a pestle, and add distilled water, with continual stirring, in portions of 100, until the whole amounts to 500 grammes. If the liniment is used with lanoline, heat the mixture until the lanoline melts, and stir until cold.—*Zeit. d. allg. oest. Apoth. Ver.*, li., 525.

METALLIC IODINE IN SYPHILIS.—Bouveyron (*Bullet. Med.*) recommends the treatment of syphilis with metallic iodine, which is prescribed thus: Iodine, 1 gramme; potassium iodide, sufficient to dissolve; glycerin, 5 to 10 grammes; citric acid, 5 grammes; simple syrup, to 1 litre. Two teaspoonfuls are taken to commence with, the dose being gradually increased to 6 or 9 teaspoonfuls. These are taken on an empty stomach half an hour before a meal.—*Bull. Gén. de Thérap.*, cxxxv., 799.

PHENOSAL AND PYROSAL.—Phenosal is the aceto-salicylic ester of phenetidine and occurs in white needles, sparingly soluble in water. When taken, it is split up into its components, and it acts as an antipyretic. Pyrosal is the corresponding salt of antipyrin; in each case the secondary action of both the salicylic acid and the base is stated to be modified.—*Pharm. Centralh.*, xxxix., 621.

MERCURIAL OINTMENT INTERNALLY IN SYPHILIS.—The treatment of syphilis by the internal administration of mercurial ointment finds many followers in continental practice. It is stated that the metal is better absorbed in this form. L. Silberstein prescribes it in pills thus: Mercurial ointment with lanolin basis, 4.5 grammes; powdered liquorice root, 5 grammes; glycerin, 5 drops; mucilage of acacia q.s. to mass. Divide into 60 pills; each pill contains 0.025 gramme of mercury.—*Therap. Monats.*, xii., 397.

XEROFORM IN CORNEAL ULCER.—Marcinowski finds that xeroform is much preferable to iodoform in the treatment of corneal ulcer. Having succeeded with xeroform in a case which had previously given bad results with iodoform, he has since relied solely upon the former, with uniformly good results, both in ulcerations, and in dressings for corneal injuries. Wounds heal quickly under its influence without leaving a scar.—*Therap. Monats.*, xii., 38.

SELECTED PRACTICAL FORMULÆ.

AROMATIC SACCHARIN SOLUTION.

Refined saccharin, 2.5; vanilline, 5, are dissolved in alcohol (90 per cent.), 95, and Ceylon cinnamon oil, 2, added.—*Pharm. Cent.*, xxxix., 460.

MOUSE AND RAT POISON.

Lard, 500 grammes; salicylic acid, 5 grammes; one fried onion; beef tallow, 50 grammes to 100 grammes; barium carbonate, 500 grammes, in 20 per cent. solution of verdigris; ammonia, 50 grammes. The onion is cut into slices, which are fried to a dark brown in the fat. Salicylic acid is added and the mixture stirred until partly congealed. The barium carbonate is now added, and finally the solution of verdigris.—*Zeit. d. allg. oest. Apoth. Ver.*, lii., 360, after *Sudd. Apoth. Ztg.*

CAPSICUM OPODELDOC.

Alcohol (90 per cent.), 40; tinct. capsic., 10; castile soap, 6; camphor, 4; solution of ammonia, 2; menthol, 1; ol. spilanth. olerac., 1, are dissolved together in the cold and filled into tubes.—*Zeit. d. allg. oest. Apoth. Ver.*, lii., 35, after *Bull. f. Ph.*

PILOCARPINE AND QUININE HAIRWASH.

Pilocarpine hydrochloride, 6; quinine hydrochloride, 12; tincture of cantharides, 100; Cologne water, 200; distilled water to produce 1000. Digest together for twenty-four hours then filter.

PILOCARPINE AND QUININE POMADE.

Pilocarpine hydrochloride, 2; quinine hydrochloride, 4; precipitated sulphur, 10; balsam of Peru, 20; beef marrow, 500. Mix.—*Pharm. Post*, xxxi., 343.

NON-POISONOUS WEED-KILLER.

A solution of calcium sulphide is stated to be an effectual weed-killer, both for weeds on paths and on the beds. Six pounds of recently-slaked lime and 1 pound of flowers of sulphur are boiled with 17 gallons of water for some time. The mixture is diluted with an equal volume of water before using, and sprinkled freely over the weeds.—*Pharm. Zeit.*, xliii., 607.

LAC VARNISH FOR ELECTRIC CELLS.

(a) Resin, 80; gutta-percha, 20; boiled oil, 25; melt together. Or (b) Burgundy pitch, 150; gutta-percha, 35; pumice stone powder, 25. First melt the gutta-percha, then add the powder and lastly the resin. After applying, a smooth surface is obtained with a hot iron. For small cells a good lac is obtained by macerating broken fragments of celluloid in acetone.—*Eng. and Min. Journ.*, lxx., 699.

TOOTH POWDER FOR DISCOLOURED ENAMEL.

Potassium chlorate, 1; powdered boric acid, 2; magnesium carbonate, 2; prepared chalk, 2. Flavour with peppermint or any desired perfume.—*Odontology*, through *Zahn. Rundsch.*, vii., 4703.

FOR CHAPPED HANDS.

Glycerin of tragacanth, 480; boric acid, 36; zinc sulphocarbonate, 4; glycerin, 150; otto of rose, q.s.—*Zeits. des alg. oest. Apoth. Ver.*, lii., 518.

RED STAINS FOR WOOD.

Pernambuco Wood Stain.—The wood to be stained is first heated for sixty to ninety minutes with a 12½ per cent. alum solution, then dried for twenty hours, and finally coloured with an alcoholic liquid extract of Pernambuco wood. **Brazil Wood Stain.**—The stain is prepared by digesting Brazil wood chips, 16; and potassium carbonate, 2; in water, 64; for four days. The liquid thus obtained is applied to the wood to be coloured in successive portions until the desired depth of tone is reached; before the last lot of stain is put on, the coloured surface must be gone over with a 20 per cent. solution of alum. **Cochineal Stain.**—Boil together cochineal, 1; cream of tartar, 2; and water, 20; dissolve zinc, 17; in hydrochloric acid, 8. Add the zinc chloride solution to the boiling cochineal liquor, and add sufficient ammonia to produce a good carmine colour. The stain thus obtained is applied direct to the wood.—*Pharm. Centralh.*, xxxix., 611, after *Neueste Erfind. u. Erfahr.*

DENTAL NOTES.

REFINING GOLD SCRAPS.

Experience teaches most dentists that it pays them to refine their gold scraps rather than rely upon the assayer. The scraps should be dissolved in a small quantity of nitro-muriatic acid—warming hastens the solution—the solution should then be diluted with about three times its volume of water and nearly neutralised by adding a small quantity of sodium carbonate. The solution should remain slightly acid or the gold will be precipitated, in that case redissolve by adding a few drops of nitro-muriatic acid. Filter the solution, washing it through with water, then add slowly while stirring a concentrated solution of ferric sulphate, acidulated with a little sulphuric acid. Set the solution aside for twenty-four hours, so that all the gold is precipitated, then decant the liquor through filter paper to catch any particles of floating gold, wash the precipitate out of the vessel into the filter paper, roll up the paper and fuse with plenty of flux.

USEFUL HINTS.

Oxide of zinc for the final polishing of gold plates gives a beautiful polish, and does not soil the hands. The true working qualities of cohesive gold are best obtained by heating it on a sheet of mica. Direct heating in the flame of a spirit lamp injures its cohesiveness. When filling an incisor or cuspid that has a thin labial wall with cement or gutta percha, line the wall with four thicknesses of No. 4 gold-foil, it gives the tooth when finished a very nice appearance. In waxing up, oil the surface of wax before using blowpipe to give final finish to case.

THIN RIM DISCS.

Thin rim discs can be made at a moment's notice by placing a disc on the mandril in the engine and revolving it rapidly, holding an instrument against the part nearest the mandril and gradually passing it outwards to about an eighth of an inch of the edge. This wears off the grit on the central surface, but leaves fresh grit on the rim.—*Items of Interest.*

DURABILITY OF OSTEO FILLINGS.

The durability of an osteo filling is greatly increased by condensing it thoroughly by pressure while it is setting. This is best done with a smooth round-headed hand burnisher, kneading it, so to speak, into the cavity. The rubber dam should be used, and as much care taken in shaping and finishing the cavity as for a gold filling. A stopping so treated with melted paraffin flowed over, using the hot air syringe to keep it melted while it soaks into the cement will be found (the conditions of the mouth being favourable) to last for many years, even in the most exposed positions. It is as remarkable as it is true that the walls of carefully prepared cavities that have been filled with osteo seldom show any signs of re-occurring decay, although the stopping may be worn away considerably below the enamel edge.

REPAIRING THE FACE.

It sometimes comes within the province of the dentist to restore portions of the face that have been lost. What appears to be an ingenious and practical method of making an artificial nose is copied by the *Dental Record* from an article by Herr Bruck of Breslau, in the *Monatsschrift*. Having obtained a cast of the remains of the nose and of the surrounding parts, a model of a suitable nose is carved to this and duplicated in zinc or lead. This is painted over with gum arabic and then a layer of damp kid leather is smoothly laid on. A piece of white transparent celluloid, 1 to 2 millimetres in thickness, is softened in acetone and is then carefully pressed to shape on the model as prepared. When the celluloid has hardened the latter can be readily torn away from it. But should the celluloid have become separated from the model, because of the latter drying, it can readily be pressed into place if it be softened by slightly warming the model. When cold the celluloid nose is trimmed to shape, its edges are trimmed and the surface gloss is removed by rubbing it over with powdered pumice. Gold springs are attached to the portion between the anterior nares, these carry small ivory plates which grip the remains of the septum. The springs are fastened to the nose by celluloid dissolved in acetone. When finished the nose is handed to an artist, who paints its under surface to match the complexion of the face. Herr Bruck claims that the colour seen through the celluloid produces a most natural appearance.

NOTICES TO CORRESPONDENTS.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ADVERTISEMENTS AND ORDERS for copies of the 'PHARMACEUTICAL JOURNAL' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers."

ARTICLES AND REPORTS sent for the Editor's approval should be accompanied by stamped directed envelopes, otherwise no guarantee can be given that they will be returned if not found suitable.

CORRESPONDENTS should write in ink, on one side of the paper only, and must authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

DRAWINGS FOR ILLUSTRATIONS should be executed twice the desired size; clean sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

NAMES AND FORMULÆ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

QUERIES addressed to the Editor will be replied to in the Journal as early as possible after receipt, though not necessarily in the next issue. Replies cannot be sent by post, even though stamped envelopes accompany the queries.

LETTERS TO THE EDITOR.

THE CHIEF PROBLEM FOR CHEMISTS.

Sir,—Your editorial article of to-day points to the necessity of combination on the part of chemists with the Pharmaceutical Society, to strengthen the hands of the Council to obtain more pharmaceutical legislation. If the Council cannot obtain more powers than the last amendment of the Act confers I do not think it will need—nor will it get—the disaffected ones to join. As an earnest of the Society's wishes to benefit chemists and druggists, I think it is time they sought powers to license and control the keeping open of chemists' businesses, and as the intention or spirit of the 1868 Act was to have shops kept open only by qualified men, to see that no one carries on such business either for himself or in partnership with any one but a qualified chemist. The way businesses change hands from one person to another without the Society's "ken" has long been a wonder to me, and it is evident that many proprietors give over their businesses to others without returning their certificates of membership or diplomas, and those who purchase may in some instances be trading upon the reputation of a qualified man without the Society's knowledge. This is one reason why an old-established business is of so much value to the purchaser, but still I hold the Society in all cases should be cognisant of such sale, and I think licensing would effect that purpose. Now, sir! if the Society will seek the power to license, and only recognise the right of each individual to carry on business for himself, or in partnership with any other qualified persons, and get the legal authorities to back them, as it seems evident they are willing to, then we may hope to do away with this system of company pharmacy. There also should be licensed assistants as well as proprietors, who should be under the control of the Society, and hold situations under the eye, as it were, of the secretary (local), just as curates are licensed to curacies. If this were strictly carried out "The Widow's Clause" need be no obstacle. By this system of licence, the Society should know if a deceased system of licence, the Society should know if a deceased licensee was married, and if by will he desired his widow to carry on business solely for her benefit, and if so, permission should be granted to her to carry on the same only during her widowhood by a duly qualified licensed assistant, whose name should appear as the manager, and whose appointment and vacation of the same should be ratified by the local secretary or the Society. This licence should be paid for by the widow and renewed yearly, and due notification of intended change of state should be given to the Society so that they might revoke such licence and appointment. This to my idea is the only practical solution of the company pharmacy question, and should be set about ere the bulk of those in business convert their establishments into company pharmacies.

Torquay, November 19, 1898.

WM. JNO. RAWLING.

Sir,—The editorial remarks made in the two last numbers of the *Pharmaceutical Journal*, as well as the speech made by the President (p. 532), give hope that with an energetic and decided policy, combined with an increased support of the Society by the trade generally, there may yet be a future for pharmacy. I remember it was said in the House of Commons last year that before the Pharmaceutical Society could expect to get greater privileges it must put its own house in order. The point I wish to emphasise now is the folly of expecting to get the principle of proprietors' qualification recognised as long as the so-called "Widows' Clause" stands. We may close our eyes to it, but our opponents will not be slow to point out that that clause legalises the very thing we are fighting against. What is the difference between the unqualified widow or executor and the unqualified corporation? In my judgment the clause should limit the time to a period (say a year) necessary to wind up the estate of the deceased chemist. I am aware of the apparent injustice of this suggestion, but I am inclined to think the injustice and hardship are more apparent than real, for it seems to me that the estate would in the majority of cases be better off if the business were sold at once. I know of several cases where a great loss has ultimately been sustained, and of none where the arrangement has been a success. But, however that may be, the only logical course to pursue, in the event of attempting legislation, is to make up our minds that the widows' clause is one of the things we shall have to abandon.

Bristol, November 19, 1898.

B. KEEN (15/30).

LOYALTY TO THE CRAFT.

Sir,—If C. P. will be good enough to communicate with me privately, or through the President of the Pharmaceutical Society, I shall be very glad to furnish him with the information he desires.

40, Sankey Street, Warrington,
November 21, 1898.

J. RYMER YOUNG.

Sir,—In your issue of to-day C. P. says, "How about that fairly large (and dishonest) class who put up 'Drug Stores' outside their shops and charge the old-fashioned prices?" How about the well-known drug company who puts up perfumes in a bottle looking like a large 2-oz. if not more, but which, filled to the stopper, holds only 10 drachms, and charges it store price 2s. 6d., also enemas 5s. 6d., which can be obtained anywhere for 3s. 6d. or at most 4s.? Oh the gullibility of the British public.

November 19, 1898.

BELGRAVIA (155/10).

Sir,—I have read the *Pharmaceutical Journal* regularly for some sixteen years now, and have been frequently amused with the difference of opinions expressed from time to time by correspondents on the inexhaustible "stores" question. The enthusiastic exponents of professional pharmacy entreat all the assistants connected with the drug trade to remain "Loyal to the craft." I do not dispute for a moment but that chemists would find their businesses greatly improve if all the qualified men could be induced not to sell their services to unqualified companies, but then so long as this is a free country and the law is respected a qualified man is at liberty to engage with whom he pleases, and he naturally chooses the field of labour which pays him best. In the same way you will always find smart business chemists buy their goods from sources which pay them best, and under ordinary circumstances an active chemist like a skilled trader adopts the principle of buying in the cheapest and selling in the dearest market, no matter whether the wholesale dealer or agent is qualified or not. There is another more powerful factor at work than the assistants who engage themselves to the stores, but which is sometimes lost sight of. Perhaps it will surprise a good many of your readers to know that most if not all the high-class leading houses in London do a lot of their business with stores. Many houses supply their specialties on wholesale terms to any limited company or firm who will take goods to the extent of their wholesale limit, and as business men they execute such orders for prompt cash and send them to their destination carriage paid or otherwise, according to their terms. Now what I contend is this: The man who sells his services to the stores is in no worse position than those leaders of pharmacy who sell their goods in this way. The only difference is that the assistant makes all his living by this means, while the high-class houses make only part of theirs, but the principle remains the same. In the event of supplies being cut off from the stores by the makers, as occasionally happens when the P.A.T.A. prices are departed from, it is only fair to state that company traders can

always obtain any quantity of proprietary articles of any firm from patent medicine houses at a trifle over wholesale cost. In order for a large company to be highly successful the ship must be steered with one brain power only, and the systems of carrying on business must be those of the utmost simplicity and business-like uniformity, while the quality of all goods supplied by the branches must be of the highest standard possible. In any case the chemist, firm, or company with energy, method, and tact will always succeed *omnibus paribus*, but without those qualities no one can reasonably expect to get a living during those times of keen competition from which every trader more or less suffers.

November 19, 1898.

KING'S HEATH (155/11).

SUGGESTIONS FOR A MORE FORWARD POLICY.

Sir,—Almost a clean sweep of the present Council should be made at the next election. One can almost perceive the broom. Radical change is necessary, a forward policy pursued, dwelling on the past forgotten, the dry but respected bones of our founders left buried and exhumed no more. Our present Council contains some pre-eminent men. Keep these, but the nonentities let us once and forever brush aside. Our future policy should be "war to the knife" with companies and no half-hearted triflings. This cancer must be extirpated. Let all chemists see to it. Chemists of Great Britain between now and next May should select men capable of securing the rights for which we have studied and paid, and willing to make the requisite effort. To increase the favour that the Society ought to enjoy amongst our craft it has been suggested that it should throw open its London premises, like its Edinburgh house, to all chemists, supplying suitable accommodation for purposes of business and social intercourse, and so keeping the immediate interests of our craft in sight. By so doing many who are not now of the Society would become its members. Transform this head centre into a kind of ark where our brethren may rest and become familiar with the Society's ways. There is nothing more conducive to a strengthening of the bond which should bind us together than to have a spot where all may meet freely and fraternally to discuss topics of mutual interest. Asperities would be softened down, and many chemists would be drawn from their objectionable ways, thus affording a fair and reasonable mode of living for us all. In the past without question the poor remuneration of assistants, when employers were having their fill of good things, has been a potent factor in the present chaos. Our assistants should command a higher rate of pay, commensurate with the position they hold in the community, and as compensation for their expenditure of money, time, and brains for their studies. Loyalty would then step in and companies be crushed, by the assistance they now receive from qualified men being withheld.

London, November 17, 1893.

DUM SPIRO SPERO (155/8).

THE IMPORTATION OF COLONIAL PRODUCE.

Sir,—I take the opportunity offered by the extensive colonial and foreign circulation of your Journal to direct the attention of pharmacists and others who reside abroad or in the British Colonies to a few facts which bear an important relation to the sale of colonial products in this country.

1. *Drugs*.—It is absolutely necessary, in order to avoid loss, to be well informed as to the state of the large European markets, especially London, Liverpool, Hamburg, and New York, etc. As an instance I may point to the genuine or Pernambuco jaborandi, *Pilocarpus jaborandi*, which is now, I am told, realising 7s or 8s. per lb., against 1s. 6d. per lb. for the Rio Janeiro jaborandi, *P. pinnatifolium*; Pernambuco jaborandi, which is now the only official kind, having practically disappeared from the market. The reason of this is that, when the genuine jaborandi was last sent to this country, the market was overstocked with the Rio Janeiro kind, and there were no buyers for the genuine, except at a price that entailed a decided loss on the exporters. Consequently, the exporters having lost money, sent no more, and the drug gets scarcer and scarcer and the price goes up. Drugs are not like provisions. There is not room for an unlimited supply, and the export to European markets, if it is not to entail loss upon the producer and exporter, must bear a direct relation to the state of the market. But it is to the interest of the buyer to buy cheaply, and early information is not likely to be obtainable except through colonial agents in Europe, paid to look after the interests of their respective colonies.

2. *New Vegetable Remedies*.—Frequently specimens of native remedies are sent home on speculation, without any details as to

their botanical source and in very small quantities. Under these circumstances it is useless to hope that they will receive attention. It requires at least 14 lb. or 28 lb. of material to ascertain if any definite active principle is present, and unless the drug possesses decided properties and differs from other drugs already in use in its remedial effects, it is not likely to be experimented with. Thus, pure bitters, simple purgatives, or emetics are not needed; but remedies that are known to be actually of service in skin diseases, malarial fevers, or zymotic diseases (and which do not owe their properties to the hot water in which they are administered), might receive a trial if sent in sufficient quantity and if a portion of the plant having leaves, flower, and fruit be sent with them for identification. Medical men are chary of trying remedies of which nothing but the native name and use is known. It may, therefore, be taken as a rule that not less than 28 lb. to 1 cwt. is worth sending for a trial.

3. *Drugs other than Medicines.*—Gums, resins, oils, fats, dye woods, tanning materials, and other economic products, if sent over in the form of samples of 14 lb. or more, should be sent with full information as to possible regularity of supply, and uniformity, or otherwise, of quality. Thus, on offering a new fat or oil to a soap boiler, the first inquiry will be: "Can I get this by the ton? and is there a regular supply to be had?" It will not pay me to introduce a new article to the public and when a demand is created to find there is no supply." With respect to gums, it should be recognised that it pays the exporter to sort the gum into qualities where labour is cheap; a uniform white gum fetching a much better price in proportion than a mixed or dirty product.

4. *Packing.*—Doubtless in tropical climates there is some difficulty in drying drugs properly, so as to avoid mouldiness. It must be recognised, however, that the value depends very largely on proper drying. There should be no difficulty in drying many drugs under the roof of a dwelling where the air is hot and a current can be easily established, and where the drug is protected from the heavy dew. Many drugs, such as coca leaves, lose much of their alkaloid if packed before being properly dried. The question of packing fruits also is one of great importance to colonists. Thus, Jamaica oranges packed unassorted in boxes, even if of very superior quality, will fetch only a very inferior price, for the reason that the wholesale fruiterer cannot see inside the barrels, and thus has to buy, so to speak, "a pig in a poke." But oranges that are packed of uniform size and quality, each in tissue paper, a definite number in a box of definite size, with air spaces between the box boards and protected by transverse ribs from crushing, and thus allowing circulation of air, will, he knows, pay him to buy, because he can see something of their state and knows what each contains. In other words, the exporter who wishes to ensure a profitable transaction must first learn the requirements of the market to which he sends them, and must keep himself as well informed as possible as to the state of repletion or depletion of the stock in the market.

London, November 23, 1898.

E. M. HOLMES.

THE POSITION OF PHARMACY.

Sir,—I have read with interest your recent editorials upon pharmaceutical problems, and also the speech of the President of the Society. I agree with you in thinking that it will be difficult to fix upon a suitable course to pursue in regard to legislation. The first step to be taken, however, is to try and rouse chemists throughout the country from the lethargy into which they have fallen. Nothing can be done until they are thoroughly roused. I do not wonder that they have long since lost all heart, and all hope, and are now reduced to a condition in which they can only sit in sackcloth and ashes and mutter "Ichabod." If a trumpet from heaven were to sound in the ears of those men it would scarcely arouse them, and yet they must be led to understand that even an angel from heaven could not help them unless they will make some effort to help themselves. They must, if they are to follow the lead which the President has promised to give, and make their influence felt as a compact force behind him, join the Society, form local associations which are associations in something more than a mere name, read the reports of what is going on in the world of pharmacy, and keep themselves informed upon matters pharmaceutical generally. Our case is not hopeless, and we have everything to gain by dragging the whole circumstances into the light. Our strength lies in this, that we are suffering from a real and very pressing injustice, and not an imaginary one, and in this also lies the weakness of the

enemy, and the enemy knows it. It is easy to humbug the public by publishing false and calumnious statements (in some cases I think actionable) about chemists when only one side of the question is presented, but it will not be so easy to humbug the House of Commons when both sides are presented, and the enemy has already had a taste of this fact. Now, as to method of procedure, I am quite sure that chemists will have nothing to do with a Bill which only forces unqualified men to keep qualified men for their various branches. This would only be legalising what is at present of doubtful legality, and it would be a miserable selling of our posterity in the pharmaceutical world into the most abject and contemptible slavery. Such a Bill would be easy to pass, but we will have nothing to do with it at any price, or else I have quite failed in my attempt to gather the feeling throughout the drug trade. I do not think that it would be a wise act to bring in a Bill for the closing of unqualified companies either. In fact, until we can widen the scope of the Pharmacy Act this is impossible. Through the courtesy of the lay press, I have been enabled to express my opinion upon several occasions, and I shall now do so briefly here. I think our best course is to try and get a measure through the House of Commons, empowering the Pharmaceutical Society to erase from the Register of Chemists the names of those qualified men who cover unqualified men, whether these men exist as individuals or as companies. In order that the opposition from qualified men in stores might be overcome, and also in order that the vested interest question might be toned down, I would have the Bill drawn in such a manner that it would only come into operation, say five years after the date of its passing through Parliament. Such a long period is certainly an objection, but we must allow something to adverse circumstances. I am of opinion, I may say frankly, that such a measure would meet with tremendous opposition from people who are interested and others who are ignorant, but the rascality which has been sheltered under the Companies Acts generally is being so well exposed in influential quarters, that our task would be easier now than it would have been two years ago. Besides, even if we fail the first, and the second, and the third time, we will still be educating the people, and the opposition with which we are sure to meet will educate the people even better than our action. It must not be understood that I am censuring men who have taken situations in stores. I sympathise with these men, knowing as I do that many of them are there much against their inclinations, but with them it has not been a question of more or less pay, but one of work or no work. I can see no good service to be done in inveighing against them, unless we wish to drive the work into the hands of the worst kind of assistants, and leave the best out in the cold. We must bring the work into a legitimate channel, and the question of honour in qualified men will rectify itself. We must also remember that whatever steps we take must be taken under sound legal advice. These unqualified men will leave no legal subterfuge untried in order to wriggle through an Act of Parliament. Indeed, I am informed that in some cases they took legal steps to enable them to wriggle through an Act which has never become law, and in all human probability never will become law. So far as the widening of the scope of the Pharmacy Act goes, I think we may well leave that for future consideration. One thing at a time is enough. Sir, will you allow me to say, in conclusion (and I wish I could shout it in the ear of every chemist in the country), that we have everything to gain by bringing the whole case before the public, both in Parliament and out of it, and the enemy has everything to lose. The front door of honour is ours, the back door is for them.

Dumfries, November 14, 1898.

JAMES REID.

A CORRECTION.

Sir,—On page 534*d* of this week's issue you state that Mr. A. Urwin has taken over my business at 114, Westgate Road, Newcastle-on-Tyne. Now I may tell you this is incorrect. I am still the owner, and have not sold the business, nor am I negotiating for its sale.

Newcastle-on-Tyne, November 19, 1898.

JAMES DAVIDSON.

* * We regret that the erroneous statement referred to by Mr. Davidson should have been published in the Journal and tender him an apology for any inconvenience or annoyance he may have been caused in the matter. Mr. Urwin had written, stating that he was "now in a business" at the address stated, but it appears that he is only manager of the business referred to. [Ed. P. J.]

ANSWERS TO QUERIES.

Special Notice.—Scientific, technical, legal, and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on different slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms, and the registered number added in each instance should be quoted in any subsequent communication on the same subject.

BOTANICAL.—(1) Probably a white form of *Campanula latifolia*. (2) Pink, pale lilac, and white varieties are found in Kent. (3) We are not acquainted with such a book. [Reply to R. D.—19/13.]

CUDBEAR.—This colouring matter is obtained from lichens, including various species of *Roccella*. It may safely be used for the purpose you mention. [Reply to NEMO.—19/11.]

SUPPLY OF MEDICINES CONTAINING POISONS.—He is not entitled to "sell, or keep an open shop for the retailing, dispensing, or compounding poisons," unless he is a registered chemist. [Reply to R. H. R.—19/2.]

LANTERN SLIDES.—Procure water-soluble aniline dyes, make concentrated aqueous solutions of the same, and add a little mucilage of acacia. When the slides are quite dry, varnish them with a thin, transparent spirit varnish. [Reply T. H. D.—19/4.]

BELL SCHOLARSHIP EXAMINATION.—Refer to the special article on the subject in the Journal for September 11, 1897. Full particulars are given there regarding books, the course of study, etc. [Reply to W. J. H. T.—19/21.]

DECOLORISING HONEY.—This is a difficult matter. Try gently warming with granular animal charcoal and filtering while hot through a column of the same substance in a cylindrical percolator. Honey is generally very dark in colour this year. [Reply to W. S.—19/6.]

COLOURING OF EASTON'S SYRUP.—This is due to oxidation. Keep the syrup well corked up in full bottles. Exposure to light will not hinder this preparation from colouring, as it will in the case of syrup of ferrous iodide or bromide. The addition of a little citric acid is sometimes recommended. [Reply to A. K. H.—19/3.]

IODOFORM SUBSTITUTE.—Probably there are more substitutes for iodoform than for any other drug. Look through the "New Remedies" column in our pages during the past three years, and you will easily find a score of such substitutes. You may then select which seem most suitable to your special requirements. [Reply to WHITE ROSE.—19/5.]

ANALYTICAL CHEMIST.—The amount of the premium will vary greatly according to the circumstances of the case. There is no special period, nor is there any necessity for you to pass an examination prior to practising as an analyst. It is an advantage, however, to be connected with the Institute of Chemistry, 30, Bloomsbury Square, W.C., and you should write to the Secretary, at that address, for full particulars regarding the examinations, etc. [Reply to J. R. A.—19/9.]

UNGUENTUM ALTHEÆ.—The following is the formula official in the Codex: Infused oil of fenugreek, 8; yellow wax, 2; resin, 1; Venice turpentine, 1. Melt resin and wax in the oil, add the Venice turpentine, strain and stir until nearly cold. The infused oil of fenugreek is prepared thus: fenugreek, 1; olive oil, 10. Digest on the water bath for two hours with occasional stirring; strain, press and filter. You will note that this contains no althea root; the old London Pharmacopœia (1746) formula, however, is made with "oil of mucilages," which does, thus: Oil of mucilages, 24; beeswax, 6; resin, 3; Venice turpentine, $\frac{1}{2}$. Mix with heat. The oil of mucilages is prepared from fresh marshmallow root, 6; linseed and fenugreek, of each 3; water, 24; olive oil, 48. Gently boil the bruised seeds and root with the hot water for 30 minutes; then add the oil and again boil until the water is evaporated. Allow to settle and decant the oil. [Reply to J. W. H.—18/27.]

CAUSTICUM B. H. P.—Impure solution of calcium hydroxide is formed and subjected to distillation. The distillate may contain traces of ammonia, and may also be expected to contain "homœopathic" quantities of potassium hydroxide carried over mechanically during the operation. [Reply to W. B. W.—19/19.]

SOLUTION OF MENTHOL.—To make the solution strictly according to the particulars you send, you should take 48 grains of menthol and add sufficient olive oil to make 480 grains, or one ounce, Apothecaries' weight. Presumably, however, a fluid ounce of solution is required, and in that case you should take 43.75 grains of menthol and make up to 437.5 grain-measures, or one fluid ounce, with oil. [Reply to R. McC.—19/20.]

CORRECTIONS.

PHARMACEUTICAL PROBLEMS OF TO-DAY.—In the letter by Mr. Barrass, published last week, the word "wrong" in the last line of column 1, page 544, should read "strong." The type was accidentally broken in printing and not properly replaced.

MR. DUNLOP'S PAPER.—At page 529, column 2, line 2, for "phosphate" read "formula." At the same page and column, line 20, for "Martin" read "Martindale." At page 530, column 1, line 3, before "tr. zingib." read "syr. zingib. and the making of."

DISPENSING PROBLEMS AND NOTES.

COCAINE HYDROCHLORIDE IN OINTMENT.

Sir,—Please say how the following prescription should be dispensed?—

℞ Ung. Ac. Borici ʒii.
Lanolini ad ʒii.
Addē Cocain. Hydrochlor. 10 per cent.
M. ft. Unguentum. Sig.: To be used as directed.

"NEMO" (19/7).

NOTE.—As the prescription stands it implies that two drachms of boric acid ointment are to be mixed with 14 drachms of lanolin, and sufficient cocaine hydrochloride added so that the finished ointment shall contain 10 per cent. of the alkaloidal salt. In order to accomplish this we must add to every 9 parts of the ointment and lanolin 1 part of cocaine hydrochloride. Since the two ounces (ʒii.) of ointment weigh 960 grains, 106 $\frac{2}{3}$ grains of the hydrochloride will be necessary. The total weight (1066 $\frac{2}{3}$ grains) of ointment will then contain $\frac{1}{10}$ th its weight, or 10 per cent. of alkaloidal salt. If the cocaine hydrochloride be rubbed carefully with the ointment it will dissolve in the water contained in the lanolin. There is, therefore, no necessity to dissolve the salt in water before mixing. It is not very often that ointments containing 10 per cent. of cocaine are employed; still, they are sometimes, and the correct interpretation of the prescription is the one indicated. It is just possible, however, that the prescriber intended a certain quantity of 10 per cent. solution of cocaine hydrochloride to be added but omitted to name the quantity. If there is anything to suggest the possibility of this, your only plan is to communicate with the prescriber.

ZINC OXIDE IN A LOTION.

Sir,—Is it possible to send out the following lotion perfectly smooth and non-separable?—

℞ Zinci. Oxid. ʒvi.
Glycerini ʒiii.
Ol. Olivæ ʒvi.
Aq. Calcis. ad ʒvi.

M.

How should it be dispensed?

TYRO (18/28).

NOTE.—We have not succeeded in making a non-separable combination according to your prescription. The cause of this is the insolubility, in water or lime water, of the lime soap formed by the partial saponification of the olive oil. Since this is insoluble it cannot form an emulsion with the unsaponified oil, as is the case with the soluble potash, soda, or ammonia soaps. The curdy precipitate of lime soap separates, whatever be the order of mixing, and carries with it the zinc oxide and unsaponified oil, forming greasy masses suspended in the aqueous fluid. If the prescriber is willing to substitute an equivalent quantity of potash, soda, or ammonia, a more presentable product can probably be made.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Lithium Ammonium. When pure lithium is exposed in a tube to the dry vapour of ammonia, according to H. Moissan it quickly assumes a reddish-brown colour, and rapidly liquefies with evolution of considerable heat. The liquid continues to absorb ammonia. When absorption ceases, excess of ammonia is driven off by quickly heating the tube to 70° C. A red-brown solid results, which takes fire on contact with air. If lithium be immersed in liquefied ammonia, and the tube containing it be allowed to gradually revert to normal temperatures, the deep blue liquid at first formed gradually thickens and becomes reddish brown. The constitution of this body, as determined by both synthetical and analytical methods, corresponds with the formula NH_3Li . In contact with water, it is decomposed into lithium hydrate, ammonia, and hydrogen, thus $\text{NH}_3\text{Li} + \text{H}_2\text{O} = \text{NH}_3 + \text{LiHO} + \text{H}$.—*Comptes rendus*, cxxvii., 686.

Lithium Amide. The above lithium ammonium dissolved in pure ammonia is slowly transformed at ordinary temperatures, and rapidly at 63-80° C. into lithium amide, NH_2Li , in the form of brilliant transparent crystals, very slightly soluble in liquefied ammonia.—*Comptes rendus*, cxxvii., 690.

Calcium Ammonium. H. Moissan has also prepared calcium ammonium in a similar manner to that followed for the lithium compound. As soon as calcium comes in contact with ammonia gas, each crystal of the metal assumes a fine yellowish-brown colour, and increases in volume, with a notable rise of temperature. If the temperature be maintained at between 15° and 20° C. only a solid body, $(\text{NH}_3)_4\text{Ca}$, is formed, and no liquefaction takes place. This body takes fire and burns with a brilliant flame in contact with the air. In liquefied ammonia it dissolves, forming a pasty mass, which is not soluble in the liquid. Calcium ammonium is of a deeper bronze colour than the lithium compound. It gradually decomposes at ordinary temperatures, forming crystals of calcium amide, $(\text{NH}_2)_2\text{Ca}$, and evolving hydrogen and ammonia. From the formula for calcium ammonium given above, it would appear that calcium here exerts a tetratomic valency, unless the formula be assumed to be $(\text{NH}_3)_2\text{Ca} + 2\text{NH}_3$, in which the metal preserves its diatomic character. The investigator, however, docs not favour the latter hypothesis, since he has been unable to obtain any intermediate compound of ammonia and calcium containing two molecules of ammonia.—*Comptes rendus*, cxxvii., 690.

New Fruit Pest. There appears to be grounds for fear that a troublesome insect pest, a scale insect *Diaspis amygdali*, Tryon, may have gained a footing in this country. In January of the present year, a consignment of Japanese cherries was imported, and ultimately dispersed over the country; later on it was discovered that many of them were badly infested with this scale. As the insect is quite hardy, and likely to flourish in this country, and is, moreover, very resistant to insecticides and most destructive to fruit trees, all those who happen to have Japanese cherries, presumably of this consignment, are requested to communicate with R. Newstead, Grosvenor Museum, Chester. Figures of the insect are given in *Gard. Chron.*, xiv., 245.

A False Sarsaparilla. Hartwich, of Zurich, calls attention to the occurrence of a false sarsaparilla which outwardly greatly resembles the genuine drug, and shows also a similar anatomical structure, but is distinguished by its constituents. The false drug contains no calcium oxalate and no starch. Instead of the latter sugar is present. The root comes from the Amazon River. Its exact botanical source cannot be definitely fixed, but it is undoubtedly derived from a liliaceous plant.—*Pharm. Ztg.*, lxxvii., 684.

Properties of Calcium. The following properties, characteristic of pure metallic calcium, are recorded by H. Moissan. It melts at 760° C. to a brilliant liquid, which, on cooling, may be cut with a knife, but is less malleable than potassium or sodium. The surface, when perfectly free from nitrogen, is brilliantly white, like silver. The density is 1.85. Its crystals are hexagonal tablets or secondary rhombohedra. It is not acted upon by chlorine in the cold, but combines with it at about 400° C. with incandescence. It does not combine with liquid bromine, but burns in its vapour below a low heat. In oxygen when heated to 300, it burns with a dazzling flame, evolving sufficient heat to melt and volatilise part of the lime produced. It also combines directly, when heated, with sulphur, phosphorus, arsenic, antimony, and bismuth. When heated with lamp-black, it forms calcium carbide below a red heat. A long series of experiments has been conducted to investigate the action of acids on the metal.—*Comptes rendus*, cxxvii., 585.

Solubility of Camphor in Hydrochloric Acid. In the course of their researches on the synthesis of camphor, C. Istrati and A. Zaharia have observed that camphor is markedly soluble in concentrated hydrochloric acid. On adding water a precipitate is formed, which, however, dissolves on adding more water. It is considered probable that there is a definite chemical combination between the hydrochloric acid and the camphor, forming a chlorhydrine, since on evaporation *in vacuo* the solid obtained has a markedly lower melting point than pure camphor. It is noteworthy that camphor is much more soluble in hydrochloric acid at a lower than at a higher temperature, a few degrees making a very marked difference. Thus a concentrated syrupy solution may be prepared at 0° C., containing over 40 per cent. of camphor, and if a flask of this be held in the hand it speedily becomes solid, but is again liquefied on cooling to 0° C.—*Comptes rendus*, cxxvii., 557.

Colocynth Fruiting at Kew. The *Citrullus colocynthis* may now be seen in fruit in one of the houses in Kew Gardens. The fruits are about as large again as an ordinary orange, and are of a rich golden hue (*Garden*, November 26, p. 439). The orange colour is apparently assumed when the fruits ripen, since fresh fruits from Mogador, brought home some years ago by the late Dr. Learedo, had a green colour variegated with white.

Cassia Marilandica. This plant, the leaves of which are used in the United States like senna, and are known as American senna, has long been regarded as a greenhouse plant in this country, but it has flowered freely this season out of doors against a wall. Plants of the sub-order *Cesalpinea* that are hardy in the open air in this country are very difficult to obtain for botanical purposes, and the *Cassia marilandica* should prove a useful addition to the very limited number obtainable. Even the flower buds of *Cercis siliquastrum* often drop before opening in this country.

PRACTICAL PHARMACOGRAPHY.

CINNAMOMI CORTEX.

Cinnamon Bark.—Cannelle, Fr.; Ceylonzimmt, Germ.

MACROSCOPIC CHARACTERS.

It should be noted that in Austria, Germany, Hungary, and Russia, cassia bark is official under the name of cinnamon, and that in the Danish, Dutch, Spanish, Swiss, and United States Pharmacopœias, both cinnamon and cassia are official under the name of cinnamon, which in this country is restricted to the bark of *Cinnamomum zeylanicum*. The bark, which is prepared from the shoots of truncated stocks by removing the corky layer, and rolling

a number of quills one inside the other, occurs in commerce in compound quills, about 100 Cm. in length and about 6 to 9 Mm. in diameter. The usual length of each separate quill is about 30 Cm., the pieces being made to overlap in order to make up the uniform length of the bundles, and the smaller pieces being placed in the interior. There are four commercial qualities in this country, distinguished by the thinness and smoothness of the compound quills, the finest variety being in the smallest quills. Besides these the broken pieces, usually of the fourth quality, are sold as quillings, and are of inferior colour and appearance. The trimmings of the shoots enter commerce under the name of cinnamon chips. These have usually small portions of the whitish wood attached to them. They are chiefly used for distilling the oil, and probably for powdering. More rarely a very thick bark enters commerce, but it has comparatively little aroma, and may possibly find its way into inferior varieties of mixed spice. The quills during the process of preparation lose the corky layer, and thus present a smooth appearance, only traces of the cork cells remaining. The quills are thin, with a splintery but not fibrous fracture, are of a light yellowish-brown colour, marked externally with faint, shining, slightly paler, wavy lines, and with little scars or holes, indicating the position of lateral twigs or leaves. On the inner surface the colour is rather darker. Cinnamon has a sweet,



Cinnamon. Cassia.

biting, aromatic, and somewhat astringent taste, and a characteristic agreeable odour. It is not adulterated, but occasionally the bark of other species of *Cinnamomum* is offered for it. The one most resembling it externally is that of *Cinnamomum obtusifolium*, but this is in larger quills, has a very fibrous fracture, and the flavour recalls that of cinnamon mixed with coriander.

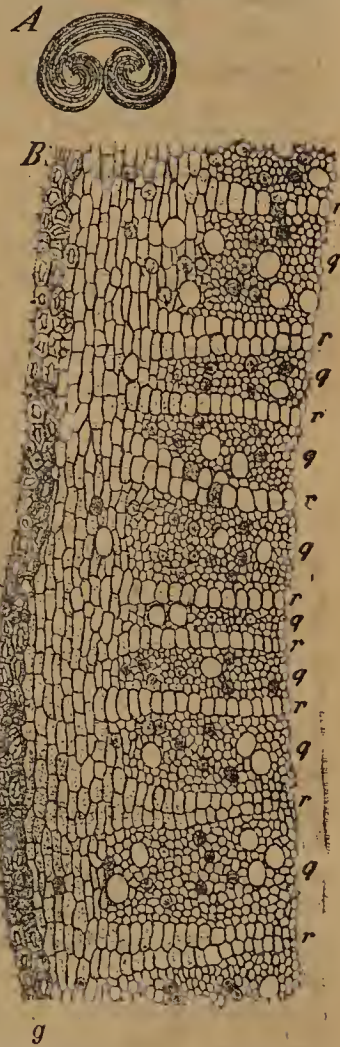
Powdered cinnamon bark is sometimes replaced by the cheaper cassia bark, but the flavour of the latter is so distinctly different, that it is easily recognised by taste. Cassia bark itself is distinguished by the thicker quills, usually simple, but rarely one inrolled in another, by the presence of an imperfectly renewed cork, and by the shortness and irregularity of length of the quills. The variety known as Saigon cassia, but which is collected in Annam, occurs in straighter and smoother quills, and has none of the corky layer removed. It has a sweeter and more pungent taste than ordinary cassia. It is little known in this country, being chiefly exported to the United States.

MICROSCOPIC CHARACTERS.

Stereom Sheath.—As the cork and primary cortex have been removed from the bark in the process of preparation for the market, it happens that the outermost tissue is a stereom sheath, taking the form of a completely closed ring of short sclerenchymatous cells and scattered bundles of fibres. The ring is three or four cells broad. The cells are markedly extended tangentially, have strongly thickened porous walls, and the deposits are fairly uniformly disposed upon both the outer and inner walls as well as upon the lateral ones. Upon the outer verge of the ring are placed the narrow bundles of bast fibres, to which is due the delicate anastomosing tracery observable upon the outer surface of the drug.

Phloem.—Immediately within the stereom ring is situated the proto-phloem represented by narrow tangentially extended masses of obliterated sieve elements placed in a matrix of parenchyma with somewhat tangentially extended cells; in this region isolated bast fibres are not uncommon. The inner portion of the bark is occupied by broad masses of phloem tissue separated from each other by distinct medullary rays. In the phloem masses there are to be found, in addition to the ground tissue, numerous bast fibres, isolated and in small tangentially extended rows, narrow bands of sieve tubes and soft phloem tissue, and large mucilage receptacles. The latter vary in diameter from 45 to 75 μ or even more. The fibres have strongly thickened walls and gradually taper towards the acute

ends. The medullary rays are usually two cells broad, and in the inner portion the elements are radially extended, but in the outer portion they are tangentially extended; many of the cells contain very small raphides of calcium oxalate which are not always readily detected. The fundamental parenchyma contains large quantities of small starch granules varying in size from 5 to 10 μ ; some of the cells contain volatile oil and others contain similar raphides to those found in the medullary rays. The cell walls are charged with colouring matters which should be removed by treatment with a solution of chlorinated lime in order to obtain good microscopical preparations.



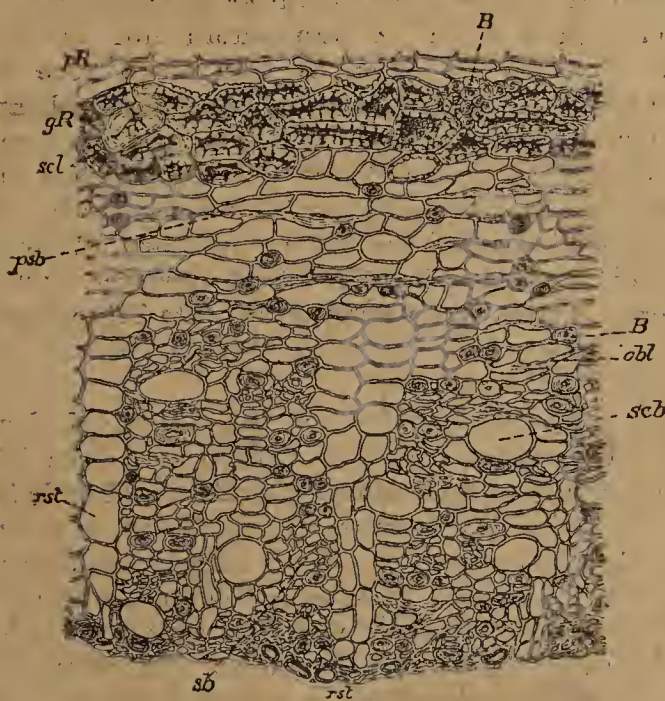
Cinnamomi Cortex. — A. Transverse section of a roll of cinnamon quills. B. Transverse section. r. Medullary rays. g. Phloem masses. g. Sclerenchyma ring. $\times 65$. (After Berg.)

Distinctive Characters.—The completely closed sclerenchymatous ring; the tangential extension of the stone cells; the comparatively uniform thickening of the same. In cassia bark the ring is pierced here and there by radial bands of thin-walled parenchyma; the stone cells are not so strongly extended



Cinnamomi Cortex.—Fragments of powder, much magnified. *fl.* Bast fibres. *sc.* Sclerenchymatous cells. *pc.* Fundamental parenchyma. *l.* Tissue of the phloem bundles containing raphides. *a.* Starch. After Collin

tangentially and are more frequently quadratic; the thickening is generally much more pronounced on the inner tangential wall than on the outer one. The bast fibres are more numerous than they are in cassia bark, and are not infrequently in short tangential



Cinnamomi Cortex.—Transverse section. *pR.* Remains of cortical parenchyma. *gR.* Sclerenchyma ring. *scl.* Sclerenchymatous cells. *B.* Bundle of fibres. *psb.* Protophloem. *B.* Bast fibres. *obl.* Obliterated sieve elements. *scb.* Mucilage receptacles. *rst.* Medullary rays. *sb.* Groups of soft phloem. \times abt. 140. (After Tschirch and Oesterle).

rows, whereas in cassia it is most rare to find more than two together. The powder should be free from vessels the presence of which would indicate the admixture of woody tissue, which might be due to the grinding of cinnamon chips to which fragments of wood are sometimes adherent.

SOAP FOR PEDICULI.—Melt soft soap, 100; add alcohol, 50; glycerin, 15. Filter and dissolve in the mixture, naphthol, 3.—*L'Union Pharm.* after *Journ. de Pharm. de Liège.*

ARROW POISONS: THEIR HISTORY, SOURCES, AND CONSTITUENTS.*

BY RALPH STOCKMAN, M.D.,

Professor of Materia Medica in the University of Glasgow.

(Concluded from page 550.)

After this slight introductory sketch we may now glance at some of the more interesting or better-known poisons which are at present in use in different parts of the globe, and I shall first consider two of animal origin as being distinctive in their character and of great interest in their action. One of these is the arrow poison of the Kalahari Bushmen (S.W. Africa). The Bushmen live in scattered tribes over the whole of S. Africa from the Cape to the Zambesi, and as they use local poisons for their arrows, these differ a good deal in different districts. In the Kalahari district Livingstone states that the natives were seen applying to their arrows the entrails of a small caterpillar, which they termed 'Nga. When the caterpillar is drawn over a small sore it causes the most excruciating agony, and men wounded with the arrows die slowly in the most violent delirium. Baines gives a more detailed description. There was brought to him a small bagful of the cocoons of an insect, brown in colour, oval, and about half an inch long. On breaking the cocoon a small cream-coloured grub was found coiled up inside. The Bushmen squeeze the grub gradually between the forefinger and thumb, when a colourless fluid exudes, which is smeared over the arrow-head. It is then almost imperceptible and no mixture is used. The insect is a small beetle, the *Diamphidia locusta*, which deposits its eggs on the leaves of a large tree on which the caterpillars feed, and then in due time they drop on to the earth and form their cocoons. Boehm has recently investigated the chemistry and action of the poison. He found that it is an albuminous substance very soluble in water, the solutions becoming rapidly decomposed under the action of putrefractive organisms and losing their poisonous properties. By precipitating the toxic albumin with alcohol or ammonium sulphate and drying the precipitate, he obtained it as an amorphous greyish powder, which retained its poisonous properties for an indefinite time. His pupil, Starcke, made experiments with it on animals, and found that its action had a generic resemblance to some of the snake poisons. Like them, it is not poisonous when given by the mouth, but injected under the skin it causes great local irritation, sometimes ending in ulceration or abscess, nervous depression, and bloody urine. Death was slow, from some hours to several days after administration. It somewhat resembles, therefore, abrin, snake poison, and other toxic albumoses which have been more minutely studied than it has.

Although its action is sure, it is not very rapid, and Baines states that animals after being wounded sometimes require to be followed up for a whole day. As regards an antidote, he says, the natives use a root which is chewed, and then rubbed on the wound and fat applied, but Livingstone makes a much more interesting statement, namely, that the grub taken by the mouth is considered the best cure. This bears out what we already know accurately about the immunity obtainable from the effects of abrin, ricin, and snake poison.

According to Steedman and Burchell, who both give very detailed accounts, other Bushman tribes use vegetable poisons from the *Amaryllis disticha*, various species of *Euphorbium* and *Acokanthera* alone or mixed with snake, spider, and beetle poisons. Burchell says there is no chance of surviving after a wound if the poison be fresh and well-made, but that quite superficial wounds may be scraped and scarified with a successful result. A Hottentot

* Inaugural sessional address to the North British Branch of the Pharmaceutical Society, delivered November 23, 1898.

also told him that habitual eaters of snake poison do not die from the wounds of the poisoned arrows, and no doubt this would prove a protection against the animal venoms, but scarcely against the vegetable ones.

The Choco Indians, in Columbia, South America, also use a peculiar poison, derived from a tree-frog, the *Phyllobates chocoensis*, which they hold on a stick near a fire, when the heat causes the glands of the skin to secrete the poisonous fluid. Our common frog secretes an irritating fluid from its cutaneous glands; so does the toad, the active principle of the latter having been named phrynin, and being known to act as a heart poison. The Choco Indian poison is innocuous when given by the mouth; a few experiments have been made with it in France, but its exact action remains rather doubtful. It is capable of killing large carnivora.

Of the vegetable substances used for poisoning arrows those which paralyse the heart after the manner of large doses of digitalis occupy a foremost place as regards deadliness and widespread use. As you are doubtless aware, digitalis and bodies of the same pharmacological group, of which there are many, paralyse the heart muscle, at first causing irregular and feeble action followed by complete stoppage and death. The final effect is preceded by great muscular feebleness and breathlessness. The physiological action of all these substances has been carefully and successfully studied, but no antidote has yet been found, and so if one absorb a sufficient amount of the poison death is certain to occur within a short time.

The most deadly are the arrow-poisons derived from the root wood of different species of *Acokanthera*, trees about 15 feet high—*A. schimperi*, *A. deflersii*, and *A. ouabai*. From these is prepared the deadly arrow-poison of the Somalis, known now for a long time and very fully described by Burton ('First Footsteps in East Africa' 1856). The poison is known as Waba, Wabayo, or Ouabaio. It is a thick, tar-like, watery extract, the active constituent in which is a glucoside known as ouabain (Arnaud), and it is made by splitting up the root into small pieces, boiling these with water, inspissating the juice, and then adding usually snake-venom or other poisonous vegetable extracts. Burton says that cattle eat the leaves of the tree only if very hungry, and that the berries are edible.

Besides the Somalis, the Wa Nyika, Wakamba, the Massai Wa Nyamwesi, and many tribes of Eastern and Central Equatorial Africa use practically this same poison, although there are many minor differences in its composition among these different peoples. Many of the prepared poisons contain very irritating substances, which are productive of severe local symptoms in the wounded. Boehm states that the poisonous dose for a dog per kilo. of its weight is about 1/140th gr. echujin, 1/260th gr. strophanthin, and 1/430th gr. ouabain, which gives some idea of their extreme toxicity. Fitzgerald ('Travels in British East Africa,' 1898) relates of the Waboni, that each arrow-head has its owner's special mark, and is so made that it cannot drop out, and this enables them to identify the killer of big game, as elephants often live for several days after they have been hit. In German South-West Africa, the Ovambas also use a heart poison derived from a species of *Adenium*, while the *Strophanthus* is widely used on the Congo, on Lake Nyassa, the Zambesi, Gaboon, Guinea, Cameroons, and Senegambia. Various *Euphorbias* and other imperfectly known plants are also largely employed.

Mr. Crawford Angus gives a graphic account of the poisons used in Azimba and Chapitaland, in Central Africa. I am indebted for it, and for the photograph of the arrows to Dr. R. W. Felkin. The natives use an arrow, the slightest scratch of which causes death,

the poison being known only to certain chief men, who collect it and serve it out to the others. He saw a man very slightly wounded in the lip, and in fifteen minutes he fell down, twitching violently; in six hours the arms and neck began to swell, and he died in twelve hours in great agony. Large quantities of these arrows are kept in covered bins in the villages, which are opened on a war alarm and the arrows served out. The arrow-heads are made so brittle that if they miss their mark they shatter against the ground and cannot be picked up and used against their original owners.

Stanley describes some of the wounds received by members of his expedition as being "mere needle-point punctures," and yet proving fatal. Some of the wounded died at once, others more slowly, and a few of tetanus later on. Some of the cases recovered. Very careful cleansing of the wound and cauterising was the treatment adopted.

The arrow poison of the Pigmies is a mixture of a cardiac poison and strychnine poison, with some others. It is very deadly, and one arrow will kill an elephant, but Stublman states that in man, if the head be at once extracted and the wound scraped and washed, fatal consequences are frequently averted.

Another set of arrow poisons which have a similar action on the heart are those made from the juice of the famous upas tree, the *Upas antiar*, growing in Borneo, Java, and adjacent parts. It is a very large forest tree, and the poisonous sap is obtained from incisions made into the bark. I show you some of it preserved with alcohol, and also the active principle—a crystalline glucoside called antiarin—which I isolated from this very specimen. It is extremely poisonous, and experiments which I made with it showed that 1/6400th gr. was sufficient to kill an ordinary sized frog in comparison with 1/4500th gr. strophanthin and 1/2600th gr. urechitin. The sap is known as Ipoh Kayu (tree poison) among the natives. It kills guinea-pigs and other small animals in a few minutes from stoppage of the heart, and has been used in Cochin-China against the French soldiers, who died in from half-an-hour to several days after receiving their wounds. It is in use throughout the Eastern Archipelago by nearly all the native peoples, pure, or mixed with snake-poison, scorpions, centipedes, other plants and occasionally with arsenic. The different prepared poisons vary greatly in strength, and one old specimen which I examined was quite innocuous.

The most extraordinary stories have been circulated about the deadliness of the upas tree, and seem to have been believed widely, and even by such an authority as Erasmus Darwin (see the 'Botanic Garden'). These stories are traceable to an account of the tree written last century by a Dutch surgeon named Foerscher, in the service of the Dutch East India Company, whose account was copied as genuine into a number of the current periodicals of the time, and thus obtained a wide circulation. On reading it, however, one is forcibly reminded of the style of Swift, in describing the travels of Mr. Lemuel Gulliver to Laputa. As it is rather amusing I may perhaps be allowed to give some extracts from his account: "I shall now only relate simple unadorned facts, of which I have been an eye-witness. In the year 1774 I was stationed at Batavia, and during my residence there I received several different accounts of the Bohon upas, and the violent effects of its poison. They all seemed incredible to me, and I resolved to investigate this subject thoroughly, and to trust only to my own observation. . . . I had procured a recommendation from an old Malayan priest to another priest, who lives on the nearest habitable spot to the tree, which is about fifteen or sixteen miles distant. The letter proved of great service to me in my undertaking, as that priest is appointed by the Emperor to reside there, in

order to prepare for eternity the souls of those who for different crimes are sentenced to approach the tree and to procure the poison. Malefactors who for their crimes are sentenced to die, are the only persons who fetch the poison. After sentence is pronounced on them by the judge, they are asked in court whether they will die by the hands of the executioner, or whether they will go to the upas tree for a box of poison. . . . They are afterwards sent to the house of the old priest and remain some days, during which time the ecclesiastic prepares them for their future fate by prayers and admonitions. When the hour of their departure arrives, the priest puts on them a long leather cap with two glasses before their eyes, which comes down as far as their breast, and also provides them with a pair of leather gloves. The worthy old ecclesiastic has assured me that during his residence there for upwards of thirty years he had dismissed above seven hundred criminals in the manner which I have described; and that scarcely two out of twenty have returned. He showed me a catalogue of all the unhappy sufferers, with the date of their departure from his house annexed, and a list of the offences for which they had been condemned. I was present at some of these melancholy ceremonies." He goes on with great detail in the same strain, and may be compared as a historian to a mixture of Defoe and Swift, and several people have been at the trouble to gravely refute his statements.

Aconite root (*A. ferox*), under the name of Bis, Bish, Bikh, and sometimes called tiger poison, is used as an arrow poison in Nepaul and along the eastern frontiers of our Indian Empire, and on the French and Chinese frontiers also most probably. It is very active, but the effects of aconite are so well known that I need not linger over them here.

We come lastly to the different species of *Strychnos*, which are so largely used in South America, in the East Indian Archipelago, and to a much more limited extent in Africa for preparing these poisons. The most famous of them is the *Curare*, first brought to Europe in 1595 by Sir Walter Raleigh. Under various names it is used over the immense tract of country comprised in the basins of the Amazon and Orinoco and their tributaries. A very minute and interesting account of its manufacture has been given by Humboldt, from which it appears that it is a concentrated extract made with cold water from the bark of several species of *Strychnos*, and that this is mixed with other poisonous and non-poisonous ingredients to increase its efficacy and consistence. It is not poisonous when swallowed owing, it is said, to the slow rate at which it is absorbed, and Humboldt says that the Indians lick it off their fingers and use it as a stomachic tonic. Its harmlessness when given by the mouth has been frequently confirmed by exact experiment. But when injected subcutaneously it proves rapidly fatal by paralysing the ends of the motor nerves in muscle, so that movement becomes impossible and death takes place from the respiratory muscles ceasing to act on the chest wall. A large dose kills in a few minutes, and there is no antidote known. Besides this action on the nerves, which is due to curarin, it has a paralysing effect on the heart, due to a second active principle, discovered by Boehm and named by him curin.

In the Malayan Archipelago the *Strychnos* or *Upas tieute* furnishes a sap largely used for poisoning arrows, and the active principles being strychnine and brucine we get the well-known convulsant effect of these substances in animals or men struck by the arrows.

I have, however, examined the root-bark of two species of *Strychnos* used as an arrow poison by the natives of Perak in the Straits Settlements, and found that both had a marked digitalis-like action on the heart, as well as a curare-like action on the

motor nerves (*Lab. Rep. Roy. Coll. Phys. Ed.*, vol. vi.). These are mixed with a third substance called "prual," which paralyses the muscles. When these different ingredients are mixed they form a most efficient means of dealing death, seeing that they paralyse simultaneously the heart, the motor nerves, and the voluntary muscles.

In conclusion, I may just mention two other poisons, neither of which is perhaps thoroughly authenticated. The Ainos in Japan are said to use a preparation made from aconite and tobacco, while the natives of the New Hebrides are stated to smear their arrows and spears with damp earth containing the tetanus bacillus, so that a cut infects their victim with this disease. It is more probable, perhaps, that the wounds inflicted by these weapons sometimes become infected with the bacilli through the ordinary channels. The North American Indians do not use arrow poisons, nor do the aborigines of Australia, so far as is known.

In spite of the large number of arrow poisons which are known to us, the toxic actions are not very numerous, and can be roughly classed under five headings (although this does not include all, especially locally irritating substances): (1) Those which act on the heart and muscles, like digitalis; (2) those which act on the nerve-endings, like curare; (3) those which act on the nervous system and heart, like aconite; (4) those which act on the spinal cord, like strychnine; and (5) those which have an action something like snake poison.

In addition to my own specimens I have received samples of arrows and poisons from Mr. E. M. Holmes, Dr. Woodhead, Dr. Felkin, and Professor Balfour, and to these gentlemen I have to express my sincere thanks for their kindness.

PHOTO-MICROGRAPHY.—IX.

BY EDMUND J. SPITTA, L.R.C.P. LOND., M.R.C.S. ENG., F.R.A.S.

Let us next place a half-inch objective on the microscope and use it with what is called a "projection" eye-piece. This eye-piece is made especially for projection purposes, and can be procured for achromatics as well as apochromatics. It has a considerably smaller field than the ordinary eye-piece, such being limited by a diaphragm which is meant to be focussed on the ground glass by a slight turning of the front lens. When this diaphragm is so focussed, the eye-piece performs at its best.

Let us use the same slide of the proboscis, but try this time to get details of some one or more of the smaller suctorial tubes. These should now be seen, if the objective be a good one, very sharply defined on the ground glass, but it must be borne in mind that the low power condenser used at first should be removed and one of higher N. A. substituted, otherwise the full benefit of the higher N. A. of the objective may be impaired. We must now, too, be more careful about centering the condenser, the limelight, and the auxiliary lens, for errors of no consequence when using the inch objective are now of more importance. The exact method of centering the condenser will be given when speaking of the 1/6th objective.

The exposure will have to be increased, and as attention has been called to the fact that most writers afford little information upon the subject of exposure altogether, and as I have pledged myself to make these articles as practical and instructive as possible, so I will try and make an attempt to be more explicit.

Theoretically the time of exposure in cases like this increases in the same ratio as the squares of the diameters, or directly as the variation of the areas, *i.e.*, if twice the diameter (four times the area), it will be as 1 to 4. Put another way, supposing the first picture is magnified 25 diameters, and the second 50 diameters, the exposure varies as $25^2 : 50^2$, or as 625 : 2500, which is as 1 : 4.

If then the first negative was found to require two seconds exposure, the second one should receive eight seconds.

This law holds good as a general guide, but it is not always found to be practically correct, owing to the presence of a source of error hitherto not mentioned, and one not so easy to intelligibly explain. When a specimen is photographed in its entirety any small portions of it more dense than the rest become lost and unnoticed in the photograph when taken as a whole; by which is meant the lack of sufficient exposure in these tiny parts of the specimen is unobserved. But when taking a photo-micrograph at a higher scale of magnification it is evident if we get one of these very places now so much enlarged to photograph, the law will not apparently serve us correctly, furnishing us very likely with too short an exposure. But it is not the law that is at fault; on the contrary, it is really quite correct, for the very portion of the specimen which I have said escaped the proper exposure, before now shows how clearly it was under-exposed. But this may not strike the observer until after a little consideration. Anyhow, the law furnishes us with an approximation if we have taken a photograph with a low power first as described. But what if we have not, and are asked to take a photo of a tissue at 300 diameters without any previous experience? Speaking only of the limelight mixed jet, it is a good rule to give an exposure (300 diameters being the magnification) of about twenty seconds for the first plate and sixty for the second. It will be evident then on which side of scale we shall have to proceed. If over-exposed, such is the latitude of the Edwards plate that we may most probably save the picture.

When using the $\frac{1}{2}$ inch, the Davis diaphragm must be touched with a lighter hand than before, and focussing becomes more of an art, and the head should be withdrawn from the ground glass about ten inches, whilst a good dark focussing cloth excludes all extraneous light. If any minute details are desired the coarse ground glass might be removed for the finer one, after the photographer has made sure the light is equal over the plate, and then if necessary the finest of all can be substituted, a Dallmeyer or other focuser being applied while the operator turns his focussing screw gently to and fro till he gets the best results. Great care must be exercised not to shake the apparatus, as if we are using a six projection eye-piece, a $\frac{1}{2}$ inch objective and a twenty-inch extension of the camera, which in our case is done by adding the auxiliary front, it must be remembered one is dealing with a linear magnification of 240 diameters, and, therefore, any shake is itself magnified that number of times in all directions.

It is time now for us to enter into and discuss a phase of our subject, which, although it is of a most engrossing nature and one which has a most important bearing upon things photo-micrographical, yet is very frequently overlooked, and perhaps with some photographers very slightly understood.

It has been plainly pointed out that the apochromatic objective can stand eye-piecing to almost any reasonable extent, and the effect or outcome of this excessively useful property is that magnification of the same amount may be obtained by very different combinations of objective and eye-piece, putting aside for the moment the utility of different camera lengths. As an instance, just for example sake take the following illustration. It is required to magnify an object 250 diameters. This can be obtained in the following manner:—

1. With a 1 inch apo. N. A. $\cdot 3$ and a 4 eye-piece and 60 inch camera.
2. " 1 " " N. A. $0\cdot 3$ " 24 " 10 "
3. " $\frac{1}{2}$ " " N. A. $0\cdot 65$ " 10 " 12 "
4. " $\frac{1}{4}$ " " N. A. $0\cdot 95$ " 4 " 10 "
5. " $\frac{1}{8}$ " " N. A. $1\cdot 40$ " 3 " 10 "
6. " $\frac{1}{2}$ " " N. A. $1\cdot 40$ " 2 " 10 "

Which, then, is the best? Here we have to pause and ask ourselves, first, what is required to be represented in the photograph?

(α) Is it to show the finest details that can be possibly effected in one plane, disregarding altogether the relation of any one part to the whole? or is it

(β) That a general view with as much detail as possible is required of the large objects, but not so much of the small? or

(γ) Merely a general idea of an object with just enough of the leading points to make a recognisable picture and to show as many planes in focus at one time as possible?

Before returning an answer to these questions, I must remind the reader that I have explained in a recent chapter, when speaking about lenses, that although "penetrating power" varies inversely as the square of the magnifying power, still it also varies inversely as the N. A. of the objective. Now with respect to the magnifying power in the present case before us, there is nothing to say, as with each combination the amplitude obtained is practically the same; but it is to the effect produced by change in the N. A. of the system that the attention of the reader must be directed. A word in explanation may here be given. To say that this variation is inversely as the N. A. is only another way of expressing the fact that it varies directly as the reciprocal of N. A., and as the reciprocal of the N. A. is expressed by $\left(\frac{1}{N.A.}\right)$ a ready method of comparing the penetrating power of the different apochromatic powers used is afforded by a study of the accompanying table.

For N.A. $0\cdot 30$	3·338
" " $0\cdot 65$	1·538
" " $0\cdot 95$	1·053
" " $1\cdot 40$	0·714

It is quite evident that the 1-inch gives the greatest depth of focus, and that the $\frac{1}{8}$ th and $\frac{1}{12}$ th, each of $1\cdot 40$, give the least. We can now see which of the six combinations already mentioned will best suit the conditions enumerated in α , β , and γ . If the requirements are as propounded in α , where we desire the highest possible detail irrespective of depth of focus, then small as the field would be in No. 5 or No. 6, the former in preference, will be the combination best suited for the purpose, because the details furnished will be unquestionably greater; but if (γ) where merely the general view of everything is desired everywhere, and detail a secondary object, then I should choose No. 1 or No. 2. But granted that neither the extreme of (α) nor that of (γ) suit the wishes of the photographer, then No. 3 or No. 4 will be the arrangement I should recommend for (β). Here, then, is a great opportunity for the operator to display his "individuality," for he must make his choice, and I counsel those whose experience is limited to try several of the combinations before coming to a definite conclusion.

To resume, having now focussed with the greatest care, we expose—what we think from the considerations laid down to be the correct amount—and develop and fix in the ordinary fashion.

The next class of slide which may be taken with the half-inch is a diatom. It serves to illustrate a different type of object. Before purchasing one—let us say an *Arachnoidiscus ehrenbergii*—the photographer must assure himself it is mounted perfectly flat on the cover-glass and in a highly refractive medium. I know of no mounter of diatoms in Great Britain who can surpass Mr. Firth, of Clifton Park Avenue, Belfast, and few that can equal him; but Thum, of Leipzig, and Möller, of Wedel Holstein, supply slides of exceptional merit and perfection.

In photographing diatoms, apochromatics become almost a necessity—certainly so with high powers—for the manner they seem to pick out the details devoid of all secondary spectrum colours must be seen to be appreciated.

Critical light is an absolute necessity, but the iris will usually want a small amount of closing; in other words, too large a cone is not advisable, but, if too small, the minute marking will seem to have thick cumbersome black edges. No coloured glasses or screens will be here required with these objects. Expose fully about five to twenty seconds and develop deeply, and clear afterwards if necessary. Great care in centering the condenser is obligatory, and the light must be narrowly watched to see it is quite even. If a good negative be procured it can be subsequently enlarged to almost any amount. I have experienced no difficulty in producing a secondary enlargement up to 1800 diameters on Ilford rapid bromide paper in the manner already described.

This concludes a general description of some of the leading objects for medium power work, specimens of which were recently illustrated in the Journal. I propose next to deal with high power or critical photography.

REVIEWS AND NOTICES OF BOOKS.

THE COMING OF THE KILOGRAM; OR, THE BATTLE OF THE STANDARDS. By H. O. ARNOLD FORSTER. Pp. 150. Price 2s. 6d. London: Cassell and Company, Limited. 1898.

The relative advantages of the metric system of weights and measures have never been stated more forcibly than in this modest work, nor have the facts and statistics in connection therewith ever been marshalled in a more interesting fashion. The object of the book is "to make Englishmen realise the position in which they stand in the competition of the civilised world, and to show them exactly what it is that they are risking by clinging to their present system of weights and measures while almost every other nation in the world is adopting another and saner plan." If that object is not attained it will not be the fault of the author, but to the innate contrariness of people who think they know the how and why of everything better than anyone else can tell them. It is not altogether pleasing to the English reader to be told that the book is not intended to be a manual of instruction in the use of metric weights and measures, because "we have not yet arrived at the stage when the admirable text-books in use in France, Germany, and elsewhere, can be of value to a large class in this country." Nevertheless, what is stated by the author is quite true, and he is right in condemning, by implication, the muddle-headed conservatism which prevents British Governments from declaring that the metric system shall become compulsory within some limited time. The longer the day of compulsory change is put off the worse will matters become, for it is absolutely out of the question to imagine that the British public will voluntarily go out of its way to add a knowledge of other standards to the multiplicity it is already burdened with.

Commencing with a chapter on weighing and measuring, in which he deals with the principle of measurement and standards of comparison, the author points out that weights and measures should be uniform, accurate, easily understood and used, widely known, and simple in calculation. All those requirements are met by the metric system, but by no other, and certainly not by the weights and measures in use in this country. We have different pounds, ounces, and drachms, a variety of miles, acres, etc., and an enormous superfluity of antiquated and absurd weights and measures, many of which are employed locally only. Corn is sold in different parts of the country by more than two hundred different measures, many of which agree in name, but in no other respect; a stone weight varies according as it applies to a man, an ox, or to glass; a fodder

of lead changes its weight as it goes along the coast, a pint is not necessarily a pint, nor a quart always a quart. Englishmen have not even the satisfaction of being able to say that they are not worse, in regard to the confusion of their weights and measures, than other people, for as it happens, our system, taken as a whole, is the worst of all. The United States system was as bad, but is gradually improving, though it is still the next worst to ours. But Japan, Turkey, and Venezuela are far and away ahead of us, their old systems of weights and measures having been abolished and the newer and more scientific one adopted. Russia also is about to adopt the metric system.

British weights and measures are used by some 113 millions of people in Great Britain and Ireland, Canada, Australia, Cape Colony, New Zealand, and the United States of America; and the time, money, and patience lost to that enormous number of human beings, most of whom esteem themselves rational, is simply incalculable. The 329 millions of people who habitually use metric weights and measures save time in all their calculations, they also save trouble through being able to perform mental calculation more easily, and the inter-relation of their standards affords them a great advantage over us. That this is so is clearly shown by the author in the chapters wherein he discloses "the secret of ten," and explains the principles of a decimal system. The use of illustrations is freely resorted to in the book, in which the metric system is as fully explained as it is possible for it to be, and compared with the British system to the manifest disadvantage of the latter. The book can therefore be unreservedly recommended to all readers of the Journal, and the sooner they secure copies and digest the contents the better will it be.

THE TUTORIAL ALGEBRA. PART II. ADVANCED COURSE. By WILLIAM BRIGGS, M.A., and G. H. BRYAN, Sc.D., F.R.S. Pp. 596. Price, 6s. 6d. London: W. B. Clive. 1898.

This is a much larger work than the 'Middle Algebra,' by the same authors, but, like that, it is based on the Algebra of Radhakrishnan. It is intended more particularly for the use of students preparing for the Intermediate and B.A. examinations of London University, and follows the same lines as the smaller work, though it carries the student further and goes more deeply into certain subjects. The matter is well arranged and the book clearly printed. Probably no better praise can be awarded to it than to say that it is a worthy addition to the University Tutorial Series, which now includes so many excellent text-books for students—books which contain all that is required without being overburdened with what students are not concerned about.

ELEMENTS OF PHARMACY, MATERIA MEDICA, AND THERAPEUTICS. By WILLIAM WHITLA, M.A., M.D. Seventh edition. Pp. 644. Price 10s. 6d. London: Henry Renshaw. 1898.

This is one of the most useful students' manuals, dealing with the subjects of which it treats from the medical side, and the new edition should have a large demand, considering that it is based on the new B.P., and has been entirely revised and, in great measure, re-written, in accordance with that work. The various sections of the work deal with pharmacy, the administration of medicines, materia medica, therapeutics, and non-official remedies. As an indication of the thoroughness of the revision the book has undergone it may be stated that, whilst much new matter has been introduced throughout without adding to the size of the book, the section on non-official remedies—a most useful one—contains short notices of about three hundred new drugs not mentioned in previous editions.

Pharmaceutical Problems of To-Day.

WESTERN CHEMISTS' ASSOCIATION (OF LONDON).

A special meeting of this Association was held on Wednesday, November 30, at the Westbourne Restaurant, Craven Road, Paddington, to consider the question of

Compulsory Poisons Regulations.

Mr. J. F. HARRINGTON, President, occupied the chair, and there was a good attendance of members.—The PRESIDENT, having explained the purpose of the meeting, asked Mr. J. H. Mathews to open the discussion.—Mr. MATHEWS said he had to bring before the meeting a proposition relating to the making of regulations for the keeping and dispensing of poisons. He pointed out that the question has for many years been a stumbling-block in the way of better pharmaceutical legislation. Although such regulations as were recommended by the Pharmaceutical Society in 1871 were in use to a great extent amongst pharmacists, still they were not adopted by the whole trade, and he was of opinion that it was advisable that some such regulations should now be adopted, as it would strengthen the position of pharmacists considerably and do away with such opposition as they have hitherto met with from the Privy Council. He had pleasure, therefore, in moving that, in the opinion of that meeting the time had arrived for making regulations for the keeping, dispensing, and selling of poisons in accordance with the Pharmacy Act of 1868.—Mr. H. CRACKNELL, in seconding the motion, said that according to the first clause of the Pharmacy Act, 1868, pharmacists were in duty bound to have some such regulations as were recommended by the Pharmaceutical Society. It might be asked if regulations were necessary, and in many cases the answer would be that they are not. But in other cases it was necessary that regulations should be enforced with respect to the keeping, dispensing, and selling of poisons. The object of such regulations would simply be to call to book any pharmacists who by carelessness had been the means of bringing about an accident. There would be no inspectors appointed, and no need for inspection of any kind, but in cases of accident the coroner's jury would make inquiries as to the circumstances under which the poison was sold. It had been pointed out again and again by the Privy Council that, inasmuch as the stipulation in the first section of the Pharmacy Act, to the effect that regulations should be drawn up, had not been complied with, the Pharmaceutical Society had broken faith with the Government. He believed that the opposition to the regulations at the time came largely from country members, but now there is a different state of feeling in the matter. Therefore, in bringing the question forward that night, they simply wanted to make suggestions for discussion throughout the country, and not to say what the regulations should be.

Mr. R. A. ROBINSON, L.C.C., supported the motion, but wished to propose an addendum to the effect that a special meeting of the Pharmaceutical Society should be called, in order to consider the question. He said the question had been brought before the country because it had been borne upon their minds that the present Government was not satisfied with the position of affairs at the present time. When the Pharmacy Act was going through in 1868, the Government wished to make regulations for the keeping and sale of poisons, but the President of the Pharmaceutical Society (Mr. Sandford) asked that no hard and fast regulations should be laid down, but that the making of regulations should be left to the Society,—strangely enough not to the Council—and Mr. Sandford promised that regulations should be made. When the matter came before a meeting of the Society, however, in May, 1871, those present came to the conclusion that there was no occasion for regulations such as had been drafted by the Council, and they were simply adopted as recommendations. Thereupon, Mr. Sandford, he believed, resigned from the presidency. Since then the question had been laid on one side, but whenever the President of the Society had gone to the Privy Council for anything, that refusal had been brought up against the Society. Last Session the Privy Council brought in the Poisonous Substances Bill and put in a clause that it should make regulations for the

keeping and sale of poisons. That placed pharmacists in a very difficult position and was a very strong indictment, and it required some care to show the Government that it was a false position. As an individual interested in the matter, he wrote to the Government giving his views, and his letter was passed on to the Privy Council, which replied. The Bill was subsequently withdrawn, but he was not sure that they were out of the wood yet. He had an interview only that morning with Mr. Fitzroy, the Clerk to the Privy Council, and got a statement from him of some importance. Mr. Fitzroy said, in effect, that if the Pharmaceutical Society adopted poison regulations, it would certainly meet with the approval of the Privy Council, and would go a long way towards putting the Society right with the Council and with the public. In addition, he said that the Privy Council is not doing anything at present in the matter, and that the Poisonous Substances Bill would not be introduced again without a consultation with the Pharmaceutical Society. He (Mr. Robinson) urged upon him that the proper thing to do was to bring in a Bill to extend the present Poison Schedule, and Mr. Fitzroy seemed to agree with that. There was no doubt that the Lord President would be made acquainted with what had passed during the interview that morning, and he (Mr. Robinson) thought there was a better chance than there had been for some time past of the Pharmaceutical Society being brought into closer contact with the Privy Council. Personally, he was pledged to bring the matter before the Society, if no one else did, but if the proposed addition was made to the motion before the meeting, then, of course, the question would be brought forward by that Association. The law was that if thirty members of the Society signed a requisition the Council was bound to call a meeting of the Society. Mr. Robinson then read the following:—

RECOMMENDATIONS FOR THE KEEPING, DISPENSING, AND SELLING OF POISONS.

(Adopted at a General Meeting of the Pharmaceutical Society, May 17, 1871)

1. That in the keeping of poisons each bottle, vessel, box, or package containing a poison be labelled with the name of the article, and also with some distinctive mark indicating that it contains poison.
2. Also that in the keeping of poisons, each poison be kept on one or other of the following systems, viz.:—
 - (a) In a bottle or vessel tied over, capped, locked, or otherwise secured in a manner different from that in which bottles or vessels containing ordinary articles are secured in the same warehouse, shop, or dispensary; or
 - (b) In a bottle or vessel rendered distinguishable by touch from the bottles or vessels in which ordinary articles are kept in the same warehouse, shop, or dispensary; or
 - (c) In a bottle, vessel, box, or package kept in a room or cupboard set apart for dangerous articles.
3. That in the dispensing and selling of poisons all liniments, embrocations, and lotions containing poison be sent out in bottles rendered distinguishable by touch from ordinary medicine bottles, and that there also be affixed to each such bottle (in addition to the name of the article, and to any particular instructions for its use) a label giving notice that the contents of the bottle are not to be taken internally.

He pointed out that there could be no difficulty in complying with such regulations, as they would be found to be applicable for either town or country, being specially made so elastic as to suit all classes of chemists. They were wise regulations and would do chemists no harm, nor would they affect their dignity in the slightest degree, seeing that they were already subject to regulations, as also were other persons in equally dignified positions. They had now an opportunity of getting on good terms with the Privy Council and the Government, and if they did not adopt regulations themselves, there could be no doubt that the Government would bring in a Bill which would take the matter out of their hands.—Mr. MATHEWS having no objection to the proposed addition to his motion, he formally withdrew it, and Mr. ROBINSON then moved:—

That in the opinion of the Western Chemists' Association (of London) the time has arrived for making regulations for the keeping, dispensing, and selling of poisons, in accordance with the Pharmacy Act of 1868, and also that a special meeting of the Pharmaceutical Society should be called in order to consider the question.

Mr. MATHEWS seconded the motion, and Mr. J. W. TAPLIN said he quite agreed with it. Of course, there would have to be some

slight modifications of the recommendations as they now stand, and there would be a great many poisons not in the Schedule, to which they would not apply.—Mr. PHILLIPS wished to know how the regulations would be enforced.—It was pointed out by Mr. Robinson and others that there would be no inspection required, but if an accident happened, then, if the regulations had not been properly carried out, the chemist implicated would be liable to a penalty.—Mr. J. C. HYSLOP spoke in favour of the adoption of regulations, and expressed the opinion that there should be some legislation with regard to dispensing, and that any regulations should order poisons to be arranged according to dosage.—Mr. G. S. TAYLOR thought it a right and proper thing to adopt some kind of poisons regulations, because if they, as pharmacists, wished to secure a better Act than they had at present, the only way to succeed with it was to get right with the Privy Council. It was really a very little concession for them to make, because he believed that most practical pharmacists do all that is necessary now, and as for compulsion, they were already subject to it.—Mr. WOOLLONS agreed that the majority of chemists do keep their poisons as they ought to be kept. He thought the fear of inspection was a bogie. He would like to see it made illegal for any poison to be supplied in unsuitable bottles, and thought that the onus should not be thrown upon the chemist of refusing to serve poisons in a wrong class of bottles.—The motion was then put and carried unanimously.—A requisition asking the Council of the Pharmaceutical Society to call a special meeting to consider the question was then handed round amongst the members of the Society present for signature, and after a few items of private business, the meeting terminated.

MANCHESTER PHARMACEUTICAL ASSOCIATION.

A special meeting of this Association was held at the Victoria Hotel, Manchester, on Wednesday, November 30, for the purpose of discussing resolutions submitted by the Federation of Local Associations.—Mr. G. S. WOOLLEY, President, occupied the chair, and there was a fair attendance.—The CHAIRMAN said that the resolutions sent by the Federation of Local Associations contained matter of such importance that the Committee thought it was worthy of an extra-ordinary meeting being called. He was glad to notice there was a considerable revival in pharmaceutical politics throughout the country, and he was also pleased to see interest was shown in Manchester. He thought it their duty to keep the interest alive, and do what they could to stimulate their fellow-craftsmen in the district to exert themselves to assist the Pharmaceutical Society, and to do everything in their power to promote the legislation that they all so urgently desired.—Mr. HARRY KEMP introduced the discussion of the resolutions. Dealing with the first item, the importance of

FIRMS TRADING UNDER TITLES,

using the names of present proprietors in conjunction, he said he hoped the gentlemen present would take a lively interest in those matters, because he felt quite sure that what was done that night would in a great measure be reflected in other localities, and that they would have an expression of opinion from other parts of the country. On more than one occasion the President of the Pharmaceutical Society and others, as knowing something of the inner workings of the Council, had expressed themselves to the effect that they wanted to know what are the wishes of the trade generally. Sometimes it was facetiously said that it was desirable that the tail should wag the dog, and if they were the tail, and the Pharmaceutical Council the dog, the sooner they wagged the dog the better. At Belfast the matter was placed in such clear light that there was not a dissentient voice. As to the first item being carried out, it might happen that a new proprietor might come in who was not a qualified person at all. He had reason to believe that certain gentlemen, whose names he mentioned, who traded under old titles, would be willing to fall in with such a suggestion if it was thought desirable. He felt sure, if the matter were dealt with on those lines, they would have good grounds for including in the case of registered companies the name of the qualified manager on the labels, and thus see that the dispensing of poisons was in the hands of a properly qualified man. On the second item, the question of

ALLIANCE OF ALL REGISTERED CHEMISTS

with the Pharmaceutical Society, that was a matter which

could not be dealt with quite so quickly. But they were all aware, of course, that the Pharmaceutical Society had, during the past twelve months, been successful in passing into law an amendment of the Pharmacy Acts, for the consolidation of the Society. It was now possible for every member on the Register to have equal privileges with those who had been members in the past, and they had now no reason to hold aloof. There were others, again, who had the old excuse that the Society had done nothing for them, and they would not do anything for the Society. This was a short-sighted view of matters, and he trusted under the new conditions no registered person would remain outside any longer. It was essential that the Pharmaceutical Society should have a strong following, and he hoped the time was coming when the present state of things would be altered. If Manchester took the lead in that matter they would find plenty of other places ready to follow. Mr. Kemp next dealt with the Secretary's circular showing the democratic constitution of the Pharmaceutical Society, and he held that if this were carefully studied it would result in an improvement of their position. The Pharmaceutical Society took the lead in killing or scorching the Poisonous Substances Bill, and those who did not subscribe to the Society benefited equally with those who did; it was therefore desirable for all to subscribe to a society which existed for their protection and advancement. He was glad that a Committee had been formed in Manchester at the instance of the Council of the Association, and he did hope that they would in consequence have a large accession of members, as it would eventually be for the good of the whole trade. In regard to the

REGULATION OF THE KEEPING AND STORING OF POISONS,

this was one on which considerable differences of opinion existed. He urged, however, that they had suggestions on the point which were of a practicable character. When the Duke of Devonshire brought in the Poisonous Substances Bill he made a great deal of the fact that the Pharmaceutical Society had been existing for thirty years and had never done anything to get this brought in as a regulation, and he almost as much as said that they were going to take it out of the hands of the Society and place it in the hands of the medical officer of the Privy Council to say under what conditions poisons should be kept and stored, and what regulations should be made from time to time for the storing and keeping of poisons by chemists. This, in his opinion, would be an undesirable thing, because if the Act were placed on the Statute Book they would have some system of inspection, which was always repulsive to English minds. He did not think there were any pharmacists who did not comply with the regulations as to labelling poisons. Another point was that, regulation or no regulation, they ought to have some system of separating poisons from ordinary drugs. He saw no reason why those recommendations should not become regulations and subject to the penalties of the Pharmacy Act. He moved, first—

That this meeting approves of the suggestion that all registered chemists trading under ancient titles shall be required to use the name of the present owner in conjunction therewith.

Secondly,

That this meeting, believing it to be to the best interests of the trade that the present recommendations for the storage, etc., of poisons, should become regulations subject to the provisions of the Pharmacy Act, requests the Council to take early steps towards this end.

—Mr. WOODRUFF next moved—

That this meeting pledges itself to use every effort to induce all registered chemists to ally themselves with the Pharmaceutical Society, and thereby lead to the consolidation of the craft.

—Mr. PERCY KNOTT (Bolton) seconded all the three motions.—A discussion followed, the CHAIRMAN remarking that, judging from revelations recently made, it was very desirable that some amendment should be made in the constitution of limited companies.—Mr. WALTER GIBBONS urged that the Pharmaceutical Society should take friendly action to test the position of such companies trading as chemists.—Mr. RYMER YOUNG supported Mr. Woolley's motions, which were agreed to.—On Mr. WOODRUFF's proposition being discussed, the CHAIRMAN said they had seen what they could achieve with united action recently; if they got a strong body they might accomplish something which would be of use afterwards.—Mr. J. PHILLIPS (Wigan) supported, as did Mr. RYMER YOUNG, who remarked that it was not, as had often been said, a question of guineas. The Pharmaceutical Society in its normal condition was not in want of guineas, but it was absolutely necessary it should have the trade behind it.—The motion was then agreed to.

FORMULÆ, METHODS, AND REACTIONS,
KNOWN BY THE NAMES OF THEIR AUTHORS.

Supplementary List.*

Boedecker (SULPHITES).—On adding zinc sulphate solution with a little sodium nitroprusside, to a neutral liquid a rose to dark-red colour appears if sulphites be present; under similar circumstances potassium ferrocyanide gives a purple precipitate.

Boehm (BOMBAY MACE).—When an alcoholic extract of Bombay mace is filtered through pure white filter paper, the paper is only stained a pale yellow colour, and when dried the red colour of Bombay mace appears round the edge.

Boettger (ALCOHOL).—A blue coloration is produced on adding a solution of molybdic acid in sulphuric acid. When alcohol is present in essential oils, it can be removed by shaking with glycerin. Or, a piece of dry potassium hydroxide added to the oil is soon covered with a yellowish film.

Boettger (AMMONIA).—Gaseous ammonia changes the colour of alcannin paper from red to blue.

Boettger (ANIMAL FIBRE).—A piece of the fabric is treated with an alcoholic solution of rosolic acid, then with soda solution and washed. Animal fibres (such as wool) are dyed red, linen (flax) pink, but cotton remains uncoloured. Compare with Liebermann's test.

Boettger (COTTON AND LINEN FIBRES).—The fabric is dyed with fuchsine solution, washed out with water, then treated with ammonia. Cotton thus treated is decolorised, while flax retains the dye.

Boettger (FLOUR IN STARCH).—If flour be present in starch, a more or less persistent foam is produced on boiling 1 Gm. of the mixture with 180 C.c. of water, and stirring briskly with a glass rod.

Boettger (HYDROGEN PEROXIDE).—On heating a liquid containing hydrogen peroxide with a few drops of ammoniated silver nitrate solution containing no free ammonia, cloudiness is produced and the silver is reduced. See *P. J.* [4], iv., 510.

Boettger (INDICATOR).—The colour of tincture of *Coleus verschaefelti* is changed from red to green on adding to an alkaline solution.

Boettger (MANGANESE).—A red coloration is produced on throwing a little manganese into fused potassium chlorate.

Boettger (NITRIC ACID).—If nitric acid be present in potable water, a red to brownish-red colour is produced on mixing 3 drops of the water, with two drops of brucine solution, and 3 or 4 drops of sulphuric acid.

Boettger (NITROUS ACID).—A blue colour is given by nitrous acid on adding diluted sulphuric acid and cadmium-iodide starch paste. See Boettger's reagent.

Boettger (REAGENT).—This reagent consists of a solution of cadmium iodide and starch prepared thus: Starch, 1, is dissolved in water, 200, and hydrochloric acid, 1. The solution is then neutralised with calcium carbonate, 10; sodium chloride, 10; and cadmium chloride, 0.5, are then added, and the solution made up to 250 with water.

Boettger (SAFRANINE).—On adding sulphuric acid safranine turns blue, and the subsequent addition of water changes the colour to green.

Boettger (SULPHOCYANIDES).—Filtering paper dipped in tincture of guaiacum and dried, then moistened with copper sulphate solution (1:2000), is coloured blue by sulphocyanides in solution.

Boettger (WATER IN ETHER).—Ether containing water causes a milky appearance on being shaken gently with an equal bulk of carbon bisulphide.

Bogomolow and Wassilieff (PEPTONE).—The accompanying albuminoids are precipitated by means of trichloroacetic acid, and the presence of peptone revealed in the filtrate by means of the biuret reaction. See Devoto's reaction for peptone.

Bohland (URINARY DEPOSITS).—To preserve urinary deposits, decant the supernatant urine, wash the residue with physiological salt solution (sodium chloride, 4; sodium carbonate, 3;

water, 1000), then treat with Mueller's solution, renewing this three or four times in the course of 14 days. Finally harden with alcohol, frequently renewed until it is colourless.

Böhmer (HÆMATOXYLIN).—Add 2 or 3 drops of a solution of hæmatoxylin (1 p.c.) in absolute alcohol to a watch-glassful of an aqueous solution of alum (0.5 p.c.), leave the sections in the mixture for half a day to a day, then pass them in succession through absolute alcohol, alcoholic solution of tartaric acid, absolute alcohol again, then through benzol or turpentine. Finally mount in castor oil.

Böhn (NEUTRAL CARMINE).—Rub up in a mortar 3 or 4 Gm. of carmine and 200 Gm. of water; then add ammonia, drop by drop, until the solution acquires a cherry-red colour. Next add acetic acid until the solution becomes of a sealing-wax red, and filter. To intensify the colour add 2 drops of ammonia before filtering, and expose in an open vessel until the odour of the ammonia disappears. Stain tissues in this for 24 hours (or longer if they exceed 1 Mm. in thickness), after which wash out with a mixture of equal parts of glycerin and water, acidulated with 0.5 p.c. of hydrochloric acid.

Bolas (NITRIC ACID).—Mix 10 parts of sulphuric acid with 1 of ferrous sulphate solution, heat, and pour the suspected liquid cautiously on top. A brown zone is produced in the presence of nitric acid.

Borne (MACERATION FLUID).—Mix 10 p.c. sodium chloride solution, 5, with absolute alcohol,

Bornstein (SACCHARIN).—The substance is extracted with ether, and the residue, on distilling off the solvent, is heated with resorcin and concentrated sulphuric acid. If saccharin be present a marked fluorescence is produced on saturating with caustic soda.

Borntraeger (INDICATOR).—A concentrated tincture of fresh orange peel, shaken up with ether, is not affected by acids, but turns lemon-yellow with alkalis.

Borodin (SOLUBLE PRECIPITATES).—This process consists of treating the precipitate with a saturated solution of the body with which it is considered to be identical. For instance, a vegetable microscopical preparation, containing a substance, suspected to be asparagin, is treated with a saturated solution of that body. If it be asparagin, it will be insoluble, whereas if it be not it will probably be dissolved.

Borsarelli (ALCOHOL).—On heating essential oils containing alcohol with dry calcium chloride a dense solution is formed.

Böttcher (STAINING METHOD).—Preparations are treated with Müller's fluid, followed by alcohol, then stained with rosaniline nitrate dissolved in glycerin and water, washed out with alcohol, cleared with creosote or clove oil, and mounted in balsam.

Boudet (OLIVE OIL).—Note the colour produced on adding 3 parts of a mixture of equal volumes of sulphuric and nitric acids to 10 parts of the oil, and the change in consistence caused by the addition to the oil of fuming nitric acid. See also *P. J.* [4], iv., 510.

Bourgoin (NITROBENZOL).—On shaking 15 drops of essential oil of bitter almonds with 8 drops of potash solution, a green colour is produced if nitrobenzol be present, and on subsequently adding 20 drops of water two layers are formed—the upper one green, the lower one yellow.

Bourne (BORAX CARMINE).—Mix a saturated solution of carmine in 4 p.c. borax solution with an equal volume of 70 p.c. alcohol. Let the mixture stand for a week, then filter, and if carmine should be deposited subsequently, filter again. Leave tissues in this stain for 1 to 3 days, according to size, then immerse them in acidulated alcohol for 3 to 6 hours until bright and transparent.

Bourreau (ALBUMIN).—See Koch's reagent.

Boussingault (NITRIC ACID).—This depends upon the decolorisation of solution of indigo in sulphuric acid in the presence of hydrochloric acid. A little of the latter is heated in a test tube, a few drops of very dilute indigo sulphate solution are added, then the substance to be tested. In the presence of nitric acid the blue colour is discharged.

Bouvier (AMYLIC ALCOHOL).—Alcohol containing fusel oil acquires a yellowish colour on adding a few crystals of potassium iodide and agitating gently.

* After Wilder, Schneider, Altschul, Lee, Squire, Crookshank, etc. Continued from p. 487.

Braconnot (ARSENIC).—Extract the arsenic with alcohol and test with sulphuretted hydrogen.

Bradford (OLIVE OIL).—The production of a reddish colour on shaking olive oil with solution of lead subacetate indicates the presence of cotton-seed oil.

Brand (ABRSTOL IN WINE).—The wine is first treated with lead peroxide and sulphuric acid to eliminate other colouring matter; it is then shaken out with chloroform. On evaporating off this solvent any abrastol present is left and may be identified by its giving a green colour reaction with sulphuric acid.

Brand (THALLEIOQUIN).—As modified by Hyde this reaction consists in acidulating a solution of quinine containing 5 Mgm. of the alkaloid, with one drop of sulphuric acid (1 : 4), passing through a small filter and adding solution of chlorinated lime until the bluish fluorescence at first visible is destroyed. A few drops of dilute ammonia (1 : 3) are now added when, if quinine be present, a bright green colour is obtained. On the addition of dilute sulphuric acid this changes to red.

Brandberg (BENZOL-BENZINE).—Pitch dissolves in benzol, but not in petroleum spirit.

Branson (ASSAY OF GOLD CHLORIDE).—Take about 15 grains of the salt dissolved in water. Add 25 C.c. of normal oxalic acid solution. Set aside for 36 hours at about 21° C. and expose to light for 12 hours, then boil, collect the precipitate, dry, incinerate, and weigh the metallic gold.

Brantlecht (POTABLE WATER).—To detect organic impurities in potable water, treat 100 C.c. with 5 drops of aluminium sulphate solution (aluminium sulphate, 1; hydrochloric acid, 1; water, 8), and add 1 or 2 drops of ammonia. Filter off the precipitate, dissolve it in 10 or 15 drops of diluted acetic acid, and examine under the microscope before and after the addition of safranine.

Braun (CHLORATES).—A cherry-red colour is produced with chlorates on adding a solution of aniline sulphate containing toluidin and hydrochloric acid. On neutralising, the colour changes to blue.

Braun (MOLYBDIC ACID).—A yellow to flesh-coloured precipitate, which soon becomes violet, is formed on adding to a very dilute solution of molybdic acid containing a little nitric acid, an aqueous solution of potassium ethyl-sulpho-carbonate.

Braun (NICKEL).—A rose-red to deep brownish-red colour, almost black, results when a solution of potassium sulphocarbonate is added to a solution containing nickel.

Braun (NITRIC ACID).—Add to 1 C.c. of sulphuric acid, drop by drop, 0.5 C.c. of aniline sulphate solution, prepared by mixing 10 drops of aniline with 50 C.c. of diluted sulphuric acid. Place a little of this reagent on a porcelain plate and draw through it a glass rod dipped in the suspected liquid. If nitric acid be present a reddish fringe is produced on breathing upon the surface of the mixture.

Bremer (GLUCOSE IN BLOOD).—Equal volumes of saturated solutions of eosin and of methylene blue are mixed, the resulting precipitate collected on a filter, dried, finely powdered, and mixed with 1/24th its weight of eosin and 1/6th of methylene blue. When required for use from 2 to 5 centigrammes of this mixture are dissolved in alcohol (33 p. c.), 10 grammes. A cover-glass with a drop of the blood to be examined is immersed in this solution for 4 minutes. The production of a blue-black colour indicates glucose.

Bremer (SESAME OIL).—To a cooled mixture of 50 C.c. of absolute alcohol and sulphuric acid add 10 drops of furfural. When 1 drop of this reagent is stirred with sesame oil (or with margarine containing that oil) it develops a red colour in 1 or 2 minutes. Pure butter and albuminoids are not thus coloured. Compare Villavecchia and Fabri's reagent.

Brieger (STRYCHNINE).—Pure chromic acid gives a violet colour with strychnine.

Brösicke (STAINING METHOD).—Treat tissues with 1 per cent. osmic acid solution for 1 hour, then wash out carefully and immerse for 24 hours in cold saturated aqueous solution of oxalic acid. The tissues should not be allowed to blacken in the osmic acid bath.

Brown (COPPER).—The copper salt in solution is treated with excess of potassium iodide and cuprous iodide precipitated. The iodine in this is determined with a standard solution of thio-sulphate.

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P.*

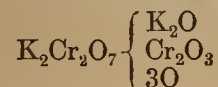
Ferrum Redactum.—This is now required to contain 75 per cent. of metallic iron. Fuge's process is adopted for the determination of this constituent: It is the one mentioned in the previous article on Reduced Iron (*vide P. J.*, June 12, 1897), as being more satisfactory than the old iodine method. The reactions involved are as follows:—



The filtrate will contain ferrous sulphate and a small excess of copper sulphate. It is acidulated and titrated with vol. sol. of potassium bichromate (or with potassium permanganate):—



Since the potassium and chromium of the bichromate form the sulphates K_2SO_4 and $\text{Cr}_2\text{3SO}_4$, corresponding to the oxides K_2O and Cr_2O_3 , it is evident that one molecule of bichromate yields three atoms of available oxygen in this and similar cases where bichromate is used as an oxidising agent. This will be more easily understood if we split up the formula thus:—



Since three atoms of oxygen are equivalent to *six* atoms of hydrogen, a *normal* solution (*i.e.*, a solution containing one gramme of replaceable hydrogen, or equivalent quantity of some other element, per litre) of potassium bichromate contains $\frac{1}{6}$ th M. Wt.

$$\text{K}_2\text{Cr}_2\text{O}_7 \left(\text{or } \frac{292.3}{6} = 48.7 \text{ grammes} \right)$$

in grammes in one litre. The official volumetric solution contains 4.87 grammes per litre, and is hence a N/10 solution. In the equation already given it will be seen that $\text{K}_2\text{Cr}_2\text{O}_7 \equiv 6\text{FeSO}_4$, or 6Fe in terms of metallic iron.

Now 1 litre of N/10 $\text{K}_2\text{Cr}_2\text{O}_7$ contains 4.87 grammes $\left(\frac{\text{K}_2\text{Cr}_2\text{O}_7}{60} \right)$
 $\therefore 1 \text{ ,, ,, ,, is equivalent to } 5.56 \text{ grammes of iron.}$
 $\left(\frac{6\text{Fe}}{60} = 5.56 \right)$
 $\therefore 1 \text{ C.c. ,, ,, } \equiv .00556 \text{ gramme of iron.}$

Consequently the 33.7 C.c. mentioned in the official test indicate 0.187 gramme (0.00556×33.7) of metallic iron in the 0.25 gramme of ferrum redactum, or 74.95 per cent.

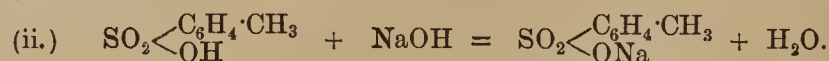
Glusidum.—The preparation and reactions of this compound provide material for illustrating a number of reactions having general interest in organic chemistry. It is made from toluene (methyl benzene). The first step is to prepare toluene sulphonic acid by the action of strong sulphuric acid on the toluene:—



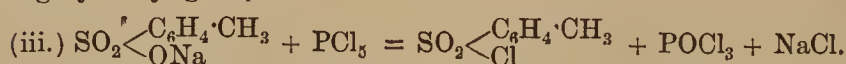
The facility with which the benzene hydrocarbons can be thus sulphonated distinguishes them from the paraffin hydrocarbons. Since toluene sulphonic acid is a di-derivative of benzene it can exist in the three varieties, distinguished by the three prefixes ortho-, meta-, and para-, according to the relative positions of the two substituting groups in the benzene nucleus. When, as in the formation of toluene sulphonic acid, a mono- is converted into a di-derivative, it has been found that the position taken up by the entering radicle is dependent upon the nature of the substituting radicle *already present* in the benzene nucleus and only in a slight degree upon the nature of the second radicle to be

* NOTE.—This series of articles should be read in conjunction with the series referring to the 1885 B.P., and published in the *P. J.* during 1897 and the earlier portion of the current year.

introduced. Thus, speaking generally, if the group already present be (HO), (CH₃), or other hydrocarbon residue, Cl, Br, or (NH₂), the second entering group takes up partly the ortho-, and partly the para-position relatively to the first. On the other hand when the mono-substitution product contains the following groups (NO₂), (COOH), (SO₂OH), (C·O·H), then the meta-di-derivative is obtained. These rules may be easily remembered by observing that the substances obtained by adding hydrogen to the groups of the first class are all difficult to oxidise, viz., H₂O, CH₄, HCl, HBr, and NH₃; while in a similar way we obtain from the groups of the second class substances easily oxidised, viz., HNO₂, H·COOH, H₂SO₃, HC·O·H. By the action of sulphuric acid on toluene, we should expect therefore to obtain a mixture of ortho- and para-acids, but none of the meta-toluene sulphonic acid. The relative proportion of these two acids obtained in this and analogous cases varies in each case and with the conditions under which the reaction is carried out. It has been found that by sulphonating toluene at a temperature not exceeding 100° C., the ortho-acid is formed in greater quantity than the para-acid, and since the para-acid is useless (for reasons which will be explained later on) for the preparation of gluside, the reaction between toluene and sulphuric acid is carried out below 100° C. The mixture of ortho- and para-toluene sulphonic acids are then converted into their sodium salts by neutralisation with sodium hydroxide :—



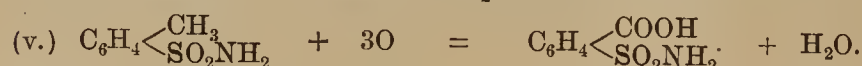
The sodium salts are next converted into the acid chlorides by the action of phosphorus pentachloride. This change essentially consists in the replacement of the hydroxyl of the acid by one atom of chlorine—behaviour which is quite typical of the reaction of phosphorus pentachloride (and trichloride) with bodies containing hydroxyl groups.



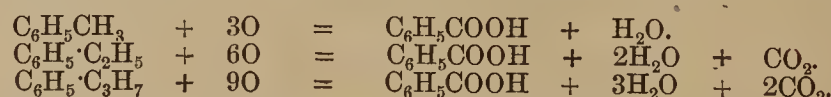
At this stage the para-compound mostly crystallises out, leaving a fluid residue containing chiefly ortho-toluene-sulphonic chloride. This compound by treatment with ammonia is converted into ortho-toluene-sulphonamide :—



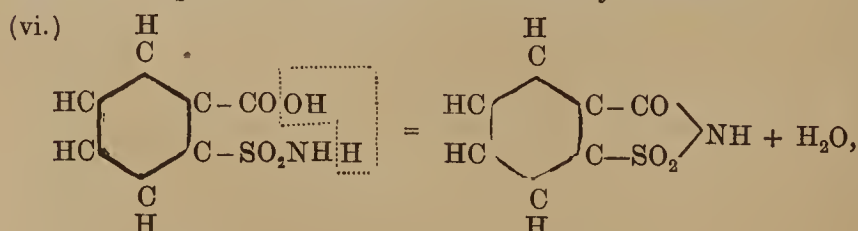
This reaction is quite typical of the behaviour of acid chlorides with ammonia. By oxidation with potassium permanganate in neutral solution the methyl group of the toluene residue in the sulphonamide is oxidised to carboxyl, giving, therefore, a derivative of benzoic acid, viz., ortho-sulphon-amido-benzoic acid :—



Oxidation of benzene derivatives containing alkyl side chains (methyl, ethyl, propyl, etc.) always finally results in the complete oxidation of these down to the last carbon atom connected with the benzene nucleus. Benzoic acid, or some derivative thereof, if the compound oxidised contained already some other substituting group or groups (as in the case under discussion), is consequently obtained. Thus methyl-, ethyl-, or propyl-benzene all yield benzoic acid :—



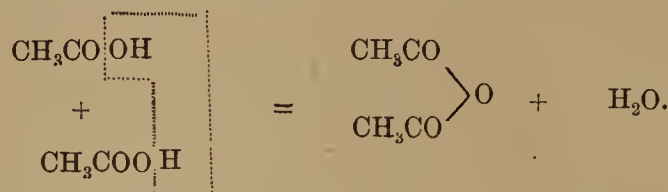
The ortho-sulphamido-benzoic acid immediately loses water—



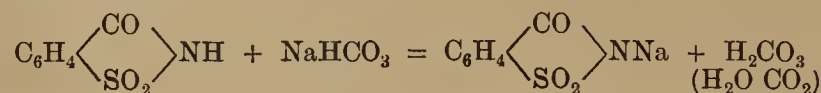
forming gluside, or benzoyl-sulphonic-imide.

The latter name is obtained by regarding gluside as a derivative of benzoyl, C₆H₅CO (the acid radicle of benzoic acid C₆H₅CO·OH) containing the sulphon (—SO₂—) and imido (=NH) groups. It belongs to a class of bodies known as *inner* anhydrides, which

are so-called because they are obtained by the separation of a molecule of water from *one* molecule of the acid. Compare equation (vi.). Ordinary anhydrides are derived by the removal of water from two molecules of acid :—



In describing the preparation of gluside, it has been mentioned that only the *ortho*-toluene-sulphonic acid was desired. The reason for this is that only the *ortho*-sulphamido-benzoic acid, containing the sulphamido and carboxyl groups linked to *contiguous* carbon atoms in the benzene nucleus, forms this inner (or intra-molecular) anhydride. The corresponding meta or para in which the substituting sulphonamide and carboxyl groups are separated by one or two carbon atoms do not form inner anhydrides, and have, moreover, no sweet taste. With regard to this formation of inner anhydrides compare the behaviour of phthalic and succinic acids, and the formation of lactones from the γ -oxy-acids of the fatty series. The hydrogen atom combined with nitrogen in gluside can be easily replaced by electro-positive metals or groups. The acidic nature of this hydrogen is due to the influence of the closely associated electro-negative carbonyl (CO) and sulphonyl (SO₂) groups. Typical organic acids which contain the carboxyl group CO·OH, owe their acid properties to the association of the hydroxyl with the carbonyl group. When aqueous solutions of gluside are treated with sodium bicarbonate the sodium compound or "soluble saccharin" is formed :—



The reason why gluside is not readily charred by warm sulphuric acid can be easily seen by inspecting its formula. The side chains contain only one carbon atom and that closely associated with oxygen, while the carbon in the aromatic nucleus is not easily disturbed by sulphuric acid, as is shown by the formation of such compounds as benzene sulphonic acid from benzene.

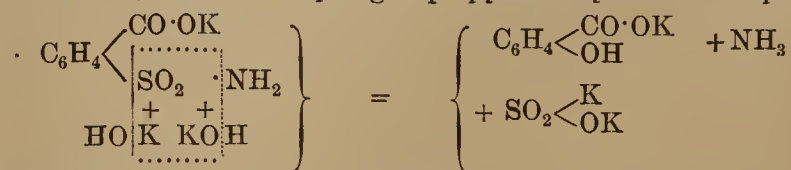
When *boiled* with potassium hydroxide *solution* the anhydride formation is broken up, the potassium salt of the corresponding acid, ortho-sulphamido-benzoic acid, being formed :—



When this solution is evaporated and *fused* with the excess of hydroxide the sulpho-group is eliminated and replaced by hydroxyl, the potassium salt of ortho-hydroxy-benzoic acid (salicylic acid) being formed. The fused mass dissolved in water, and the excess of potassium hydroxide removed by neutralisation with hydrochloric acid, gives the characteristic test with ferric chloride for salicylates. The elimination of the sulpho-group by fusion with caustic alkali is quite typical of the benzene-sulphonic acids and their derivatives. Compare the practical process in your text-book for the synthesis of phenol from benzene by means of the potassium benzene sulphonate—



In the case of glucoside, the nitrogen in the side chain is evolved as ammonia, while the sulpho group appears as potassium sulphite.



The sulphamido-benzoic acid referred to in the last official test is probably the *para*-variety derived from the corresponding *para*-toluene-sulphonic acid (*vide supra* process for preparing gluside). As a rule, inner anhydrides in the aromatic series can only be formed from bodies having the groups, from which the water is eliminated, in the adjacent or ortho-position. Consequently *para*-amido benzoic acid will not eliminate water with formation of an imide, like the corresponding ortho-acid.

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COMPANY TRADING AND THE PHARMACY ACT.

THE proceedings of local associations appear recently to have given evidence that the imperative necessity for the incorporation of all persons carrying on the business of chemists and druggists—so much talked about forty years ago—is now more really appreciated as being a prime condition of their welfare and even of their continued existence. This circumstance gives encouragement to consider, again, the claims that chemists registered under the Pharmacy Act are entitled to make, as legally qualified members of a body recognised by the State and, in that capacity, individually authorised, to perform certain functions. The Act of 1868, like all arrangements that are the result of compromise, has manifold inherent defects, which have been only partially mended by subsequent judicial constructions. As a means of adequately regulating the practice of pharmacy the Act fails altogether; from its deficiency, even in regard to the business of chemists and druggists in the wider sense, it has well earned the designation of being merely a “wretched poison Act” and it has given rise to general dissatisfaction. Judicial construction has upheld the object of the Act—so far as the public are concerned—by affirming the necessity of personal qualification of the mechanical seller of poisons within its meaning; but there is still difference of opinion as to the necessity of the complementary condition, viz., that the keeping open shop for the sale, dispensing, or compounding of poison in connection with the use of a distinctive title, requires the same individual qualification. In that respect the construction of the Act, relating to the position of companies and to the exercise of the chemist's business by them, is unquestionably most unsatisfactory from every point of view but that of companies which have thus acquired some apparent recognition of their claim to be “above all law,” as Mr. Newton put it when hearing the case of the Pharmaceutical Society *v.* the London and Provincial Association, in 1878, at the Marlborough Street Police Court. Since the object of the Pharmacy Act, 1868, was to establish a legal qualification and new conditions for the exercise of a business which had previously been uncontrolled and open to anyone, provision for conserving the interests of persons already known as chemists and druggists had of necessity to be made and such persons as could show they had been so engaged were placed upon the Register of Chemists and Druggists as entitled to keep open shop under the designation of chemist and druggist. There is no record of any application to be registered having been made by a corporation or limited liability company; that circumstance may therefore be taken as evidence that no such companies were at that time carrying on the business. The absence of reference to companies, in the Act, is consequently intelligible, as such companies were non-existent at the time as keepers of shops for the sale, dispensing, or compounding of poisons. Moreover, the only persons indicated as capable of becoming qualified under the Act are those capable of undergoing examination, there is, therefore, no ground for supposing that the contingency of a company, consisting of unqualified persons, carrying on

that business, as an artificial person, was overlooked, indeed a provision that such exercise of the business would be unlawful, would have been superfluous and absurd. In this connection it is interesting to refer to the terms of the declaration to be made by applicants for registration (Schedules C and D) as showing that the provisions of the Act apply to, and were intended to apply specifically to, individual persons, even in the case of firms carrying on the business. Moreover, the one prospective qualification, established by the Act, relates to “persons keeping open shop,” and that qualification is to be acquired by them “before commencing such business,” clearly showing that the qualification was intended to apply to persons engaged in business on their own account, and not to persons acting in the capacity of assistants or servants.

The position now existing is that in face of a statutory enactment which, in its principle, distinctly points to the necessity for qualification of the individual proprietor or proprietors of a chemist's business and, in its details, affords evidence that such individual proprietary qualification was contemplated by the Legislature and intended to be the essential condition for exercising the business; in face also of the judicial construction which has, at least, recognised the qualification of individuals, performing the functions to which the Act relates, as being essential in the public interest, there is the practice which ignores all these indications. Combinations of unqualified persons—incorporated as limited liability companies—carry on the business of chemist and druggist with no further pretext of justification than the plea that the artificial person, thus constituted, being incapable of qualifying as the Act requires, is outside the scope of the Act and, therefore, not amenable to its provisions. That, in itself, is but a one-sided view and the more rational inference would be that such an artificial person is necessarily disqualified for the performance of functions requiring individual personal qualification as the Act provides. Even the view taken by the House of Lords, in the case above referred to—that personal qualification of the individual selling, dispensing, or compounding poisons, as the servant of a company, satisfied, in that particular case, all the requirements of the Act, as a public measure, so far as the safety of the public was concerned—cannot be regarded otherwise than as partial and one-sided. The safety of the public was, no doubt, the chief object of the Act; but the imposition of conditions on the exercise of the chemist and druggist's business, with that object, carries with it, even in the interest of the public, the implication that the persons keeping open shop for retailing, dispensing, compounding etc. and known in that capacity as chemists and druggists, are to possess competent practical knowledge of their business and to be certified accordingly, as the Act provides. Unqualified persons, combined to constitute a limited liability company, do not fulfil those requirements, either individually or in their corporate capacity. The members of a company, being unqualified, are in either capacity, incapable of legally keeping open shop as, or assuming the title of, chemists and druggists. It may, therefore, be contended that, by reason of inherent disability to qualify in that respect, such a company keeping open shop as, and using the designation of, chemists and druggists is not merely exceeding its capability; but is actually committing an infringement of the Pharmacy Act, 1868.

It has been suggested that one of the difficulties to be encountered, in attempting to deal with company trading, is

that of making any legislative enactment in regard to the practice retrospective in its action.' The idea that such difficulty would arise seems to be based on the assumption that companies, in carrying on the business of chemists and druggists and assuming that designation, have acquired a prescriptive right to do so. But if the view put forward above is capable of being supported, what else is the position of such companies but that of law-breakers? They have not even a hope of the only salvation possible for wrong-doers of not being found out. Their offence is flagrant. It surely cannot be contended that twenty years' continued infringement of a statute converts wrong-doing into a right, or that defiance of the law to that extent creates immunity in regard to its provisions! Arguments to that end also imply the assumption that the principle of limited liability is not only to be applied to commercial transactions, but extended also to the application of a statutory enactment intended to promote public safety and, with that object, to establish conditions under which the exercise of a particular business is to be carried on. Any question there may be on those points still claims the consideration of the Legislature and—if chemists unite in the effort to defend the position they believe to be maintainable from every point of view—there is reasonable prospect of offering successful opposition to the plea of vested interest as being sufficient to warrant continuance in unlawful procedure. If the Pharmaceutical Society is to undertake the task of endeavouring to obtain such amendment of the Act, its membership must first be augmented so as to comprise, at least, the majority of those who desire that reform. In any case the task will be a difficult one, requiring hearty support both moral and material.

PARLIAMENTARY OPINION ON POISON.

WHEN the Pharmacy Acts Amendment Bill was before the House of Commons last June, the most remarkable feature of its chequered progress was the discussion which took place at the third reading of the Bill when—in the absence of Mr. ALEXANDER CROSS, the member for the Camlachie Division of Glasgow—Dr. CLARK, acting on his behalf, proposed to move the addition of a clause that would have the effect of rendering persons selling poisonous preparations for destroying vermin or weeds, etc., and for use in connection with the arts, agriculture, or other trade purposes, exempt from the provisions of the Pharmacy Act, 1868, in regard to the sale of poisons. Dr. CLARK argued that the use of poisonous articles in large quantities for such purposes takes place under conditions so different from those under which poisons are employed for medicinal purposes, that there should be a corresponding difference in the regulations to which the sale of poisons for those respective purposes should be subjected for the sake of public safety. He maintained that the provisions of the Pharmacy Act—which the Pharmaceutical Society is now compelled to enforce—operate prejudicially in restraint of trade, by preventing farmers, cattle dealers, and others from conveniently obtaining their supplies of sheep dressings, antiseptic solutions, etc. The discussion that followed was especially interesting; for, though entirely irrelevant so far as the object and purpose of the Bill under consideration were concerned, it led to expressions of opinion from several members of the House that should be borne in mind as having important bearing upon the general question as to regulation of the sale of poison for the safety of the public and upon legislative regulation of the practice of pharmacy.

The speakers on that occasion were unanimously of opinion that the present condition of things in regard to the sale of poisons is very unsatisfactory and that the restriction of their sale should be much greater than it is. On that point Mr. CHANNING spoke of the present lax regulations as being very undesirable, and he referred to a recent case of murder as illustrating the danger arising from the facility with which scheduled poisons can be obtained, even in a chemist's shop. Mr. BURNS also regarded the existing regulations for the sale of poison as most unsatisfactory in many respects. He expressed a belief that the average chemist and druggist, as a mixer of poisons, is capable of much education and that chemists and druggists have not, as a body, fully recognised the duty they owe to the public. Dr. CLARK was of opinion that legislation on this subject should be directed to preventing the sale of drugs, for medicinal purposes, either by companies or by individuals who are not qualified for that purpose, while at the same time it should not interfere with the supply of poisonous articles, under proper regulations, for agricultural or commercial purposes. Mr. BURNS agreed with him that legislation is requisite in this respect, in order that the true purpose and object of the Pharmacy Act may be carried out. Having regard to the special nature of the Bill then before the House, as enabling chemists and druggists and the Pharmaceutical Society to put their own house in order, Mr. BURNS also expressed a hope that, after accomplishing that object, they would act upon the various suggestions which had been made in the House and use their powers with greater courage and greater discretion in the interests of the general public as well as of registered chemists and druggists.

It was evident throughout this discussion that members of Parliament, in speaking of the Pharmaceutical Society, regarded it as representing chemists and druggists: they also assumed the Society to be a body comprising all chemists and druggists registered under the Pharmacy Act, 1868 and, in that sense, fully capable of exercising the powers conferred upon it. That idea certainly seems to have prevailed with Mr. BURNS, and to have induced him to support the general object of the Bill, as being a means of educating chemists and druggists, improving their status as members of the Society, and enabling the Society as a representative body to assist the House of Commons in the endeavour to put the regulations for the sale of poisons on a satisfactory footing. That, indeed, is the position which must be taken in the future and it is encouraging to find members of Parliament expressing confidence in the Pharmaceutical Society, as well as appreciation of its past work in trying to put a stop to the system—referred to by Dr. FARQUHARSON as a great and growing evil—under which associations calling themselves drug stores are able to elude the provisions of the Pharmacy Act. In future attempts at legislation the question will probably be raised whether at the present day the place of business of the chemist and druggist should be exclusively the poison shop, or whether, disregarding old associations, some more rational conception of pharmacy, as a professional occupation, should not now be made the basis of a law regulating the practice of that art. The remarks made by Mr. LORD GIFFORD at the recent meeting of the North-East Lancashire Chemists' Association point in that direction, as evidence of a wholesome, though tardy, awakening. He has wisely taken up the propagation of that gospel with much prospect of success, and there is good reason for believing that a similar opinion is held by many chemists throughout the country.

ANNOTATIONS.

THE NEXT EVENING MEETING of the Pharmaceutical Society will be held at 17, Bloomsbury Square, London, on Tuesday, December 13, when Mr. W. Murton Holmes will deliver a lecture on "Deep-Sea Deposits." Mr. Holmes proposes to give a short account of the principal microscopic organisms found at the bottom of the sea, and to compare them with certain deposits which are now found on land. The lecture will be illustrated by lantern slides, and members are invited to bring any friends who may be interested in the subject. The meeting will open at 8 p.m. sharp, when the chair will be taken by the President of the Society—Mr. Walter Hills.

THE INVERNESS CHEMISTS' ASSOCIATION has commenced its winter session with an illustrated lecture by Mr. W. Lamond Howie, on Mont Blanc and the Matterhorn, and the Hon. Secretary, Mr. Lewis MacLeod, informs us that several of the local medical men have intimated their willingness to assist the Association in its work. Already a discussion on the new B.P. has been arranged for, and one of the members of the Association will initiate that discussion by reading a paper on the subject. Presumably, also, though the fact is not stated by Mr. MacLeod, the members of the Association will meet to discuss the Federation programme, and more especially the subjects of compulsory poison regulations and company trading in pharmacy, which are more prominent and better fitted for discussion at the present time than any other problems of special pharmaceutical interest.

IT IS EXTREMELY IMPORTANT that the subjects referred to should be seriously considered, with a view to fresh legislation, by every pharmaceutical association in Great Britain before Christmas, in order that the views of the whole trade may be put before the Council of the Pharmaceutical Society at its first meeting in the new year. As we point out elsewhere, to a correspondent who seems to fail to grasp what is necessary at the present moment, chemists and druggists generally have to consider in the first place whether it is desirable that steps should be taken to secure further alteration in the existing pharmacy and poison law. If that point be decided in the affirmative, the next steps will be for the trade to agree what alterations should be attempted, and to furnish the President and Council of the Pharmaceutical Society with the support necessary for enabling them to proceed with a suitable measure.

A DRAFT PHARMACY BILL may be an attractive thing to criticise, especially to registered chemists who are without the pale of the Society, but unless a sufficient measure of support is forthcoming from that class, in addition to what is furnished by the existing members, it is improbable that much room will be afforded for criticism, except it be criticism of the non-existent. It must be clearly understood that the probability of any attempt being made by the Society to promote fresh legislation will be strictly limited by the numerical strength of the Society. The greater the increase in strength during the next few weeks, the more likelihood will there be of measures being attempted for the regulation of the practice of pharmacy, but it would obviously be absurd for the Society to attempt what is at present, utterly beyond its capacity as a representative body.

THAT THE SOCIETY should at once set about drafting a Bill and spending money freely, in an attempt to limit the sale of drugs

to duly qualified persons, might gratify many who do not contribute in any degree to the expense of promoting such a Bill. And if it were passed, some few registered chemists might join the Society. But under existing conditions there is no reason why the Society should embark in enterprises of the nature indicated for the sake of such a possibility? Is it not infinitely more logical that those individuals should join the Society first, and thus give it the benefit of their direct support during the struggle? The Society has two special duties and two only—one to protect the public in the matter of the sale of scheduled poisons, and the other to advance the interests of its members. It is under no obligation whatever with regard to registered chemists outside its ranks, and if they wish to influence its policy or stimulate its action their obvious course is to become members forthwith.

A CIRCULAR IS IN COURSE OF BEING ISSUED by the Secretary of the Pharmaceutical Society to the Society's local secretaries throughout the country, pointing out that the official confirmation of the new Bye-laws—giving effect to the provisions of the Act passed last session—places every person on the Register of Chemists and Druggists in a position to become a member of the Society. The circular also requests local secretaries to bring this fact under the notice of the chemists and druggists, in their several districts, who are still unconnected with the Society, and personally to urge upon them the pressing necessity of general organisation as a means of providing the protection which is now felt to be more requisite than ever. Attached to the circular is a memorandum for distribution, stating the nature of the advantages enjoyed by members of the Society, the principal one being representation in the executive body, which not only manages the private affairs of the Society but is entrusted by the Legislature with the administration of the law relating to the exercise of the business of chemists and druggists and with the conduct of the qualifying examination. The possibility of making that position serviceable for the purposes of defence, or for advancing and protecting the interests of registered chemists and druggists—either by the internal self-government, which the Society's democratic constitution admits of, or by appealing to Parliament for an amended Pharmacy Act—is now absolutely at the command of all registered chemists who, as members of the Society, can decide upon the policy to be pursued in their interest and can accordingly elect their representatives to carry out a line of action commanding general support.

THE USE OF SYMBOLS IN PRESCRIPTIONS is referred to by a correspondent of the *British Medical Journal*, who has noticed how the use of the customary symbols in prescription writing has been denounced, because a hospital nurse accidentally poisoned a patient through misinterpreting one such symbol. The fact of that fatal misadventure having recently occurred prompted one medical writer to suggest that, "at this time of the day, we can afford to dispense with these symbols considering the danger to human life." But, the present writer asks, would he not also think it advisable to dispense with the "opium," which was shown to be the cause of death in the case in question, for the very same reason? "The mishap referred to was caused simply by the fact that the prescription came into the hands of a person for whom it was in nowise intended, and to whom it should naturally be quite unintelligible. What has a 'nurse' to do with the reading of prescriptions? They are meant solely and exclusively for a qualified chemist, and if they are invariably transferred to his hands, all the directions necessary for nurse, etc., will appear in plain English on the label attached to the medicine, and mistakes cannot occur." The

writer also remarks that he sees no reason for the change suggested, and he expresses the opinion that, should such a change be adopted, it would lead to very much greater danger in the same direction. Life is too short to enable the busy practitioner to write his prescriptions always in plain English, and abbreviations would naturally result, increasing very materially the probability of such mishaps. In conclusion, it is said to be more than probable that every medical man who is a master of the art of prescription writing will rigidly adhere to the symbols which experience has proved to be exceedingly convenient, thoroughly efficient, and absolutely safe—"if used only by those who know how—from ages past to 'this time of day.'"

LIEUT.-COL. AND SHERIFF PROBYN was entertained on Tuesday last at a dinner which took place in the Victoria Hall of the Hotel Cecil, and was arranged by a large number of his masonic friends, for the purpose of congratulating him on his election as one of the Sheriffs of the City of London. The chair was taken by the Earl of Euston, and the number of those present at the dinner was upwards of a hundred. Mr. Probyn is well known to most readers of this Journal as a member of the pharmaceutical body, and to many as an enthusiastic freemason, upon whom the high office of Grand Treasurer has been conferred. He is also a distinguished member of the Volunteer force, has taken an active part in public affairs, as a member of the London County Council, and has recently been elected to the office of Sheriff. After the customary loyal toasts Lord Euston proposed the health of Mr. Probyn and presented him with a piece of plate as a memento of the occasion. In returning thanks, Mr. Probyn said he was deeply touched by the kind feeling his numerous masonic friends had manifested, and in a brief, unaffected speech he expressed, on behalf of himself, his wife, and sons the gratification afforded by being the recipient of such a mark of esteem.

THE REGISTRATION OF MEDICAL COMPANIES continues, and at the meeting of the General Medical Council on Tuesday, Mr. Tomes directed renewed attention to the matter in moving the adoption of a report from the Companies Acts Amendment Committee in regard to the proposed amendment of the Companies Acts, with the object of preventing the registration of companies to carry on medical, surgical, and dental practice. The Committee, after mentioning that deputations had waited upon and submitted memorials to the President of the Board of Trade and Sir Kenneth Muir Mackenzie (on behalf of the Lord Chancellor), stated that it had been advised to have a draft of a Bill prepared which would meet the case of the Medical and Dentists Acts. Accordingly, the Committee had requested the standing counsel to the General Medical Council to do so, in order that the draft might be submitted to the Lord Chancellor. That had now been done, and the Committee asked the Council to approve its action. Mr. Tomes having pointed out that the evil was still going on, three companies having been formed since the Committee communicated with the Lord Chancellor, the report was adopted, and a resolution passed reappointing the Committee and requesting it to continue its efforts for the improvement of the law upon the subject of companies formed to carry on professional functions.

THE REPORT OF THE PHARMACOPŒIA COMMITTEE of the General Medical Council, presented and adopted on Wednesday, states that up to the present time 20,500 copies of the first issue of the British Pharmacopœia of 1898 have been sold, and as only 1000 copies now remain in stock the Committee thinks it is desirable that a further

issue of 5000 should be ordered. It is remarked that the new Pharmacopœia seems to have proved acceptable to the medical profession generally, and has likewise been well received by pharmacists. The Committee is of opinion that some of the criticisms of the Pharmacopœia should be investigated and reported on by experts, suggests that arrangements should be made for carrying out such investigations and also for accumulating information for the next publication of a Pharmacopœia, and recommends that Dr. Attfield be asked to report on the criticisms passed on the Pharmacopœia, and on the progress of pharmacy and pharmaceutical chemistry during the years 1897 and 1898. It is further recommended that the Pharmaceutical Societies be invited by the General Medical Council to co-operate in these inquiries and investigations. They might, it is suggested, be invited to appoint representatives to confer with members of the Pharmacopœia Committee, and the Pharmacopœia Committee should have the power to appoint experts in pharmacy and pharmaceutical chemistry to report upon matters deemed worthy of investigation. The Committee also suggests that Dr. Tirard should be requested to act as reporter to the Pharmacopœia Committee on advances in pharmacology and therapeutics bearing on the Pharmacopœia.

THE INDIAN AND COLONIAL ADDENDUM is specially referred to in the report, which recalls the fact that twenty-eight bodies sent in recommendations and suggestions through the Privy Council, relative to new remedies or to changes in descriptions and processes desired for recognition in India and the Colonies. Many of the suggestions were adopted in the British Pharmacopœia of 1898; others were dealt with in an appendix. The remainder, connected for the most part with recommendations concerning new drugs, were reserved to be dealt with in connection with an Addendum. Some progress has since been made in the matter; the drugs recommended for introduction have been carefully examined and described under the direction of the Pharmacopœia Committee, and suggestions have been drawn up with regard to preparations which may be required. It is proposed that those descriptions and suggestions, embodied in a Report from the Committee, shall be forwarded to the Indian and Colonial Medical Authorities, through the Privy Council, and also to other medical and pharmaceutical experts in India and the Colonies, with the view of obtaining further suggestions and criticisms prior to the production of the Indian and Colonial Addendum.

A SPECIAL REPORT ON THE PROPOSED ADDENDUM, advance copies of which have been supplied to us by Dr. Attfield, states that whilst a large number of the suggestions received from India and the Colonies have been embodied in the new Pharmacopœia, and others dealt with in an appendix to that work, many remained which it was thought best to treat separately in an Addendum. Monographs have therefore been prepared, and the respective Indian and Colonial authorities are now invited to criticise and amend the descriptions given of the various drugs, in order that such descriptions may apply to satisfactory commercial specimens. They are also invited to supply certain complete descriptions which have not yet been obtained, to express an opinion as to the suitability of the preparations proposed, and to state the doses of the preparations; further, to make suggestions respecting such additional drugs and preparations as may be deemed desirable, in order that the completed Addendum may meet the requirements of the Colonies and Dependencies. The aim of the Medical Council is, we are told, to produce, sooner or later, a Pharmacopœia which shall be equally useful in every part of the British Empire, but it is desired to recognise special articles for particular

Colonies or Dependencies in such a manner as to avoid undesirable substitution of one drug for another in other parts of the Empire.

THE DESCRIPTIVE LIST OF DRUGS, proposed by Indian and Colonial authorities for official recognition, covers twenty-three pages, similar to those of the B.P., 1898. It includes suggestions for pharmaceutical preparations, and further suggestions and comments are invited. The drugs, etc., proposed for official recognition are arranged under the names of the Colonies or Dependencies from which the recommendations of the articles have been sent; in certain instances, however, identical suggestions have been received from two or more places, and in such cases the descriptions are not repeated. Hong-Kong recommends for official recognition *Agropyrum* (the rhizome of *A. repens*), and its decoction, together with *Belæ Fructus* and its liquid extract, *Daturæ Folia*, and a spirituous extract of liquorice. India has a more lengthy list, including *Acaciæ Arabicæ Cortex* (as a substitute for *Quercus Cortex*), *Acaciæ Gummi* (the gums exuded from *A. catechu*, *A. leucophloea*, and *Feronia elephantum*); the juice of *Acalypha* (the juice of *A. indica*, recommended as an equivalent of senega); Acetic Acid (a proposal to prepare it by mixing one part by weight of glacial acetic acid and two parts by weight of water); *Andrographis* (the dried plant, *A. paniculata*), its infusion, concentrated solution, and tincture; *Aristolochia* (the stem and root of *A. indica*), its infusion, concentrated solution, and tincture; *Aurantii Cortex Indicus* (from other varieties of orange than that official in the B.P.); *Berberis* (the stem of *B. aristata*), its concentrated solution and tincture; *Belæ Fructus* (the dried, half-ripe fruit of *Ægle marmelos*) and its liquid extract; *Betel* (the leaves of *Piper betel*); *Buteæ Gummi* (an exudation from the stem of *Butea frondosa*), its compound powder and tincture; *Buteæ Semina* and their infusion; *Cambogia Indica* (from *Garcinia morella*).

THE WORD "CAMPHORODYNE" has been suggested by the Indian authorities as a suitable name for *Tinctura Chloroformi et Camphoræ Composita*, but it is not thought to be desirable. Other items in the Indian list are the following:—*Catechu Nigrum* (an extract from *Accacia catechu*), its compound powder, tincture, and lozenges; *Cissampelos* (the root of *C. pareira*) and its extract; *Coscinium* (the stem of *C. fenestratum*), its infusion, concentrated solution, and tincture; *Crinum* (the bulb of *C. asiaticum* var. *toxicarium*, suggested as a substitute for squill in the various official preparations of the latter); *Cinnamomi Lignum* (the wood of *C. glanduliferum*); *Datura Folia* and *Semina* (the leaves and seeds of *D. fastuosa*) and their respective tinctures; *Embelia* (the fruit of *E. ribes*); *Exacum* (the dried plant of *E. bicolor*); *Fœniculi Fructus* (the Indian fruit); *Glycyrrhiza Radix* (the root of *Abrus precatorius* is suggested as a substitute); *Gossypii Radicis Cortex* (the root bark of *G. herbaceum*, recommended as a substitute for ergot); *Gummi Indicum* (a gummy exudation from *Anogeissus latifolia*) and a mucilage prepared from it; *Ispaghula* (the seeds of *Plantago ovata*, recommended for use in making demulcent drinks); *Jasminum* (the flower of *J. sambac*, recommended as a lactifuge); *Mudar* (the root-bark of *Calotropis procera* and *C. gigantea*, recommended in place of ipecacuanha); *Mylabris* (the dried beetle, *M. phalerata*), its ointment, plaster, tincture, and vinegar; *Myrobalanum* (the immature fruits of *Terminalia chebula*), recommended as a substitute for galls in making the official ointments of the latter); *Oleum Ajowan* (oil distilled from *Carum copticum*, recommended for use in place of the oils of caraway, anise, dill, and peppermint); *Oleum Arachidis* (oil expressed from the seeds of *Arachis hypogæa*, recommended in place of olive oil); *Oleum Graminis Citrati* (oil distilled from *Andropogon citratus*, recommended to replace

cajuput oil in croton liniment and lavender oil in compound camphor liniment); *Oleum Sesami* (oil expressed from the seeds of *S. indicum*, recommended in place of olive oil for some preparations); *Samadera* (the wood and bark of *S. indica*, recommended as a substitute for quassia); *Sappan* (the heartwood of *Cesalpinia sappan*, recommended in place of logwood) and its decoction; *Swertia* (the dried plants of *S. affinis*, recommended as the equivalent of chiretta); *Thus Indicum* (the semi-solid oleo-resin of *Pinus longifolia*, recommended in place of American frankincense); *Tinospora* (the stem of *T. cordifolia*, a substitute for calumba), its infusion, concentrated solution and tincture; *Toddalia* (the root bark of *T. aculeata*, a substitute for cusparia bark), its infusion and concentrated solution; *Tylophoræ Folia* (the leaves of *T. asthmatica*, a substitute for ipecacuanha); and *Valerianæ Rhizoma Indicum* (the rhizome and rootlets of *V. leschenaultii*, var. *brunoniana*).

THE INDIAN MONOGRAPHS IN MANY CASES are accompanied by notes, in which objections are pointed out, suggestions made for further investigation to be made, or questions asked as to whether certain preparations, etc., are desirable or not. As may be imagined, the monographs originating in the Indian suggestions constitute the greater portion of the draft Addendum, but there are also a few suggestions from Australasia. Thus, Queensland asks for *Alstonia* (the bark of *Alstonia constricta*) and its tincture; *Beilschmiedia* (the bark of *B. obtusifolia*) and its tincture; *Duboisia* and *Duboisine*; *Euphorbia* (*E. pilulifera*) and its preparations. Victoria, in turn, desires the description of *Acaciæ Cortex* to cover commercial samples of the barks of *A. mollissima*, and *A. decurrens*. With regard to *Aconiti Radix*, information is required whether aconite root grown in Victoria corresponds exactly to that described in the B.P. *Duboisia* (the leaves of *D. myoporoides*), its tincture and ointment, and *Duboisine* are recommended for inclusion by the Victorian authorities, and attention is directed to some kindred drugs—*Anthocercis viscosa* and *A. tasmanica*, both of which contain an active principle similar to duboisine. *Duboisia hopwoodii* is also referred to. In a note on *Eucalypti Gummi*, it is stated that the Victorian authorities recommend that the official gum be limited to the product of *E. rostrata*, and that suppositories, syrup, tincture and lozenges prepared from that gum should be official. The last-mentioned articles in the Victorian list are *Fœniculi Fructus Victoriae* (the fruit desired for official recognition is that of *F. officinale*), *Grindelia* (the dried leaves and flowering tops of *G. squarrosa*), and *Kino Eucalypti* (varieties having the characters and responding to the tests of kino).

THE BOARD OF CHARITY COMMISSIONERS FOR ENGLAND AND WALES gives formal notice that an Order is proposed to be made by them after the expiration of one calendar month, establishing a scheme for the administration of the Chelsea Physic Garden, and for the further modification of the scheme regulating the charities called "The City Parochial Foundation." Any objections to the proposed Order or suggestions thereon should be transmitted to the said Commissioners in writing twenty-one days after the 23rd day of November, 1898, addressed to the Secretary, Charity Commission, Whitehall, S.W. Printed copies of the proposed scheme may be inspected free of cost on each week-day during a period of fifteen days from the first publication of this notice, between the hours of 11 a.m. and 5 p.m. (Saturdays excepted), at the Offices of the City Parochial Foundation, No. 3, Temple Gardens, and between the hours of 10 a.m. and 4 p.m., at the Offices of the Commissioners, where also copies may be purchased during the same period at 6d. each.

CHEMISTS' ASSISTANTS' ASSOCIATION.

The familiar conversazione of this Association gave place this year to a smoking concert, which was held in the Grand Hall, Freemasons' Tavern, W.C., on Thursday, November 24. The concert was an unqualified success, both in point of view of attendance and also of excellence of the programme provided. Amongst those present were many well-known members of both retail and wholesale pharmacy. The chair and vice-chair were respectively filled by Mr. R. A. ROBINSON, L.C.C., and Mr. FRANK A. ROGERS. During the interval the PRESIDENT, Mr. F. W. Gamble, in a humorous and well-turned speech, proposed a vote of thanks to the Chairman and Vice-Chairman, coupling with it an allusion to the creditable manner in which the arrangements had been carried out by the Hon. Secretary of Committee, Mr. C. Morley.—The audience, in response to the President's invitation, accorded the vote with much enthusiasm, simultaneously rising and singing in a very spirited manner "For He's a Jolly Good Fellow."—Mr. ROBINSON, replying, expressed the pleasure it gave him to be of service to the Association, and incidentally remarked on the good work which was being done under its auspices.—Mr. ROGERS followed with acknowledgments, and said that he felt much gratification in renewing for a time an active interest in the Association's affairs.—The different items of the programme were well rendered by the following gentlemen: Messrs. Robert Grice (baritone), T. Wills Page (tenor), Alexander Edwards (cornet), Sam Wright, Harry Bluff, Percy Bell, and Fred Wilson (comic vocalists), Mr. Charles King (sketch artist), and Mr. Albert Jorden (accompanist). The quick change and ventriloquial contributions of Mr. King evoked very general approval, as did the performances of Messrs. Page, Edwards, and Wright. The rather well-known imitative sketch by Mr. Tompsett (whose name did not figure on the programme) also afforded considerable amusement. Interest in the programme was well sustained until the singing of the National Anthem, which marked the conclusion of a very enjoyable evening.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION.

The annual dinner of this Association was held in the Prince of Wales's Restaurant, Glasgow, on Thursday, November 24, when Mr. WM. L. CURRIE, the President, occupied the chair and a large company was present. The usual loyal and patriotic toasts having been given and heartily pledged,

Mr. JOHN WALKER proposed the toast of

The Medical Profession.

Referring to the relations existing between pharmacy and medical men he said, chemists did not wish to go into what was known as "counter prescribing," and thus tread on the toes of their medical friends.

Dr. EBENEZER DUNCAN, in reply, referred to the relations between medicine and pharmacy, and said it would be a great improvement if the two branches were entirely separated. They would then have no doctor dispensing medicine, nor any chemist or druggist giving advice. He thought it was a very wrong thing for a medical man, who had so much to learn in connection with his own profession, to enter into competition with any other profession. At the present moment he thought the one great danger was that they might get into the hands of certain great manufacturers of drugs. There was a danger in medical men prescribing simply certain specialties sent out by the great manufacturing firms, and it behoved their professors of materia medica in the universities to teach their students to prescribe properly and to send their prescriptions to competent pharmacists to be compounded. It was high time pharmacy was put on a footing with the other professions and registered by the Government, and no one permitted to deal with dangerous remedies unless they could show a thorough acquaintance with the nature of drugs. Dr. Duncan also expressed the opinion that pharmaceutical students should add zoology to the subjects of their preliminary studies.

Professor STOCKMAN, of the chair of Materia Medica in Glasgow University, next proposed the toast of

The Pharmaceutical Society.

In every possible way, he said, the Society is trying to advance the

art of pharmacy and the science of medicine. He was very pleased to see that the standard of the Preliminary examination was to be raised to an equality with that of medical and other professions. That was a very great advance. The higher the standard of general education—apart from technical education—which was introduced into any profession the greater would be the influence of that profession throughout the community. It would be a good thing if the Pharmaceutical Society became more powerful than it was at present, but if they were to obtain more power, and so benefit the community, they must band together. Units are never so powerful as a united number. The Society had shown by a recent enactment that there was no jealousy with regard to the admission of new members, or rather of the admission to membership with full powers, and that indicated a very great advance.

Mr. J. LAIDLAW EWING, Chairman of the Executive of the North British Branch, replied to the toast. He first congratulated the chemists of Glasgow on having in the chair of materia medica of their University one with so sympathetic a feeling to pharmacy as Professor Stockman, and augured the best results, both for the teaching of materia medica in Glasgow and for the elevation of pharmacy in that city. He referred at some length to the proceedings in connection with the recent opposition by Mr. Cross, Member for the Camlachie Division of Glasgow, to the Pharmacy Acts Amendment Bill and to the Government's Poisonous Substances Bill, and in regard to this latter measure, said it intended to do what he should strongly oppose—abolish the personal qualification of the seller of poisons. He mentioned this because it was time they should set their house in order. He saw no reason why the Society should not now carry out its intention of some years ago and regulate how the poisons should be stored in their pharmacies, and thus prevent a Government department doing what he was sure would be the invidious task of appointing men to look after their pharmacies. Having paid a compliment to Mr. Currie for the valuable assistance he had given to the Society in connection with these Bills, Mr. Ewing said they had learned from the Parliamentary work of the past session that the House of Commons was by no means anxious to relax the laws regulating the sale of poisons. He was perfectly certain that any future legislation would point rather to the strengthening than the relaxing of the restrictions on the sale of poisons. They had learned also that their trade had a greater influence in the House of Commons than they had ever dreamt of before. That had been again and again expressed by members of Parliament, and he did not wonder at it, because they must remember that the educational qualification of their members throughout the country was a very high one and those members were able to bring to bear upon their representatives the influence this gave. Another lesson they had learned was that it was necessary to have some central body at their back to attend to their interests, and the only body they had was the Pharmaceutical Society. He hoped now that the Council of the Society had been thrown open so widely to the members of the Society, that all pharmacists would join the Society and do their best to strengthen its position, because only through it could the legitimate interests of the chemists and druggists throughout the country be expressed.

Mr. J. RUTHERFORD HILL, Edinburgh, in proposing the toast of

The Glasgow and West of Scotland Pharmaceutical Association,

spoke of the excellent influence upon pharmacy in the West of Scotland which the Association had exerted. The Association had accomplished good work in advancing the professional side of the craft, on which the future of pharmacy so much depended. It was by that line of action they gained the respect and confidence of the medical profession, and also ultimately the respect and esteem of the general community. There was, however, much yet to be done. There was the great question of company pharmacy, and they had to set themselves to find out how the professional rights and the legitimate privileges of registered chemists were to be conserved in a country where companies for trading purposes seemed likely to become the rule. There was also the question of poison regulations, a question on which most were disappointed and surprised, because of the way in which it had been dealt with in the Government Bill. That represented an attempt to turn back the clock for thirty years, to the time that preceded the Pharmacy Act of 1868. Before that time a similar attempt had been made, and it was because that attempt had utterly and hopelessly broken down that another attempt had been made in the Act of 1868, founded on the principle that the

education and training of the vendor were the only possible bases for a Poisons Bill. That was the only principle likely to work, and the fact that a Government Department should have so completely forgotten that incident warned them that they must be ready to act unitedly and promptly to conserve that principle.—Mr. DAVID WATSON, the Hon. Secretary of the Association, in acknowledging, said that the membership of the Association at present was about 200. It had been suggested that the Association should be made more of a trade organisation, and while he trusted that the scientific side of the Association would not be overlooked, he quite agreed with the feeling that a more general interest in the proceedings would be aroused if it were more like the Edinburgh Chemists' Trade Association.

PRIZE PRESENTATION.

—Mr. RUTHERFORD HILL next presented to Mr. Martin Meldrum, assistant with Mr. John McMillan, the Kinninmont prize, competed for annually by pharmaceutical students in Glasgow and the West of Scotland. The prize was in the form of a gold medal with a suitable inscription. Mr. Meldrum was complimented on the splendid work he had done in his examination papers, which were the most satisfactory Mr. Hill had ever had through his hands.

Other Toasts.

The remaining toasts on the list were then dealt with: "The Guests," given by Mr. Thos. Dunlop, Dr. A. Wood-Smith replying; "The Croupiers," given by Mr. Charles Kerr, Mr. McMillan responding, and "The Chairman."—During the evening Dr. Mehan, Messrs. Kilpatrick, Orr, W. L. Currie, Dykes, Lorimer, Moyes, and Cairneross (ventriloquist) contributed to the harmony of the proceedings.

EDINBURGH DISTRICT CHEMISTS' TRADE ASSOCIATION.

The opening meeting of this Association for the session was held on Tuesday November 29, when the chair was taken by the President, Mr. DAVID MACLAREN, who devoted his opening address to a consideration of

The Duties and Privileges of a Chemist and Druggist.

He said: As the subject of a few introductory remarks, I have fixed upon that of the duties and privileges of a chemist and druggist. The scope of such is of very wide application, and can be looked at from many a standpoint. It is a very ancient trade, as we heard in Glasgow on Thursday night, and, having many high and honourable traditions attached to it, it must be the aim of every one to hand down to our successors in office pure and unsullied the good name that has been given to ourselves. We meet here as members of a society anxious to promote the improvement of the art of pharmacy. I feel sure that every one here present is desirous of doing his best to cultivate this Art, and by every means to further and promote its usefulness and raise it as an essential department of the practice of medicine. It is our privilege to be humble ministers in the work of healing the sick. We do not aspire to that higher state which enables the physician to search out and determine the nature, the seat, and the cause of disease; nor do we profess to be able to indicate what are the agents best suited for the relief of those who suffer from its effects. Yet we have a province distinctly our own, a sphere of action which, if closely adhered to, will materially serve the end the physician has in view in the treatment of the ailments of his clients. The duty of a chemist and druggist is to dispense, in strict accordance with the instructions of the writer, all and every prescription handed to him. This, of course, is subject to the usual reservation clause, that everything on the part of the doctor (to use a church phrase) has been done decently and in order; the ingredients compatible, and the dose within the bounds of reason. Should a particular preparation by a particular maker be so ordered, and in our own establishment we have a preparation which to our mind is infinitely superior to that ordered, it is not our duty to put such in the place of the one ordered. I have no sympathy with those who, in their desire to get rich, seek in season and out of season, by copying parrot-like, the ideas of others, or, to use a stronger phrase, with those who "pick the brains of others," thus trading at the expense of the thought and energy of some poor fellow who, if left alone, would find a "triumph of pharmacy." The all-absorbing cry is heard on

every side that the number of patent and proprietary articles is such that no ordinary drug shop can hold them. Far be it from me to dare to tell you that, when little liver pills are asked for, you should not give a box of your own. Yet I feel that way, and would like to tell you so. Your so doing is only adding another to the numerous array of quack remedies. "Never mind the cash" used to be the motto of a certain place in Cockburn Street, and for all that is really to be made from so substituting is it really worth minding? Let us try to raise our position by a careful selection of the finest drugs and chemicals; and by skilful manipulation of the same to provide for the use of medical men preparations on which they can rely with almost absolute certainty, and our position will be such as we can stand by and defend. Do not let us give way to

THE CALL FOR CHEAP PHYSIC.

Let it be of the proper quality, and we need not be afraid to name a reasonable price. Do not try to undersell your neighbour, or even sell at the same price as him. Fix your own price, and your customers and friends will like you the better. I speak in this connection more particularly with our dispensing charges, and I feel sure that, in ninety-nine cases out of a hundred, he who has a fixed line of conduct in charging, never caring where or by whom this or that recipe was prepared formerly, put his own price thereon, will surely in the end have the confidence and earn the respect of his customers. Patent and proprietary articles—let them go. We have no Charter for the sale of such. In connection with this matter it has been put to me, Has the time not come when we, the chemists and druggists of Edinburgh, should issue a list of patent and proprietary and other articles in daily consumption, and quote therein bottom prices, and send the list broadcast throughout the city? I leave the answer to the collective wisdom of you, fathers and brethren. We have, no doubt, great responsibilities, yet, if we have, we have high privileges. A Charter was granted to our craft in 1843, and confirmed by the Acts of Parliament in 1852 and 1868, giving to those who, by having attained a certain standard of education, a certain specified training in the service of a chemist and druggist, or, might I be permitted to say, in the service of a member of the Pharmaceutical Society, and passing a qualifying examination, the sole right to sell certain retail articles specified. This is the spirit of the Act of 1868, but "the best-laid schemes of mice and men oft gang a-glee," and, while the spirit is there, the flesh is wanting. By careless drafting of what was intended to be for us a good Bill, the very provisions desired to be reserved for our exclusive benefit have been so interpreted as to admit of others who have no right to benefits such as these. How are we to regain these privileges and conserve them? Is it by taking advantage of the 1868 Act, by passing our Minor examination and thus, having acquired the privilege of going into business as a chemist and druggist, determine that, so far as we are concerned, we will have nothing more to do with

THE PHARMACEUTICAL SOCIETY;

a Society that has done so little for raising the status of the profession to which we belong? This is from our own selfish little standpoint, and at the first blush may seem right. What can the Society do for us? It has limited, might I say very limited, powers conferred upon it; the power of examining, the power of conferring the right to open a shop on him who doth successfully pass the ordeal of the examination room; the right to use the title of chemist and druggist, or the higher title of pharmaceutical chemist, with all the rights and privileges of such as conferred on them by the Act of 1868. But here it must stop. What can it, in the present divided state of the drug trade, do more? It has not the power, the more the pity, to compel all who pass the examination to become members of the Society. This, I am convinced, is the weak spot, or at least one of the weak spots, in the Act so carelessly drawn. A condition of the opening of a shop should either have been the payment of a lump sum or the payment of an annual subscription into the funds of the Society. Failure to pay said sum being a barrier to the starting or carrying on of business. This naturally leads up to the vexed question of limited liability companies and their right to the title of chemist and druggist, or, what is of more importance than the name, the right to sell and to dispense poisons, under the meaning of the Act, either by themselves or as parts of the prescriptions of medical men. The court has decided that such corporations have the right to do so if they employ qualified men,

Can this decision of the court be overturned? Yes, by an Act of Parliament. In the present temper of the House of Commons, and needless to say, the House of Lords, I feel sure that the chemists and druggists, if united, would get such support as would pass any Bill that had for its purpose the public safety. The passing of the short simple Act this year, or, to put it more correctly, the Cross opposition to its passing, showed the true temper of Parliament, and proved conclusively, to me at least, that they were ready and willing to redress any seeming injustice that had been intentionally or unintentionally done by the Act of 1868. Are we united? 4,741 in the Society, 10,474 outside of the Society. A united body! Truly we are not. If

THOSE WHO STAND OUTSIDE THE SOCIETY

and cry—Give! give! would only become part and parcel of the Society, pay their just dues and feel that on them, as individuals, rested the power to demand, from the powers that be, the rights that were really intended to be conferred on them by the Act of 1868, I feel sure that such a pressure would be brought to bear on this question that no Government would be able to withstand. The expressed opinion of the Houses of Parliament is with us, the voice of the medical profession is with us, and I feel certain that the universal voice of the intelligent public is with us, in asking great powers to deal in dangerous medicines. Why, then, should those who depend upon our trade for their daily bread be so apathetic? United we stand, divided we fall. Let us, as individuals, do all that in us lies to reclaim our lapsed masses and get them to become members of one united body, and we will realise that we have power which, if legitimately used, no other power can resist. Four thousand can do but little with 12,000 outside, but let the 16,000 act as one man, and the victory will be ours. I had intended saying something as to the storage of poisons, but I have not been able to get any new light on the subject. Various plans have been suggested—poison cupboards, bottles with patent stoppers, and other modes too numerous to mention. If poisons, in the broad sense of the word, are to be isolated, it would require a room of no small dimensions to contain them all. To my way of thinking, while being very careful to have all bottles duly labelled, the best way to secure the safety of the public and the prevention of mistakes is by a careful supervision and a thorough course of drill to the young men who come to serve as apprentices. If their training was at this early stage looked after we should have a better race of men in our profession. I would humbly suggest that no one should be allowed to begin an apprenticeship till he or she has gained the preliminary qualification of the Society. They could then enter upon their duties in the shop free from any thought of outside influences. Had time permitted I might have called attention to the question of compulsory attendance on classes for a lengthened period, the question of the style and title of a firm. Should the old name be kept on the place of business and on the labels on the bottles and packets sent out? But I leave the solution of these problems to wiser and better men. I am jealous for the honour of the trade of which I am a humble member, and would desire to do all in my power to further its interests. I feel sure that, were we a united body striving for one great good, the triumph of pharmacy, putting aside all petty jealousies and working for the good of all, our trade would yet become what we would wish it to be, and occupy that high place that our legislators by the Charter of 1843 and the Act of 1852 and 1868 desired it to be raised up to.

Discussion.

Mr. LUNAN, Vice President, in moving a vote of thanks, said he hoped the address would be published and read by a much larger audience than they had there that day. The Chairman had rightly emphasised the importance of manipulative skill in dispensing, so as to render it irreproachable. By strict integrity in that department and careful attention to the quality of materials, pharmacists would best secure public confidence and recognition. He thought the Pharmaceutical Society was wise in paying heed to the higher education and training of the pharmacist, and with the general trend of the Society's policy he believed they were all in hearty sympathy, though they might occasionally differ as to details.—Mr. BOA having seconded the vote of thanks,

Mr. J. RUTHERFORD HILL said reference had been made to the spirit of the Pharmacy Act, 1868. It was unquestionably the spirit of that Act that the dispensing of all medical prescriptions should be limited to the hands of a body of men specially trained for such a delicate and responsible duty. That idea entered

into the very substance of the Act, and yet the Act failed to accomplish its own obvious purpose in that respect. This anomalous condition was emphasised by the fact that by the Irish Pharmacy Act of 1875, the exclusive right of dispensing all physicians' prescriptions is conferred on persons registered under that Act. It seemed absolutely absurd that the State should establish a statutory class of persons who had given a public guarantee of their competency to discharge a highly responsible duty and then allow any Tom, Dick or Harry to dispense any prescription for any case, however important and critical, provided only the prescription contained none of a few articles that were scheduled as poisons. Public health and public safety demanded a rectification of this anomaly, and he thought no Legislature would refuse to pass a measure having that object as its aim. With regard to the necessity of combination among chemists, isolated units could do very little, but units in combination might be all-powerful. He felt convinced that whenever pharmacists turned their minds seriously and resolutely to the question of combination, they would inevitably come to the conclusion that the Pharmaceutical Society was the only body which they could join with any reasonable prospect of doing effective work. In Scotland it was a very thankless and expensive task for the Pharmaceutical Society to prosecute under the Pharmacy Acts, since even when the offence was clearly proved and a conviction secured the practical upshot was that the Society was fined some £10 or £12, while the real delinquent got off with a small fine, or in many cases scot-free. That was a most absurd position for a public prosecutor to be placed in. But it ought to be known that the Registrar never lost any opportunity of arresting an evil and obviating an offence, even although in many cases the proceedings never came before a judge. He was glad to say there was now in Scotland a more wholesome conviction that the Society was justified in its efforts to restrain and put down offences against the Pharmacy Acts, and recent experience had shown that those means, short of prosecution, had been more successful than hitherto in securing a better observance of the law. With regard to the storage of poisons, he thought the Privy Council had some reasonable ground for their complaint that the Society had in a sense broken faith in not passing into statute law what were merely adopted as recommendations in 1871. No doubt trained chemists had some justification for their disinclination to be compelled to adopt any particular method of storage, and they very reasonably felt that their training and education were the only really effective protection to the public. But there is really nothing in the recommendations but what every prudent pharmacist carries out in daily practice at the present time. Moreover, they are sufficiently elastic to allow reasonable freedom of action. He thought, therefore, that it was an eminently wise proposition that the Society should now remove a stumbling block out of the way, by giving these recommendations the force of law in accordance with the provisions of Section 1 of the Pharmacy Act, 1868. This, of course, brought them at once face to face with the question of joint-stock companies and other corporate bodies which carried on the business of chemists and druggists. Those storage regulations would not apply to any of them. They would not even apply to ordinary firms (*sic*), nor would they apply to either apothecaries' or doctors' shops, but only to individuals. That was an important additional reason why something should be attempted to bring the practice of pharmacy by all such concerns within the scope of the Pharmacy Acts. It was, however, a very difficult problem to deal with. Many favoured a policy of ignoring companies. Others favoured the securing of legislation to suppress them. Was there any prospect of success in either direction? It looked very much as if they would be compelled to recognise them and take effective steps to bring them under such conditions and restrictions as public safety and public health demanded. The anomaly, injustice, and danger of the present situation had been recognised and admitted in very high quarters, but the practical question seemed to be—How can the legitimate rights and privileges of registered chemists and the safeguards provided in the public interest by the Pharmacy Acts of 1852 and 1868 be adequately conserved, protected, and enforced, even in a social system in which large combinations for commercial and financial purposes seem to be rapidly on the increase and likely to become universal? Many were chiefly concerned about the question of prices and trading interests, but in that aspect he believed they would just have to submit like other traders to the well-known laws of political economy by which all such questions were inevitably determined.

—Mr. C. F. HENRY said he agreed with what Mr. Hill had said about poison regulations. There was nothing in the recommendations that need unduly harass anyone, and their adoption as compulsory would remove a cause of long-standing distrust and enmity between the Privy Council and the Society, which had shown itself on several occasions. It would be observed that in the recent Poisonous Substances Bill the Privy Council proposed to assume powers to enforce some such conditions apart from the Pharmaceutical Society. That might come to be a very serious grievance, and he thought it was wise to avoid such a danger by showing that they did not object to any of the recommendations adopted in 1871.—Mr. LUNAN put the motion to the meeting, and it was cordially and unanimously adopted.

DISCOUNT OF PROPRIETARY ARTICLES.

—The SECRETARY reported that he had received a reply from Mr. R. Adrian Smith, S.S.C., on behalf of the wholesale chemists, intimating that they had considered the proposal made by the Association, and their decision was embodied in a circular issued to the trade, in which they acceded to the request of the Association for discount of 15 per cent. and one month's credit on all orders for proprietary articles, in place of the restriction to not less than £5 orders and cash in seven days as formerly.—A letter was also read from the Board of Inland Revenue, declining to do anything in the way of removing the mineral oil from methylated spirits, and stating that it was added in consequence of many persons drinking the spirit, and no circumstances had arisen to justify any departure from the present arrangement.—On the motion of Mr. BOWMAN, seconded by Mr. McDougall, it was agreed to give a donation of £2 2s. to the Benevolent Fund, and £1 1s. to the Orphan Fund of the Pharmaceutical Society.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.

At Mason University College, Birmingham, on Tuesday, Nov. 29, Mr. DENCER WHITTLES, L.D.S., R.C.S., gave to members of this Association a demonstration with an electric projecting microscope. The President for the evening was Sir JAMES SAWYER, F.R.C.P., who was accompanied by Lady Sawyer, and there was a large attendance of members, accompanied for the most part by lady friends. In his opening address Sir James congratulated Mr. Dencer Whittles upon the distinguished honour recently conferred upon him by his appointment of first dental surgeon to the Birmingham General Hospital. That institution had been slow in recognising special work, and whilst it was a fact that at many other places dental surgery had been represented for many years, this was the first occasion upon which the authorities at the Birmingham General Hospital had recognised this great field of surgical work. Referring to the Chemists' Assistants' Association, Sir James said he knew assistants were inclined to be migratory, but he was sure there was a sufficient number in Birmingham and the Midland counties to form one large association. The objects of the existing Association, tending in the direction of intellectual and social development, he warmly commended, and said it would give him extreme pleasure to become an honorary member.—Mr. DENCER WHITTLES' demonstration, which was much enjoyed by all present, consisted of views of an infinite variety of insects thrown upon the screen and minutely described. The insects were photographed from life and enlarged by electricity.

PUBLIC DISPENSERS' ASSOCIATION.

At a meeting of this Association, on Tuesday, November 29, Mr. WELFORD (Colney Hatch) in the chair, others present being Messrs. Miller, Trison, Smith, Langford, Moon, Armitage, Meister, Howard, Smith, Clark, etc., an exhaustive paper was read by Mr. S. B. DONNAN, on

Urine and its Analysis.

After the paper a vote of thanks was proposed by Mr. CLARK (Marylebone), seconded by Mr. MEISTER, of Windsor. A discussion on the

New Bye-Laws

was then started by the Secretary, G. F. FORSTER, in which Messrs. Miller, Welford, Smith, Langford, Moore, Clark, and Donnan took part. All joined in cordially welcoming the changed conditions, and wishes were expressed that the Pharmaceutical

Society might see its way clear to obtain the revoking of the Local Government minute permitting Army compounders, etc., to take Poor Law Appointments, and other points. Ultimately it was agreed to forward the following resolution to the Pharmaceutical Society, proposed by Mr. G. F. FORSTER and seconded by Mr. MILLER:—

That this meeting desires to thank the Pharmaceutical Society for its efforts in obtaining the passing of the Amended Bye-Laws and Act, and hope they will see their way to make it possible for the new members to attend by altering the time of the annual meeting from afternoon to evening.

SUNDERLAND CHEMISTS' ASSOCIATION.

On Wednesday evening last, November 23, a meeting of the Sunderland Chemists' Association was held to consider the proposed Defence Fund, submitted by the P.A.T.A. The scheme was very favourably received, and the meeting dealt with the proposals, clause by clause. It was decided to send the following suggestions to the Council of the P.A.T.A. :—

1. To add to the list of Acts, under which members were to be defended, the Pharmacy, the Poisons, and the Employers' Liability Acts.

2. That compensation be given to subscribers to the Fund in the event of damage to goods, through the breaking of the window from outside agency, in a case where damages could not be claimed from the person or persons who broke the window.

3. In reference to the clause in the draft scheme stipulating that a subscriber would be entitled to the costs of his defence up to the amount of £10, whether guilty or not, but that the Association, in the event of a conviction, would not pay any fine incurred or costs of prosecution, the Association simply guaranteeing the best possible defence, it was suggested that the costs of the prosecution should also be paid in the case of a conviction where the total costs do not amount to £10.

4. That the Association pay the costs of any appeal which they undertake.

5. To add to the last clause—namely, "That the retail membership of the Defence Fund be only open to *bona-fide* chemists"—the words "on their own account."

NEW REMEDIES.

VALERIAN TEA FOR INSOMNIA.—G. Schmidt finds valerian tea is a valuable remedy for insomnia due to nervous excitement, etc., especially for female patients. He recommends $\frac{1}{4}$ litre of boiling water to be poured on 1 tablespoonful of crushed valerian root. One or two cups of the tea to be drunk with or without sugar about an hour before bedtime. The addition of a little potassium bromide increases the action.—*Pharm. Centralh.*, xxxix., 456, after *D. arzt. Pr.*, 1898.

VANADINE AS A STOMACHIC ANTISEPTIC.—Vanadine is a liquid combination of vanadium with sodium chlorate, which, on account of its powerful oxidising action on ptomaines and toxines, Weber considered might be useful in the treatment of tuberculosis. With guinea-pigs this was found to be the case, and the results obtained were so satisfactory that the investigator submitted human beings to the same treatment. Here, however, although the results were less satisfactory as regards the primary disease, the effect upon those cases which showed gastric fermentation, so frequently concomitant with a tubercular condition, was so remarkable, and the benefit derived from the drug so great, that fresh possibilities of its usefulness are suggested. The dose given varied from 6 to 30 drops per diem, and the remedy was found to be free from the least indication of toxicity.—*Nouv. Rems.*, xiv., 340.

MONO-CHLORO-PHENOL IN RINGWORM.—The following application: Mono-chloro-phenol, 20; alcohol, 80; oil of lavender, 10; has been found by Barbé to be an excellent remedy for tinea tonsurans of children. A little of this mixture is rubbed daily on the affected area, which is afterwards covered with a small piece of tafetta. The lavender oil is added to mask the unpleasant odour of the chloro mono-phenol.—*Bull. Gen. de Thérap.*, cxxxvi., 190.

URSAL.—The favourable results which have attended the use of urea as a diuretic has led to experiments with other urea derivatives and salts as to their value in therapeutics. Of these ursal is a combination of urea and salicylic acid, and has proved to be a valuable remedy in gouty and rheumatic ailments. It can be used in all such cases with advantage. Ursal is a good substitute for sodium salicylate and other similar preparations. The dose is the same as that of sodium salicylate, and should be taken in the form of lozenges or powder.—*Pharm. Zeit.*, xlii., 828.

DISPENSING PROBLEMS AND NOTES.

PRECIPITATION OF ALKALOIDS.

Sir,—Within the past week the following prescription has come under my notice :—

℞ Potass. Iodid. grs. v.
Syrup. Eastonii ʒi.
Mitte ʒiij. t. d. s.

For two days the mixture kept quite clear, and then on being stirred a dense crystalline precipitate was thrown out. What is the nature of the precipitate and would it contain strychnine and quinine iodides?

South Lambeth, November 23, 1898.

W. J. C. (19/27).

NOTE.—Without making an investigation of the precipitate it is impossible to state what is the exact composition of it. In all probability it contains strychnine hydriodide, which is a sparingly soluble salt, and probably quinine hydriodide as well. Deductions drawn by calculation from the solubilities of these two alkaloidal salts *in water* cannot be immediately applied, because in this case the solvent is syrup containing phosphoric acid. Probably the mixture would not precipitate if the drachm dose were diluted with water to one fluid ounce, but it would be advisable to try it before making the statement.

ZINC OXIDE IN A LOTION (18/28).

Sir,—I am sending you ʒiij. of the lotion dispensed according to the form given in the Journal of November 26, viz. :—

℞ Zinci Oxide ʒvi.
Glycerini ʒiij.
Ol. Olivæ ʒvi.
Aq. Calcis ad ʒvi.

As dispensed this is quite smooth, and can be evenly applied to the skin. Though not an absolute emulsion, it does not separate into greasy masses. It was prepared as follows :—The olive oil is thoroughly stirred in a measure with an equal quantity of lime water until completely saponified; then add about as much more lime water gradually, still stirring. Rub down the oxide of zinc in a mortar, add the lime water and oil emulsion to it, first in a small quantity, so as to make a thick cream when rubbed with the pestle; add the remainder, then the rest of the lime water and the glycerin.

Plymouth, November 29, 1898.

J. DAVY TURNER.

A CORRECTION (19/7).

In some copies of last week's issue, the number 16 appears instead of 14, in the second line of the note on the communication sent by "Nemo," page 582.

PROCEEDINGS UNDER THE PHARMACY ACTS.

PHARMACEUTICAL SOCIETY *v.* EDWARDS.

On the 25th ult., at the Portsmouth County Court, before His Honour Judge Gye, the Council of the Pharmaceutical Society sued Harry Gordon Edwards, of 30, Fratton Road, Portsmouth, for three penalties of £5 each for offences under the Pharmacy Act, 1868.

Mr. R. E. Vaughan Williams appeared for the Society and defendant appeared in person.

In reply to a question of His Honour, defendant stated that he would admit his liability for the offences with which he was charged.

Having regard to this admission, Mr. Williams said it would be unnecessary for him to call the witnesses who were in Court to prove the facts. The defendant had carried on the business of a chemist and druggist at 30, Fratton Road, Portsmouth, under the style of "Gorfett's Pharmacy." On September 20 the Society sent a person to the shop, who purchased from the defendant one pennyworth of white precipitate, and on September 29 the same person was served with one pennyworth of oxalic acid by defendant's wife. The title "Chemist" appeared in two places on a red lamp outside the shop, and it also appeared on the entrance door. Reference to the Burgess List showed that defendant was the occupier of the premises. He understood that defendant has on two occasions presented himself for the Preliminary examination, but had failed to pass.

His Honour, in giving judgment for the penalties claimed, with costs, severely censured the defendant.

LETTERS TO THE EDITOR.

THE BENEVOLENT FUND ELECTION.

Sir,—The time is drawing nigh for the election of annuitants, and there have appeared in the Journal, I think, but three responses to Mr. Hampson's assertions and expression of opinion regarding the method of conducting the elections. Whether indifference or other feelings is the cause of the silence it is difficult to judge. So, thinking some other answer than those which have appeared is better than absolute silence, I venture to make a few remarks on Mr. Hampson's very strong expressions, which I object to, for, though willing to admit the kindness of his motives, I do not acknowledge that he, or those who agree with him, have a right to claim an extra feeling of humanity, one surpassing others. He says the method of procedure is "unchristian." I object to dragging in the word "christian," which is totally unnecessary, the word being already sufficiently profaned. Then he tells us it is "inhuman" to compel a candidate to canvass for votes. This is the first time I have heard that canvassing is compulsory, and think there must be some error here. It must be one of the exaggerations. But, putting that aside, it is stated that the system of giving people a chance of receiving an annuity is an inhuman one, because carried out in the most customary manner. I rather think there is a vast number of people who would gladly accept the possibility, with the inhumanities involved in the procedure. For myself, though indifferent to the application of the epithets in my case, yet I strongly object to the application in the abstract. How does it sound: "The Pharmaceutical Society in its management of the Benevolent Fund is both unchristian and inhuman"? Being rather matter of fact, and disliking exaggeration as much as hyperbolic language, I feel more disgust than I express at the designation. Hyperbolic language is allowable in poetry, both sacred and profane, so when we read "men were stronger than lions and swifter than eagles," we look upon the words as expressing the love or admiration of the speaker, and excuse it. So also when we tell a woman "she is the sweetest thing on earth," if she is a sensible woman she does not believe it, but understands it as an expression of our love and admiration. This again is allowable. But in the present matter I find no excuse. Never using the vulgar expletives which some utter, I simply say the assertions are wholly unjustifiable and wrong. Furthermore, I think with that Association which sent an opinion adverse to the proposed change, that loss would occur to the Fund, judging from experiences which are patent to all. One question I should like to ask Mr. Hampson—What name does he give to the many who do not subscribe a trifle to the Fund, even though it is administered in a so-called iniquitous manner?

November 23, 1898.

PONDO (156/9).

THE POSITION OF PHARMACY.

Sir,—Not many chemists in Scotland have as yet come forward to define their views on this question. In scattered districts of England there have been a few who have done so, but they can scarcely be classed under the heading of men of light and leading. The President, it is true, recently spoke on current problems. He certainly is a leading man, and his declaration has weight. But why the indifference of all the others? The reason is not far to seek. We are all, in England and in Scotland alike, so much concerned about the loaves and the fishes, that we forget, and, I grieve to say, sometimes even speak with disdain of, the position of pharmacy. Were this not so, the young men of our craft, educated in our pharmacies, would not do those things we deprecate. It is scarcely conceivable that a young man trained in a good establishment, and by a man who had other thoughts than those merely connected with £ s. d., would let himself out for hire, for the sake of a few extra coppers a day, to an unqualified company of traders, to a store, or, worst and most degrading of all, to a co-operative store. Were we all, who are masters, animated by a nobler spirit, greater loyalty to the craft, and higher self-respect, there would be no need to recommend that our assistants, when they leave and take service in a store, should by their fellows be sent to Coventry. There could by no possibility be a drug department in a store, because there would be no man to run it. Do we ever find any young medical assistant willing to attach himself to a quack or charlatan? Has any store, however powerful, ever yet had a doctor of medicine as one of its appendages? I trow not. Then

why should a chemist so degrade himself? As the servants of pharmacy and the allies of the medical profession we do well frequently to call to mind that ours is no mean calling. Among the world's faithful workers I hold that our position is a high one, and our reward is not alone silver or gold. Did all of us, in even a small measure, try to live up to this ideal it is not at all likely that anyone from our ranks would prostitute his profession and his own service to any unqualified company of traders, whose sole and avowed *raison d'être* is merely gain. Legislation in this matter is not, I fear, of much use. You cannot suppress company trading. The real cure is "educate, educate, educate."

Dunfermline, November 29, 1898.

JOHN H. FISHER.

Sir,—You ask in effect in your leader of last week, "Will the trade back a Bill securing to the qualified members their bare rights?" Why ask such a question? The trade has shown promptly on very recent occasions, when asked straight questions, that it can and will unite to back up honest attempts to secure its rights. Formulate a Bill securing the sale of drugs to the qualified druggist, barring out companies of unqualified men equally with the unqualified man, and the whole trade will rise up and back it for all they are worth; but add clauses dealing with the widow, the orphan, the student, etc., and you open points for discussion. Let us have one chance to vote for one thing, the one desirable thing, the *summum bonum* and the one thing only, and from all parts fullest support will be accorded to the Council. There is no need to beg chemists to join. Give us bread and not stones, and the membership of the Pharmaceutical Society will mount by leaps and bounds. "Drugs for the Druggist" is the battle cry.

Cardiff, November 28, 1898.

A. HAGON.

. Our correspondent somewhat misses the point, and ignores the fact that we have, for some weeks past, been asking the trade "straight questions." The registered chemists of the country are asked, first, whether they are really anxious for fresh legislation, and have an idea as to its object; secondly, whether they can agree upon the provisions for a draft Bill and, thirdly, whether they will co-operate in taking the action necessary for the purpose. That support must be tendered in advance, not after the event to procure which support is required.—[Ed. P. J.]

THE B.P. AND THE MINOR.

Sir,—Mr. Lucas, one of the Pharmaceutical Society's examiners, in a speech reported in the *Chemist and Druggist* last week, is represented to have said: "No examiner would require to know what were the constituents of Gregory's powder or confection of senna, but he might reasonably expect to be told without hesitation the dose of tincture of nux vomica or of the preparations of ergot." Would a candidate be justified in the conclusion that the limited knowledge specified would satisfy other examiners, or is it possible they would require information as to the processes for making tinctures, extracts, etc.?

Clapham, S. W., November 29, 1898.

LEX (157/14).

. The scope of the (Minor) examination in pharmacy is clearly defined in the Regulations of the Boards of Examiners, and to those our correspondent is referred for information on the subject. Assuming the accuracy of the report quoted from, it would yet be beyond our province to say how other examiners would regard the statement quoted, but there is good reason for believing they do not usually interpret the Regulations in a narrow sense.—[Ed. P. J.]

MELLIN'S EMULSION OF COD-LIVER OIL.

Sir,—I should be glad if you will spare me a little space in the Journal to air a little grievance I have. A month or two ago Messrs. Mellin's representative called on a grocer friend of mine, introducing the above-named preparation, and offering, if he took a sample dozen, to pay for his stamped medicinal licence. Now, this grocer had never taken out a licence before, for the reason, to use his own words, "that as he had three chemists within two hundred yards of him, and knew how prices were cut, he did not think the game worth the candle." For all that, he promised to take a dozen on the conditions mentioned, package duly arriving with invoice at usual price, 17s. 6d., with allowance 5s. for licence, which really came to 12s. 6d. for a dozen emulsions, at which price the grocer sold them to me. Needless to say, he did not take out the licence. Now, if Messrs. Mellin are prepared to give grocers 5s. and only allow chemists such profits as they are known to do, I think it is time something was done. We country retailers, after carriage is paid, get the handsome remuneration of sixpence per dozen on Mellin's food, [for stocking, retailing, and in other ways advertising the article. I wish chemists would shun such proprietors, and refuse to stock their goods until they can fix a minimum price, leaving us a living margin. Could not some of the local associations take the matter up and combine against such a practice?

November 29, 1898.

DEVON (157/24).

RECTIFIED SPIRIT, B.P.

Sir,—With reference to Mr. Fletcher's inquiry in your issue of October 15, and to Mr. Kirkby's reply in your issue of October 29, allow me to point out that all the spirit strengths mentioned in the B.P., 1885 and 1898, closely accord with Stevenson's alcohol tables except in the case of alcohol 90 per cent., the specific gravity of which, according to Stevenson, should be 0.83375, and of proof spirit, the figures of which, given in the B.P., 1885, are in "round numbers." Allen in his 'Commercial Organic Analysis,' adopts a table the figures of which are of slightly different value, hence the discrepancies. Blyth in his book on 'Foods,' favours Allen's figures in the table he gives as "sufficient for ordinary purposes," but recommends either Hehner's or Stevenson's tables for accuracy. The differences will be clear on reference to the following table:—

Strength by volume.	P. B.		STEVENSON.			ALLEN.			HEHNER.		
	By wt.	Sp. gr.	By wt.	Proof	Sp. gr.	By wt.	Proof	Sp. gr.	By wt.	Proof	Sp. gr.
90 per cent. . .	85.65	.8340	85.65	157.75	.83375	85.65	157.71	.8340	85.65	157.71	.8340
70 " " . . .		.8900	62.50	122.7	.8399	62.46	122.7	*.8398	62.36	122.53	.8900
60 " " . . .		.9135	52.15	105.2	.9135	52.23	105.27	.9130	52.00	104.87	.9135
45 " " . . .		.9436	37.85	78.8	.9436	*37.82	78.8	*.9436	37.89	78.93	.9436
20 " " . . .		.9760	16.30	35.1	.9760	16.25	35.14	.9762	16.46	35.47	.9760
(88.65) " . . .	84.00	.838	84.00	155.4	.8380	84.00	155.45	.8382	84.00	155.44	.8382
(88.75) " . . .			84.10	155.5	.8378	84.08	155.55	.8380	84.08	155.55	.8380

*Calculated.

The question, therefore, resolves itself into whether Stevenson's tables are correct or not. A communication from Somerset House some months ago said that they differed very little from their own. London, November 30, 1898.

S. J. LEWIS.

. The discrepancies in the above tables mainly arise from having no absolutely reliable standard for absolute alcohol and the measure of contraction in mixtures of alcohol and water. The figures given are supposed to be in nearly all cases experimental, and cannot therefore be verified by calculation. Fletcher's 88.76 per cent. volume is deduced from Allen's table, the B.P., 1898, 88.65 is from Stevenson's. Neither of them is quite in agreement with the Revenue table at .8380 gravity, though all three are practically concordant at .834 (Stevenson's varying a little). The B.P., 1885, says that alcohol of .833 gravity contains 84.0 per cent. by weight. The calculation of the B.P., 1898, is thus arrived at—

	Vol. per cent.	Weight per cent.
1898.....	.834	= 90.00
1885.....	.838	= 88.65
Difference	1.35	1.65

Which table is strictly correct can only be proved experimentally.—[Ed., P. J.]

CHEMISTS' ASSISTANTS' UNION.

Sir,—Will you kindly allow me, through the columns of your Journal, to ask all those gentlemen whose letters have not been answered to communicate with the Secretary. The delay is not due to a want of courtesy, but to Mr. Pickering's illness, which has prevented him attending to the correspondence. A coming event is the C.A.U. "smoker" on Tuesday next.

Horse Shoe Hotel, Tottenham Court Road, J. LLOYD ROBERTS, Secretary.

RETAIL CHEMISTS AND THE P.A.T.A.

Sir,—The retail trade ought to be more than ever determined to avoid the P.A.T.A. after the recent exposures by Mr. Rowed and Mr. Glover (Mr. Beecham's representatives). The majority of the listed articles of the P.A.T.A. are on the black list of the majority of chemists, that is to say, they are avoided as bad stock. The prominence afforded their proprietors by the free monthly advertisement in the P.A.T.A. Journal may be worth the subscription (that is a matter for the proprietor); it does not alter the fact that they are still "bad stock." I defy any man to prove that Mr. Beecham has fixed the profit at less than 3d. in the shilling. If a customer comes in and asks for a 1s. 1½d. box of Beecham's pills, does Mr. Beecham say, we are not to take the full money thus offered, not likely! Mr. Beecham is too much of a gentleman in his actions to do this, and would far prefer to help us to larger profits, but I can understand in these days of 'cute competition when Lord Chancellors, judges, and millionaires go into trade, love for the British public or their grab-everything policy, prompts them to cut down the profit to what they consider a good percentage on their annual turnover. So Mr. Beecham is doing his utmost to bring them into line with the ordinary chemist, and

he is trying to secure us a living profit. He is more powerful than we are, and more likely to secure the benefits for us by persuasion than the P.A.T.A. (who are an insignificant minority of the chemists of the country) by force. Our profits on P.A.T.A. goods (even the saleable ones) are less than they were formerly, because the cost prices have been advanced since the P.A.T.A. entered the arena and stirred up strife. Therefore, I intend to avoid the P.A.T.A., and support as far as I am able Mr. Beecham, to whom we owe thanks for bringing to light some of the "dark spots" on this Association.

Portsmouth, November 29, 1898.

HERBERT H. BAILEY.

ANSWERS TO QUERIES.

Special Notice.—Scientific, technical, legal, and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on different slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms, and the registered number added in each instance should be quoted in any subsequent communication on the same subject.

BOTANICAL DIAGRAMS.—Kny's 'Botanische Wandtafeln' are published by Paul Parey, Berlin. [Reply to W. W.—19/32.]

BOTANICAL.—Your specimen has been handed to Mr. E. M. Holmes, who will communicate with you. [Reply to J. A.—19/25.]

CHEMIST'S COMPENDIUM.—It is published by Whittaker and Co., 2, White Hart Street, Paternoster Square, London, E.C., at 3s. 6d. net. [Reply to LASCAR.—19/33.]

MATERIA MEDICA, B.P.—We do not know that any such list has yet been published. Why not compile one for yourself? [Reply to W. S. B.—19/26.]

SPECIFIC GRAVITY OF SYR. FERRI PHOS.—We have not yet seen any published statement as to the sp. gr. of the syrup you mention. Why not make some yourself and determine the sp. gr. of the product? That would be a useful exercise. [Reply to STUDENT.—19/23.]

METHYLATED SOAP LINIMENT.—Methylated spirit may be used in the composition of soap, compound camphor, aconite and belladonna liniments, if they are otherwise made in accordance with the Pharmacopœia formulæ. [Reply to B. AND F.—19/30.]

TINCT. BENZ. CO., P.L.—B. Coarsely powdered benzoin, ℥iiss.; scraped storax, ℥iiss.; tolu balsam, ℥x.; coarsely powdered cocotrine or hepatic aloes, ℥v.; rectified spirit, Oij. Macerate for seven days, and strain. [Reply to A. E. S.—19/34.]

SALE OF POISONS.—Sulphocyanates are not poisons within the meaning of the Pharmacy Act, 1868, but it is as well to label them "poison." Any medicinal preparation containing strychnine in appreciable quantity should be dealt with in accordance with the special regulations referring to Part 1 of the list of scheduled poisons (see Pharmacy Act, Sec. 17). [Reply to ERASMUS.—19/17.]

STERILISED GELATIN VACCINATION SHIELD.—We do not know of any such article. What you refer to is probably boric gelatin, which has been employed by Dr. Sinclair White (*vide Brit. Med. Journ.*, January 1, 1898, p. 18, and November 12, 1898, p. 1519), to cover the skin after vaccination. The skin is first sterilised for some distance around the vaccine site, the lymph introduced, and the skin covered, over and around the parts, with hot boric gelatin. [Reply to F. A. W.—20/1.]

QUANTIVALENCE.—You will find the information you want with regard to sodium phosphate under Acidum Phosphoricum in the Students' Page of the Journal for September 17 of this year. You do not seem to have grasped the proper meaning of the term quantivalence. Chlorine is univalent, and hence the formula for calcium chloride is CaCl_2 , because calcium is bivalent. We cannot understand your reference to ferrous chloride and page 116 of the book you mention. Compare the statements on pp. 56 and 136. You should read Remsen's 'Theoretical Chemistry' or Scott's 'Introduction to Chemical Theory.' [Reply to W. M. B.—19/18.]

ARTIFICIAL RASPBERRY AND LIMES.—We have no formula for this preparation, and doubt if you could make it satisfactorily. [Reply to J. C. S.—19/14.]

GINGER WINE ESSENCE.—Soluble essence of ginger, 3 fl. ozs.; soluble essence of lemon, $\frac{1}{2}$ fl. oz.; tartaric acid, 1 oz.; liquid caramel, 2 fl. ozs.; tincture of capsicum, 1 drachm; oil of ginger, 20 minims; syrup to produce 8 fl. ozs. [Reply to W. W.—19/16.]

POISON REGISTER.—The space should be left blank, except when the purchaser is unknown to you and introduced by some person known to both of you. [Reply to S. H.—20/4.]

ANTI-NEURALGIA Mixture.—Quinina sulphatis, 3 grains; acid hydrobromic dil., ℥ 30; tinct. gelsem, ℥ 5; aquæ camph. ad ℥i. pro dos. To be taken every three hours until the pain ceases. Exalgine in doses of two grains in a little wine will give relief in many cases. [Reply to W. W.—19/16.]

ALCOHOLIC STRENGTHS OF TINCTURES.—You ought to be conversant with the differences in alcoholic strength, and should not find much difficulty in the matter if you classify the tinctures in groups. Moreover, since each menstruum has been selected with special reference to the physical properties of the drug, the practical acquaintance with those properties which you should possess, will afford you considerable assistance in fixing the data permanently in your mind. [Reply to E. T. S.—19/15.]

CUCUMBER EMULSION.—White castile soap, shredded, 1 oz.; cucumber pomade, 2 ozs.; tincture of quillaia, $\frac{1}{2}$ fl. oz.; distilled water, 6 fl. ozs.; rose water, to 60 fl. ozs. Dissolve the soap in the water; melt the ointment; then add it and the quillaia tincture to the soap solution and mix thoroughly. Finally, add the rose water gradually in a tepid condition, and continue to mix until cold. Leave in the mortar for some hours, and then again well mix. [Reply to GENTUMBER.—19/12.]

CONCENTRATED INFUSION OF GENTIAN.—No concentrated infusion can be made which entirely reproduces the aroma of the well-prepared fresh infusion, but the following will give you a useful preparation: Infuse 2 ounces of sliced gentian root in 14 fl. ozs. of boiling water for two hours. Strain and press. To the cold liquid add soluble essence of lemon, 2 fl. ozs.; soluble essence of orange, 2 fl. ozs.; alcohol, 90 per cent, $1\frac{1}{2}$ fl. oz.; water to produce 20 fl. ozs. Filter until bright through powdered pumice stone. [Reply to GENTUMBER.—19/12.]

COCA WINE.—Coca leaves, 4 ozs.; tartaric acid, 2 drachms; Malaga wine, *q.s.* to produce 20 fl. ozs. Reduce the coca leaves to No. 40 powder, dissolve the acid in 20 fl. ozs. of the wine, percolate the leaves with this menstruum, and continue percolation with more wine until 20 fl. ozs. is obtained. This wine will not, if prepared from good coca leaves, require a wine licence. If you wish to prepare a more pleasant tasting wine, you should use 1 fl. oz. of the B.P. fluid extract of coca made up to 1 pint with wine. This preparation, however, can only be sold by the holder of a wine licence. [Reply to E. E. F.—19/8.]

SEPARATION OF PHOSPHORIC ACID.—The mixture is boiled with strong nitric acid, and to the nitric solution, after decantation from any insoluble matter, excess of metallic tin is added, and the boiling repeated. Stannic acid is formed by the action of the nitric acid on the tin and combines with any phosphoric acid present to form an insoluble precipitate of stannic phosphate. This precipitate is filtered off, washed, and dissolved in strong potash solution. The potash decomposes the stannic phosphate, forming soluble stannate and phosphate of potassium. The solution is saturated with sulphuretted hydrogen to convert the tin into sulphide, which remains dissolved in the alkaline liquor. This is next acidified with acetic acid, which precipitates the tin sulphide. The phosphate remains in the filtrate, and may be detected by the molybdate reaction or determined by precipitation as ammonio-magnesium phosphate. The tin and nitric acid method is very useful for some technical purposes, but phosphates are usually separated by the molybdate process, which does not necessitate the use of sulphuretted hydrogen. You will find directions for applying the molybdate process in any work on quantitative analysis. [Reply to STUDENT.—19/23.]



Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Sensitiveness of Dry-Plates.

Dr. W. J. Russell has detailed the results of investigations to which he was led when repeating experiments with regard to uranium, originally performed by Becquerel, who showed that the metal uranium and some of its salts are capable of acting upon a photographic dry plate in the dark. Printing-ink has an action upon the photographic plate, not only when in contact with it, but also at a distance, the action in this case, and generally, being influenced to a very great extent by temperature. When a sheet of printed paper is kept in contact with a plate for two or three weeks at ordinary temperature, a perfectly sharp and clear reproduction of the printed matter appeared upon development; the printing on the reverse side of the paper being also shown less faintly; but at a temperature of 55° C. the same result is produced in five hours. Pieces cut from three different daily papers showed a marked variation in the action of different printing inks. The action was caused by the drying oil which formed an ingredient of the ink. Speaking generally, vegetable oils are the most active, the animal oils coming next, while the mineral oils seem to be altogether inactive. If printed paper is heated, the activity of the ink disappears. This peculiar property of printing ink is capable of being retained for a very long time. Copal varnish acts similarly, the active substance being turpentine, and all the terpenes are exceedingly active in this respect; the same is the case with all the essential oils of commerce, which contain terpenes. Alcohol and ether, when pure, are not active, and a means is thus afforded of testing their purity. Deal, spruce, oak, and mahogany possess the property of affecting a dry plate, the grain and markings of the woods being accurately and sharply reproduced. Charred wood is exceedingly active, but loses its activity if heated for some time in a crucible. Such bodies as glass, fluorspar, mica, etc., allow no trace of this activity to pass through them; but writing-paper, gelatin, and gutta-percha tissue are transparent. Of the metals, zinc is one of the most active; if dulled by exposure to the air, it is quite inactive; if the surface be quite smooth and bright, it is slightly active; but, if rubbed with sand-paper, its activity becomes very great. The activity of metals is approximately in the following order: Magnesium, cadmium, zinc, nickel, aluminium, lead, bismuth, tin, cobalt, and antimony. Mercury is quite inactive, but a trace of zinc—so small a quantity as 1/300th per cent.—makes it exceedingly active.—*Brit. Journ. Phot.*, xlv., 764.

Properties of Gelatin. R. Child Bayley recently read, before the Royal Photographic Society, a communication on the Melting and Setting Points of Gelatin Solutions and Their Modification, in which he detailed the results of some investigations carried out with the aid of an apparatus he described to the Society some two years ago (see *P. J.* [4], ii. 425), and dealt with the various influences which can be brought to bear upon gelatin, with a view to altering the temperature at which its solutions solidify and melt. It was pointed out that the setting and melting points are not identical, the setting point being generally about 8° Centigrade below that of melting. The stronger the solution in gelatin the higher is the temperature at which it will set and melt, the rise being most marked in the case of the most dilute solutions capable of solidifying at all, and the effect gradually tailing off in the case of very strong solutions. The

setting and melting points are lowered by prolonged boiling, and that eventually altogether destroys the power of setting. The author has invariably noticed that in the better grades of gelatin the effect of boiling is first to raise the melting point slightly. Prolonged boiling has a marked effect upon the colour of the jelly; however white it may be at the commencement, it soon takes on a distinctly yellowish tinge, and to such an extent that the time of boiling may be readily estimated by the colour alone. The effect of the addition of a large amount of potash alum is rather an alteration of the character of the melting and setting processes than a simple raising of the temperature at which they take place; the gelatin solution then ceases to have a definite melting point, and although for complete liquefaction a higher temperature is necessary, a partial action sets in at a temperature which is actually lowered by increasing the amount of alum present, while a still further increase gives total insolubility. With chrome alum, the effect produced by adding 1.2 Gm. per litre of five per cent. gelatin solution is about the same as that caused by 5 Gm. of potash alum, and anything over 140 C.c. of commercial formalin per litre entirely destroys all power of remelting.—*Brit. Journ. Phot.*, xlv., 764.

T. Bolas describes a tallow lamp for glass-blowing, which is free from many of the disadvantages attending the use of older forms. **New Lamp for Glass-Blowing.** The new tallow lamp consists merely of a tin-plate tray open at the top, 1 inch deep, 1½ inches wide, and 3½ inches long, through the bottom of which five flat air-shafts ¼ × ⅜ inch rise, and those air-shafts terminate level with the top of the tray. The tray being filled with tallow (or any fat oil) pieces of the compact cotton wick used for mineral oil lamps, cut to a length of 1 inch, are placed between the air-shafts and lighted. Though there are six wicks, only one large flame is formed; but the air rising through the shafts so breaks up the central hollow, and so far brings the combustion into a smaller area, that little difficulty is found in so adjusting the air jet or blast as to obtain a good blowpipe flame, whilst the hard wicks, being well within the flame, scarcely suffer after many hours use. The soft wick ordinarily found to be essential for use with the tallow lamp is undesirable in this case. All six wicks should be used, with the air-jet projecting over two of them, when the largest blowpipe flame which can be maintained by one person's blowing is required, the air jet in that case being nearly a quarter of an inch in diameter; but for smaller flames fewer and narrower wicks should be used. For example, an air-jet one twenty-fifth of an inch in diameter will require three wicks, each wick being one-fourth of an inch wide. The spaces between the air-shafts are so wide as to allow the wick to be easily removed or changed by a small pair of tweezers, but so close as hinder any tendency to shift and disturb the adjustment. A slight adjustment of one wick or more can be made with the tweezers instantly and while the blast is maintained, so that the adaptation of the fuel to the air becomes almost as easy as with coal-gas and a stopcock. The lamp stands in an outer tin plate tray about a foot square, and the bottom of the lamp is an inch and a-half or so above the tray. The front of the tray carries the air-jet with universal motions for adjustment, and a plain cover fitting loosely over the lamp, serves not only as a general extinguisher, but also to extinguish any burning wicks which may be taken out of the lamp and laid on the tray. It is found convenient never to trim the wicks, but to soak the stock of wick in paraffin wax, and then cut it into one-inch lengths; replacement of an old wick by a new one is far quicker and more convenient than trimming the old wick.—*Journ. Soc. Arts*, xlvii., 52.

ON STORAGE OF POISONS.*

BY B. S. PROCTOR, F.I.C., PH.C., BRADFORD-ON-AVON.

Nearly thirty years ago when this subject was forcibly brought under the consideration of chemists by the Privy Council, urging upon the Pharmaceutical Council that they were bound by the Act of 1868 to formulate regulations for keeping poisons, which should be binding upon all chemists, Mr. J. W. Swan and I were deputed by the chemists of Newcastle to attend, along with many other chemists from all parts of the country, at Downing Street, and protest against the Privy Council putting a compulsory meaning upon a permissive expression in the Act under consideration.

The Act provides that chemists should "conform to such regulations as may be prescribed by the Pharmaceutical Society."

Before the Act passed, I had its wording under my critical consideration, and remarked to our late friend H. B. Brady: "It is very well they say 'may' and not 'must,' for I do not think it possible to lay down strict regulations that could be reasonably adopted in all shops alike." I should have felt bound to oppose a Bill which would compel the Council to draw up regulations which we should be compelled to observe unless I saw a probability of the regulations being workable. During the visit to London, Mr. Swan and I interviewed various of our north-country members of Parliament, notably the Right Hon. T. E. Headlam, as he was not only our representative, but one of Her Majesty's Ministers and the chief pilot of medical and pharmaceutical Bills in Parliament. The discussion I had with him was interesting and enlightening both to him and to me. He gave it as his opinion that any regulations would have to apply to all things that came within Schedule A, and not to any other drugs. I urged that each chemist could best decide what was desirable and workable in his own place, and it should be enough to throw the responsibility and penalty upon him in event of an error occurring through faulty keeping. I pointed out to him that by making the Schedule the criterion of the regulations, all scheduled articles bearing the danger signal, and all other substances being free from it, would lead to absurdities and to danger. We should be bound to put a danger mark on comp. tinct. camphor, and by its absence on tinct. stramonium imply the absence of danger. Oil of ergot, though inert, would be marked dangerous and croton oil safe. Extract of poppies dangerous and ext. calabar safe. He acknowledged that such would be unwise, but that it would be law until these dangerous things not then on the Schedule were added to it. Then I put it to him that it would be a danger which the pharmacist would fall into through his carrying out the legal requirements. Would the law hold him free from penalty if an accident occurred through a poisonous substance not on the Schedule being without the danger signal? But he said "No, that could not be accepted."

As Mr. Headlam was a law man with some knowledge of medicine, the conversation was pleasant and effective, and we walked together from his chambers to Downing Street quite prepared to support, if need be, the protest against hard and fast regulations.

The sufficiency of education as a safeguard was urged by Mr. Schacht, and supported by chemists from various parts of the country. But after various spokesmen had made their speeches, Mr. Headlam and I were satisfied that enough had been said. So also thought Mr. Forster (President of the Council), for he admitted that he could not compel us to read "may" into "must."

Thus the matter dropped, and the Pharmaceutical Council, feeling that there was a tacit understanding that regulations should be drawn up, proceeded to formulate and publish such, as recommendations to the trade, and these after discussion by the general meeting of the Society held on May 17, 1871, were agreed to, and you will find them in the Society's Calendar.

After these years of discussion and consideration, what chance is there that we shall agree upon anything better than is there set out?

The whole procedure was an example of legislation in a panic and the folly of it.

A druggist's porter by mistake sold seven pounds of arsenic instead of plaster of Paris, to be used for adulterating cheap sweets, these were sold in the streets and poisoned people by scores. The arsenic and plaster of Paris were in casks without any labels and stood near together in the cellar. The sentiment of Parliament and of the public was: "These dreadful druggists! They ought all to be hanged."

Druggists and sundry-men caught the fever, and absurd proposals came up like mushrooms; and the skeletons of the said mushrooms may be detected fossilised in "a," "b," and "c," of No. 2 recommendation.

No. 1 recommendation is common sense, but common sense was not satisfactory so long as the delirium continued. I do not feel sure that the ghosts of the mushrooms have been yet safely laid. Our good friends Walter Hills and Charles Symes, at the November Council meeting talked of getting the recommendations passed as "regulations," thus giving them the force of law. The President thinks they would meet with the support of their friends throughout the country; and it is with the view of having this question considered before it is submitted to a general meeting of the Society that I now draw your attention to it.

It might be an easy thing to get unworkable regulations accepted by the Privy Council, but very difficult to get them deleted.

At the time of the panic I recommended and adopted a set of labels to attach to various articles, stating the usual adult dose, red paper for dangerous poisons in Part 1 of Schedule A, or such as ought to be there; green paper for those in Part 2 of the Schedule; and white for drugs not scheduled and not essentially dangerous. Thus strychnine would be labelled on red paper:—

Usual Adult Dose:

$\frac{3}{16}$ to $1\frac{1}{4}$ grain.

Dover's powder, a similar label on green paper:—

Usual Adult Dose:

5 to 15 grains.

And ipecacuanha a white paper label:—

Usual Adult Dose:

$\frac{1}{4}$ gr. to 2 grains.

Emetic: 20 grains.

Powdered opium and laudanum are sufficiently dangerous to justify their having a poison label on red paper, or the red dose label, but in the light of what Mr. Headlam told me if regulations prescribed a dose label as the indication of a scheduled poison, it might become illegal to modify the labels in this way according to the best of our judgment and discretion.

* Read before the Newcastle-on-Tyne and District Chemists' Association, on Wednesday, December 7.

During the quarter of a century which has elapsed since I first adopted this plan I have not seen any system which has possessed an equal number of advantages, and it is only a modification of this which I would now advocate and submit to your discussion.

Accepting Mr. Headlam's dictum, that every poison on the Schedule should have a distinctive mark on the package or containing vessel, which should not be applied to any poisonous substance not scheduled, we should adopt some simple but characteristic mark conveying a definite meaning to the pharmacist, but not to his customer, such as—



signifying "Poison Schedule, 31 and 32 Victoria, cap. 121," as the Pharmacy Act of 1868 is designated in the Calendar, etc.

I am not set upon any particular design provided that it is distinctive, does not mean too much, and meets the requirements of being applicable to all things which are poisons by law, and is not used for other materials.

The law being thus satisfied, the next point should be to make such additions as would be practically useful and not interfered with by parliamentary inspectors or outside critics. These we have in the dose labels already sketched, in which case we should not be bound to classify drugs into poisons which are dangerous and others which are not, and substances which are non-poisonous according to law but which are dangerous. If the design simply were registered as the Government mark, the pharmacist might have it printed on various coloured papers, any or all of which would fulfil the requirements of the law, but the colour of which might convey something more to the initiated. Thus the pharmacist could apply the Government mark printed on red paper to his strychnine, and the same mark printed on green paper to Dover's powder. This would be a simple step in the right direction, but it would not cover all the ground, because it would not be applicable to the dangerous substances excluded from the Schedule. Cantharidine, elaterium, extract of calabar, etc., would not be covered, hence the necessity of a distinctive label which we could use according to the dictates of common sense and would be useful for the protection of ourselves and our customers. A poison label on a stock bottle from which medicine was being dispensed might alarm a nervous patient who would take little heed of a label stating the dose to be $\frac{3}{4}$ to 2 grains, or 5 to 15 grains, but this "mem." would be a valuable check to a dispenser or salesman. If the definition of "the distinctive mark" left the colour and size as open questions, the size might range from that of a threepenny piece to a few inches, the former to suit a tube of esserine, the latter for a cask of arsenic. And if the law-men would allow the word "poison" as an alternative to the distinctive mark, which, however, is a glorious uncertainty, it would give additional facilities with no less security. We should use the Schedule label where we wish to avoid alarming our customers, and the poison label when it suited our convenience better. Thus, Winslow's syrup would bear the poison label rather than the Schedule label, because, as the Act requires this to be sold with a poison label upon it, that should suffice in its storage. It might be one desirable regulation that poisons stored packed ready for sale, such as proprietary medicines and vermin killers, are sufficiently protected when each package bears the poison label required for its sale. The recommendations as drawn by the Council and tentatively accepted by the Society, do not provide rules conveniently

applicable to proprietary medicines, vermin killers, belladonna plaster, antiseptic dressings, etc.

The No. 2 recommendation, which is an addition to the labelling required by No. 1, has three alternatives, but no one of them quite suitable for packed goods, "a" in a vessel tied over, locked etc., "b," in a vessel distinguishable by touch, "c," in the poison cupboard. If the recommendations are passed as regulations, we should be bound to store paregoric, morph. 1 oz., bell. suppos., gall and opium ointment, Winslow's syrup, bell. plasters, rat poison, sheep dip or weed killer, and a multitude of miscellanea under one or other of these three regulations, many of them not conveniently stored under any one of these three. Proceedings in the law courts during recent years have taught us that a compound containing a poison is a poison in the sight of the law. If that ruling applies to storage as well as to sale, and I do not see why not, the list would become so extensive that we might put a lock on the shop door, paint out the word "Pharmacy" from the sign-board, and put up "Poison Cupboard." But the lawyers would still be down upon us, for, as Mr. Headlam objected, this would be bringing unscheduled materials under one of the regulations which are required to distinguish scheduled poisons from other drugs, whether safe or dangerous. The dose label as previously described would work harmoniously with the Schedule label and the poison label, and should be arranged to have the same colour; thus strychnine would have the red Schedule label, the red dose label, and the red poison label. Dover's powder would have a green Schedule label, a green dose label, and not necessarily any poison label, so long as it remained in the pharmacist's keeping, but would require to have this attached if sold otherwise than by doctor's prescription. Even with this reasonable elasticity a dose label might occasionally be found unnecessary upon some of the materials the official dose of which is small. Thus we might say that all liquids the B.P. dose of which is less than $\frac{3}{4}$ ss should have the dose label attached, to reduce the chance of giving an overdose, and in most of these we should say the red dose label would be desirable, but the B.P. would thus guide us to classify the tinctures of cochineal and of saffron with the more dangerous liquids, tr. nux, tr. aconite, ol. crotonis, etc. I think I should rather attach no dose label at all to the former than use one the colour of which would be understood to imply a poisonous quality in an innocent preparation. But I would rather see this left to the discretion of the pharmacist. There would be nothing unreasonable in marking the tinct. saffron 5 to 15 drops for a dose, so long as the Pharmacopœia gives it so, nor would there be any inconsistency in omitting the dose label where there is no toxic property. The object of the dose label is to save us from the chance of giving more than a safe dose without noticing it.

Now let us suppose these suggestions or some others have been agreed upon, how is their observance to be enforced?

Probably the Pharmaceutical Society would be required to appoint an inspector whose duty it would be to make visits of inspection periodically, and defaulters when caught would be liable to a fine of £5 and costs, as indicated in Section 15 of the 1868 Act and Section 12 of the 1852 Act.

Mr. Moon or his satellites would no doubt be as agreeable as usual to all pharmacists desirous of observing the law and protecting Her Majesty's subjects from danger. I never saw him but with a pleasant face, and his light would shine into the dark corners of our shops and dispel the mist of our mismanagement. Though we elect the stars of pharmacy to be our Council, and they have shed no new light on the old recommendations as fixed in 1871. I have no doubt that Mr. Moon while moving in his orbit would both gather and reflect the light and wisdom of the world.

Thirty years ago the anticipation of an inspector was one of the dark things which we dreaded would follow if regulations were to be enforced, and Mr. Brady agreed with me that an inspector's visits might be very unpleasant; but we did not know that the services of a heavenly body could be at the disposal of the Council, though we quite thought that the inspector might carry light from one pharmacy to another, as well as from our back shops to Bloomsbury Square or the police courts. There are some materials which I feel at a loss how to treat rationally. Syrup of red poppy flowers would legally require the Schedule label, though inert; and capsules of the white poppy, though the source of preparations coming into the Schedule, are not themselves scheduled. The only ground for feeling any anxiety regarding these would be the chance that some one not on the Register, having suffered by the poison law, might retaliate by giving information of any laxity in the observance of the law by a pharmacist. This I do not think is a source of much risk so long as the enforcement of the law is in the hands of the Pharmaceutical Council, who would see in such a case that the spirit of the Act had been observed.

In adopting any code of regulations it will be necessary to make it suitable to prospective additions to the Schedule, such as carbolic acid. I have no doubt Mr. Hills and Dr. Symes have advocated this addition. Did they consider whether a cask of carbolic acid would come under "a," "b," or "c," of No. 2 recommendation? I do not think any of them are sufficiently elastic to fit it. If the carbolic acid be stored in the cellar or warehouse can these places be said to be "set apart for dangerous articles"? Probably a law-man would say that if you store soda water in the warehouse, poisons must not be stored near it. A place set apart for dangerous goods must contain dangerous goods only, otherwise it is not set apart. Some other definition must be found for the poison cupboard if it is to be a workable institution.

I should quite advise the use of a poison cupboard which should contain the most dangerous poisons used in dispensing, or for sale in small quantities. It might be for all the articles in part I of Schedule A, though in that case it might have to include vermin killers and possibly sheep dip, and I would rather have it left to the judgment of the pharmacist as to what he would keep there. His own safety and convenience would be his best guide, and would lead to different results according to many varying circumstances in different pharmacies. Every pharmacy may be expected to have a front counter for sales, where poisonous substances will be few, except the popular cough remedies, belladonna plasters, gall ointment with opium, etc. These might all bear the Schedule label. In the dispensing department a great many of the articles would be more or less poisonous in overdoses, but being little seen by the patient, might have in addition to the Schedule label, the dose label, poison label, or caution label according to the danger which was judged to be involved in their use. Then, going a step further, there would be a poison cupboard from a foot square to any number of feet required by the business, and into it would go the poisons of the criminal court, savin, ergot, cantharides, etc.; the poisons dangerous to adults in small doses, hydrocyanic acid, morphia, strychnia, cantharadine, etc., and in some few pharmacies we might have to provide for the Crichton Browne poisons, bacterial cultures, and ptomaines, which should be kept away from such innocent things as arsenic and strychnia, and consigned to a chamber of horrors only accessible to the principal of the establishment. Thus we have classified legal poisons, baby poisons, adult poisons, criminal poisons, dangerous poisons, and dreadful poisons.

It would require almost a small volume to contain all particulars of regulations to suit each individual poison under the various

circumstances of different neighbourhoods and different classes of trade, the regulations for the sale of poisons provided by the Act itself, and the definitions of poison are so crude and unreasonable as to afford no encouragement to attempt final regulations at present.

Section 17 of the Act lays down definite regulations for the sale of poisons, which it may be presumed are not to be subtracted from by the Pharmaceutical Society, but Sections 1 and 15 provide that regulations for keeping, dispensing, and selling may be prescribed by the Pharmaceutical Society presumably in addition to those contained in the Act. Had the power of subtraction as well as that of addition been given us we might have avoided some of the absurdities of the law without subtracting from its value. If a chemist labels paregoric "Poison, a teaspoonful to be taken when the cough is troublesome," it is calculated to bring the Act and the word poison into contempt. Or if we adopt another of the suggestions and label it "Poison by Act of Parliament" it is too like poking fun at the law and the law-makers. If we leave out the word poison we are open to a penalty. It becomes a problem how we can obey the law without making ourselves or our legislators ridiculous in the eyes of the public. We might fairly accomplish it thus:

Paregoric Elixir.

Dose for adults, a teaspoonful.

It is unsafe to give it to young children,
and to infants it is

Poison.

This, however, is a provision for its sale and only comes now under our consideration as an illustration of how much thought and work might be required to bring every dangerous article under reasonable regulations. Our present subject is storage, though we may subsequently be called upon to draw up further regulations for dispensing and selling. The whole task would be better accomplished if we could work under a better definition of what a poison is. I hope this paper may be submitted to discussion, and I summarise its contents in form suitable for being put to the vote. I think anything your meeting might agree upon would be desirable for publication in one or other of the trade journals.

1. That the first recommendation (see Calendar) in the opinion of this meeting is acceptable.
2. That the application of a poison label to all articles when stored, which come under the legal definition of a poison, would render the poison label too common, and thus destroy its value as a caution where most needed.
3. That there are many articles now coming under the legal definition of poison which could not be conveniently stored under any one of the three alternatives coming into the second recommendation in the Calendar.
4. That some label to be called the Schedule label be defined and adopted as the distinctive mark—



indicating that the article thus labelled comes under the legal definition of a poison according to the Pharmacy Act, 1868, and that this mark be conspicuously placed near the name of the article.

5. That the size and colour of the Schedule label be variable to suit the size of the package to which it is to be applied, and the degree of virulence of the contents.

6. That, in correspondence with the dose label, the Schedule label be on red paper for dangerous poisons; and on green for those only dangerous in larger doses.

7. That poisons kept packeted ready for sale be stored with a poison label attached to each packet as required by the Act, in the retail sale of the same. And that this meets the requirement of the storage of proprietary medicines, disinfectants, antiseptic dressings, vermin killers, weed killers, sheep dip, etc.

8. That poisons, whether scheduled or not, if judged by the pharmacist to be powerful and dangerous, shall when kept for dispensing or for sale in small quantities be stored in a poison cupboard guarded by locking, and shall have red paper labels attached beside the name of the article indicating its usual adult dose.

9. That poisons of a less dangerous kind in the judgment of the pharmacist, whether coming within the Schedule or not, shall be kept in the dispensing department, and shall have a green paper label attached, beside the name of the article, indicating its usual adult dose.

10. It is suggested that the red label should apply to dry materials the dose of which is one grain or less, and to liquids the dose of which is 20 M. or under.

11. That the green dose label should apply to dry materials the dose of which is from 1 to 10 grains, and to liquids the dose of which is from 20 to 120 M.

BRITISH PHARMACOPEIA, 1898.

THE PROPOSED INDIAN AND COLONIAL ADDENDUM.

The following is the list, with descriptions, of drugs already proposed by Indian and Colonial Authorities for official recognition in the British Pharmacopœia, and suggestions for pharmaceutical preparations. Further suggestions are invited by the Pharmacopœia Committee of the General Medical Council from any British Dependency where the drugs of the British Pharmacopœia of 1898 are insufficient for local requirements, and comments are invited from readers of the Journal in India and the Colonies.

Acaciæ Cortex.—Acacia Bark.—[A description is wanted which will satisfactorily cover commercial samples of the barks of *Acacia mollissima*, Willd., and *Acacia decurrens*, Willd. Oak Bark, which the Acacia Bark seems to represent, does not appear in the British Pharmacopœia of 1898. Is it desirable now to make Acacia Bark official?]

Acaciæ Arabicæ Cortex.—[This bark is suggested as a substitute for *Quercus Cortex*. As the oak bark is no longer official, does the Indian Government Committee still desire official recognition for the bark of *Acacia arabica*?]

Acaciæ Gummi.—[The exudation from *Acacia Catechu*, Willd., *Acacia leucophlœa*, Willd., and *Feronia elephantum*, Corr., suggested by the Indian Government Committee to take the place of official gum acacia, vary greatly in colour and differ somewhat in their reactions. Hence it seems desirable to limit the official recognition to one common Indian gum; for preparations made with different gums would differ from one another, and from those made with gum acacia. Might official recognition be confined to the gum derived from *Anogeissus latifolia*, which can be obtained of a pale colour? It gives a good mucilage and affords reactions similar to those of the official *Acaciæ Gummi*. The gum might be made official under the name of *Gummi Indicum* (q.v.)]

ACALYPHA.

Acalypha.

[The juice of *Acalypha Indica* is recommended by the Indian Government Committee as an equivalent of *Senega*. Information is desired as to whether the fresh juice or a preserved juice should be supplied. A description of the herb from which the juice is obtained is also desired.]

ACIDUM ACETICUM.

Acetic Acid.

[Reference to the British Pharmacopœia of 1898 will show that nothing prevents this acid being prepared by mixing one part by weight of Glacial Acetic Acid and two parts by weight of Distilled Water; the mode of preparation desired by the Indian Government Committee.]

Aconitum Napellus.—Aconite Root.—[Information is required as to whether the Aconite Root grown in Victoria corresponds exactly to the Aconite Root described in the Pharmacopœia. Should it correspond exactly, it will only be necessary to indicate that Victorian Aconite Root is officially recognised for use in the Australasian Colonies. Should it not correspond, the Victorian authorities are requested to furnish a description.]

ALSTONIA.

Alstonia.

The bark of *Alstonia constricta*, F. v. M. []].

CHARACTERS.—In curved pieces or quills attaining a width of two and a half inches (sixty-three millimetres) or more, and half an inch (twelve millimetres) in thickness. It is covered with a thick periderm varying from one-tenth of an inch to a quarter of an inch (two and a half to six millimetres) in thickness; of an earthy or rust-brown colour, strongly rugose, and marked with large deeply fissured reticulations, and sometimes bears small white foliaceous lichens. Internally the bark is of a cinnamon-brown colour and is marked with strong coarse longitudinal striæ. On transverse section the bark exhibits the dark-brown periderm covering the inner orange-brown tissues, in which may be observed, with a lens, numerous small shining particles. The fracture is short and granular in the outer layers, but fibrous in the liber portion. It has a faint aromatic odour and a very bitter taste.

PREPARATION.

Tinctura Alstoniæ. (Formula as *Tinctura Calumbæ*, 1898.)

[The bark is suggested for official recognition by the Medical Society of Queensland, and the preparations of extract, pill and tincture by the Queensland Pharmacy Board.]

ANDROGRAPHIS.

Andrographis.

The dried plant, *Andrographis paniculata*, Nees [Bentl. and Trim., 'Med. Pl.', plate 197].

CHARACTERS.—Stem one to three feet high (three decimetres to one metre), obtusely quadrangular and, in the upper portion, slightly winged, longitudinally furrowed, smooth, and of a dark green colour. Leaves opposite, shortly petiolate, lanceolate, entire; the upper surface is dark green and shining, the lower surface somewhat paler and finely granular; they vary in size, the larger ones attaining a length of three inches (seven and a half centimetres), and a width of about one inch (twenty-five millimetres); they are thin and brittle. Calyx small, hairy, deeply five cleft. Capsules somewhat cylindrical, tapering towards the ends, about five-eighths of an inch (fifteen millimetres) long, and one-eighth of an inch (three millimetres) wide, two-valved, with a deep furrow passing longitudinally down the face of each valve. Root simple, fusiform and woody. The dried plant is without odour; its taste is intensely bitter.

[*Andrographis* has been proposed by the Indian Government Committee for use in India as a cheap equivalent of *Himalayan Chiretta*.]

PREPARATIONS.

Infusum Andrographidis. (Formula as *Infusum Chiratæ*, 1898.)

Liquor Andrographidis Concentratus. (Formula as *Liquor Chiratæ Concentratus*, 1898.)

Tinctura Andrographidis. Formula as *Tinctura Chiratæ*, 1898.)

AGROPYRUM.

Couch Grass.

The rhizome of *Agropyrum repens*, Beauvois (*Triticum repens*, Linn.). [Berg und Schmidt, 'Off. Pflanz.', plate 139.]

CHARACTERS.—Rigid pale yellow rhizome from one-twelfth to one-tenth of an inch (two to two and a half millimetres) in diameter, usually in sections from one-eighth to one-quarter of an inch (three to six millimetres) long. Strongly furrowed longitudinally, hollow in the middle excepting at the nodes. It should be free from the remains of leaves and rootlets. Couch grass has no odour; it has a faint sweetish taste.

[Recommended by the Hong Kong authorities.]

PREPARATION.

DECOCTUM AGROPYRJ.

Decoction of Couch Grass.

	Imperial.	Metric.
Couch Grass, cut small	1 ounce	50 grammes.
Distilled Water	A sufficient quantity.	

Boil the Couch Grass with twenty-four fluid ounces (or twelve hundred cubic centimetres) of Distilled Water in a suitable vessel for ten minutes; strain. Pour enough Distilled Water over the contents of the strainer to make one pint (or one thousand cubic centimetres) of the strained Decoction.

[Recommended by the Hong Kong authorities.]

ARISTOLOCHIA.

Aristolochia.

The stem and root of *Aristolochia indica*, *Linn.* [Wight, 'Icones,' plate 1858].

CHARACTERS AND TESTS.—The stem attains a diameter of about five-eighths of an inch (fifteen millimetres); it is in more or less cylindrical pieces, marked with the projecting scars of leaves and branches, covered with a greyish-yellow bark, having shallow longitudinal furrows and reticulations in the younger pieces, and a rather warty appearance with a few transverse fissures and longitudinal furrows in the older pieces. On transverse section it exhibits a rather thick bark, enclosing a woody cylinder composed of well-defined wedge-shaped portions of xylem containing large vessels, and separated from each other by evident medullary rays, which are usually fissured radially. The root is undulated, of a dark orange-brown colour, and bears well-marked transverse constrictions; the bark is easily separable from the wood, and in many places it is removed and shows the underlying twisted woody bundles. The odour is spicy and camphoraceous, and the taste bitter and camphoraceous. The cooled decoction yields the characteristic reaction for starch with *solution of iodine*.

[*Aristolochia Indica* is proposed by the Indian Government Committee for use in India instead of *Aristolochia Serpentaria*.]

PREPARATIONS.

Infusum *Aristolochiæ*. (Formula as Infusum *Serpentiariæ*, 1898.)

Liquor *Aristolochiæ* Concentratus. (Formula as Liquor *Serpentiariæ* Concentratus, 1898.)

Tinctura *Aristolochiæ*. (Formula as Tinctura *Serpentiariæ*, 1898.)

Aurantii Cortex Indicus.

Indian Orange Peel.

[The recognition of fresh and dried orange peel, from varieties of orange other than that official in the British Pharmacopœia of 1898, is desired for India. The names of the varieties, and descriptions of their peel, fresh and dried (if differing from the official descriptions), should be supplied by the Indian Authorities.]

BEILSCHMIEDIA.

Beilschmiedia.

The bark of *Beilschmiedia obtusifolia*, *Benth. and Hook.* (*Nesodaphne obtusifolia*, *Benth.*) [

CHARACTERS.—In flat pieces attaining eight inches (two decimetres) or more in length, and one and a half inches (thirty-seven millimetres) or more in width. It is covered with a coarsely granular periderm of a deep orange-brown colour marbled with patches of a yellowish-brown hue; the tissues beneath the periderm are of a deep umber-brown colour. The inside of the bark is of an umber-brown colour, and has a close satin-like surface marked with very fine striæ. It has a close fracture, slightly fibrous in the liber portion. Odour aromatic and spicy, recalling sassafras and camphor; taste agreeably spicy and camphoraceous.

PREPARATION.

TINCTURA BEILSCHIMEDIÆ.

Tincture of Beilschmiedia.

	IMPERIAL.	METRIC.
Beilschmiedia, in No. 40 powder ..	2 ounces	100 grammes.
Alcohol (90 per cent.)	A sufficient quantity.	

Moisten the powder with one fluid ounce (or fifty cubic centimetres) of the Alcohol, and complete the percolation process. The resulting Tincture should measure one pint (or one thousand cubic centimetres).

[Recommended by the Queensland authorities for official recognition. Under which name should it be known, *Nesodaphne* or *Beilschmiedia* ?]

BERBERIS.

Berberis.

The stem of *Berberis aristata*, *D C.* [Bentl. and Trim. 'Med. Pl.,' plate 16].

CHARACTERS.—In undulating pieces from one to two inches in diameter (two and a half to five centimetres), covered with an orange-brown periderm which in some places is removed displaying the darker brown underlying tissues of the cortex; marked with slightly wavy longitudinal striæ and occasional shallow transverse depressions. The transverse section shows an outer narrow brown periderm surrounding a broad dark brown liber traversed by somewhat lighter medullary rays; the woody cylinder is composed of numerous narrow vascular rays, containing numerous vessels, separated by narrow paler coloured medullary rays. The wood is of a bright yellow colour; the portion in contiguity with the liber is somewhat lighter than the other portions. It has a faint odour and a bitter taste. A cooled decoction gives the characteristic reaction for starch with *solution of iodine*.

[Recommended by the Indian Government Committee as a *Berberis indigenous to India*.]

PREPARATIONS.

Liquor *Berberidis* Concentratus. (Formula as Liquor *Hydrastis* Concentratus, 1898.)

Tinctura *Berberis*. (Formula as Tinctura *Hydrastis*, 1898.)

BELÆ FRUCTUS.

Bael Fruit.

The dried half-ripe fruit of *Ægle Marmelos*, *Correa* [Bentl. and Trim. 'Med. Pl.,' vol. i., plate 55].

CHARACTERS.—Fruit roundish, about the size of a large orange, with a hard woody, nearly smooth rind; usually imported in dried more or less twisted slices, or in fragments consisting of portions of the rind and adherent dried pulp and seeds. Rind about one-eighth of an inch (three millimetres) thick, hard, and covered with a nearly smooth pale brown or greyish firmly adherent epicarp; the pulp firm and brittle, and of an orange-brown or cherry red colour externally, but when broken is seen to be nearly colourless internally. It has no odour, and its taste is simply mucilaginous and very slightly acid.

PREPARATION.

EXTRACTUM BELÆ LIQUIDUM.

Liquid Extract of Bael.

	IMPERIAL.	METRIC.
Bael Fruit.....	20 ounces	1000 grammes.
Distilled Water	15 pints	15 litres.
Alcohol (90 per cent.)..	A sufficient quantity.	

Macerate the Bael for twelve hours in one-third of the Distilled Water; pour off the clear liquor; repeat the maceration a second and third time for one hour in the remaining two-thirds of the Distilled Water; press the marc; and filter the mixed liquors through flannel. Evaporate to fifteen fluid ounces (or seven hundred and fifty cubic centimetres), and, when cold, add sufficient of the Alcohol to produce twenty fluid ounces (or one thousand cubic centimetres) of the Liquid Extract.

Dose.—1 to 2 fluid drachms.

[For use in India. From the British Pharmacopœia of 1885, but with the proportion of alcohol increased as desired by the Hong Kong authorities.]

BETEL.

Betel.

The leaves of *Piper Betel*, *L.* [Wight, 'Icones,' plate 2926].

CHARACTERS.—The leaves are broadly ovate, acuminate, obliquely cordate at the base, five or seven nerved; coriaceous and glossy on the upper surface; they have a warm aromatic bitter taste. In commerce they are frequently tied up or stitched together into packets.

[Recommended by the Indian Government Committee for use in India. Suggestions are required as to the preparations of Betel.]

(To be continued.)

PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL.

WEDNESDAY, DECEMBER 7, 1898.

Present :

MR. WALTER HILLS, PRESIDENT.

MR. G. T. W. NEWSHOLME, VICE-PRESIDENT.

Messrs. Allen, Atkins, Bateson, Bottle, Carteighe, Corder, Cross, Grose, Harrison, Johnston, Martindale, Park, Savory, Southall, Symes, Warren, and Young.

The minutes of the previous meeting having been read and confirmed, Mr. MARTINDALE thanked the Council for the honour done him in his absence by electing him to the office of Treasurer, which he should endeavour to fill to the best of his ability. He had had many illustrious predecessors, amongst those whom he had known personally being Mr. Daniel Bell Hanbury, Mr. Cornelius Hanbury, Mr. Thomas Hyde Hills, Mr. John Williams, Mr. Thomas Greenish, and lastly, their esteemed friend and colleague, Mr. Hampson, whose resignation they all regretted, as was very properly stated at the last meeting. He had been connected with pharmacy for forty years, had had a great deal to do with the working of the Society, and he hoped his colleagues would judge of his future by the past, though he must confess that he had not the same capacity for work that he once had. However, he would endeavour to do his best, and try to conserve the funds of the Society as much as possible, but it must be borne in mind that he would be bound to pay whatever money the Council voted. He trusted that when the new Bye-laws came into force with reference to increased fees for the Minor examination, there would be a better prospect for the Society. He thanked the Council very much for the honour done him.

CORRESPONDENCE.

The PRESIDENT said he would mention, arising out of the minutes, that a letter had been received from Mr. Hampson, thanking the Council for the resolution passed at the last meeting, and also for the kindly sentiments expressed by the members of the Council on that occasion. Mr. Storrar had written regretting his inability to attend the Council, and also at not being able to attend the Conference of the Divisional Secretaries to be held that afternoon, and expressing his intention of backing up whatever course of action might be resolved upon at that meeting. Mr. Storrar went on to express the opinion that any further legislation could not be attempted by the Society with any chance of success until they could say that the Society represented the whole trade, therefore the first thing to do was to increase the membership of the Society, and a determined personal canvass should convince most of their friends of the advisability of joining the Society. A letter had been received from Dr. Baildon, who was an old colleague of the members of the Council, stating that he had again commenced his studies abroad, and that he had recently taken the degree of Doctor of Philosophy at the University of Freiburg. Dr. Baildon had lately been appointed Professor of English literature in the important University of Vienna. He (the President) had sent his presidential card of congratulation, and in the reply which had been sent Dr. Baildon asked him to convey to his old colleagues his thanks for their good wishes.

THE LATE MR. T. W. HORSLEY.

The PRESIDENT said they had lost by death one of their divisional secretaries. Mr. Thomas W. Horsley, who was a pharmaceutical chemist, and had been connected with the Society for twenty-eight years. As divisional secretary for North Kensington, the deceased gentleman had done much to advance the interests of the Society, and had done specially good service to the Council in obtaining support for the Pharmacy Acts Amendment Bill. Mr. Horsley's son was now a student in the Society's School, and when personally entering his son's name, Mr. Horsley expressed his intention of making known to every registered person in his division the possibilities which the Act opened up. It was much to be regretted that the services of such a very active supporter should be lost to the Society.

THE NEW BYE-LAWS.

The PRESIDENT announced that a letter had been received from the Clerk to the Privy Council Office acknowledging the receipt of the letter from the Society, and stating that he had been directed to notify the Council of the approval of the Privy Council of the

Bye-laws for the better regulation of the Society's business and for the better administration of the public duties imposed upon the Society by Statute.

ELECTION OF ASSOCIATES AS MEMBERS.

The PRESIDENT then moved

That the persons who, on July 25, 1898, were registered as associates in business be now elected members pursuant to Bye-law 2, Section 1.

He said he could not allow this opportunity to pass without saying one word with reference to the motion. In the first place the Council would not wish him to read the very long list of names, amounting to some 1700 or 1800. He was very glad to have this opportunity of proposing those gentlemen as members of the Society under the new Pharmacy Acts Amendment Act, and he thought that both the Society and those gentlemen were to be congratulated. It was a good thing for the Society to have such a large accretion of members, and he trusted that the gentlemen who were now to be elected would continue that loyal help as members which they had hitherto afforded as associates in business.

The VICE-PRESIDENT seconded the proposition.

Mr. BATESON said he had asked the local secretary in his town to call upon the associates in the district and ascertain those who were willing to become members. The first gentleman called upon at once expressed his willingness, and all the others immediately followed suit.

Mr. PARK said that everyone he had called upon in Plymouth had expressed his intention of joining the Society.

The PRESIDENT said there were very encouraging reports from other centres as well as those just mentioned, and there was every reason to believe that next year there would be a very large addition to the ranks of the Society. He then put the proposition for the election of associates in business as members, and it was carried unanimously.

ELECTION OF MEMBERS.

The following having tendered their subscriptions for the current year were elected "Members" of the Society:—

Franklin, Arthur Cawte ; Titchfield.	Hodgson, John Edward ; North Cowton.
Gale, George Thomas ; Barnstaple.	Hovenden, Sydney Churcher ; Croydon.
Garnett, John Benbow ; Manchester.	Sharp, William Ashton ; Owston Ferry.

RESTORATIONS TO REGISTER.

The names of the following persons who have severally made the required declaration and paid a fine of one guinea, were restored to the Register of Chemists and Druggists:—

William Spiers, 73, Great Ormond Street, London, W.C.
 Richard John Williams, 7, Guildhall Square, Carmarthen.
 William Woodhouse, 15, Elizabeth Street, West Gorton, Manchester.

ELECTION OF A MEMBER OF COUNCIL.

The PRESIDENT moved that Mr. John Fredk. Harrington be elected a member of the Council in place of Mr. R. Hampson resigned. It had been felt that it was very desirable to select for this vacancy some gentleman out of the long list of those who were once associates in business and who had just been elected members. He was pleased to say that Mr. Harrington, who was personally known to many present, had expressed his willingness to serve if elected; he was at the present time the President of the Western Chemists' Association of London, and it was hardly necessary to say anything further, because a man who was elected to such a post must possess the confidence of those who knew him best. Mr. Harrington was one of those who had just been elected to membership, and they would be glad to welcome him to that table as a representative of that large number who had been loyal to the Society in the past, and who he trusted would continue to show the same loyalty in the future. Mr. Harrington was in business in London, and would therefore be available for work on committees when required, but he had also had considerable experience of country practice.

The VICE-PRESIDENT seconded the motion. He had not the pleasure of knowing Mr. Harrington personally, but from all he had heard about him he felt sure that he would prove a desirable member of the Council. It was an important point, in his opinion, that Mr. Harrington was resident in London, seeing that the number of gentlemen who were within easy reach of the building was small, and, he thought, had been getting less of late years.

The resolution was agreed to unanimously.

SUPERINTENDENTS OF WRITTEN EXAMINATIONS.

The PRESIDENT moved the election of the gentlemen named in the following list as Superintendents and Deputy-Superintendents of written examinations during the coming year. He

believed the names of the Superintendents who were the Local Secretaries were the same as for the current year, but in some cases the deputies had been altered.

Centre.	Superintendent.	Deputy.
Aberdeen	Strachan, Alexander	Cruickshank, John
Birmingham	Thompson, Charles	Jones, William
Brighton	Gwatkin, James R.	Savage, William W.
Bristol	Kcen, Benjamin	Allen, Benjamin
Cambridge	Deck, Arthur	Coulson, Horace
Canterbury	Bing, Edwin	Amos, Daniel
Cardiff	Munday, John	Coleman, Alfred
Carlisle	Hallaway, John	Pattinson, Michael H.
Canarthen	Lloyd, Walter	Phillips, George
Carnarvon	Jones, John	Davies, Robert
Cheltenham	Barron, Wm.	Palmer, Frank T.
Darlington	Robinson, Jas.	Hutchinson, Rev. E.
Douglas (I. M.)	Radcliffe, John C.	Young, John
Dundee	Kerr, Charles	Hardie, James M.
Edinburgh	Stephenson, John B.	Henry, Claude F.
Exeter	Lake, John Hinton	Milton, Thomas C.
Glasgow	Currie, Wm. Little	Moir, James
Guernsey	Nickolls, J. Bate	De La Rue, F. H.
Hull	Bell, Charles B.	Stoakes, Benj. M.
Inverness	Ogston, William	Bethune, W. J.
Jersey	Cole, George	Baker, John T.
Kirkwall	Stewart, Duncan	Webster, Rev. D.
Lancaster	Vince, James	Arkle, William
Leeds	Reynolds, Richard	Branson, F. W.
Lincoln	Birkbeck, John T.	Elmitt, George
Liverpool	Smith, John	Buck, Anthony S.
London	Taylor, Geo. S.	Allen, Charles B.
Manchester	Kemp, Harry	Moon, Harry
Newcastle-on-T.	Clague, Thos. M.	Swinn, Charles
Northampton	Bingley, John	Owen, Alfred E.
Norwich	Sutton, Francis	Mayer, W. D.
Nottingham	Sergeant, F. Ross	Corder, Octavius
Oxford	Prior, George T.	Beverly, R. H.
Penzance	Symons, Netherton H.	Thurland, Henry
Peterborough	Heanley, Marshall	Buckett, A. H.
Plymouth	Hunt, Freeman W.	Heanley, A. V.
Sheffield	Squire, George	Woods, Wm. H.
Shrewsbury	Cross, William G.	Pater, Joseph B.
Southampton	Dawson, Oliver R.	Blunt, Thomas P.
York	Sowray, Joseph	Wilson, Harry
		Kendall, Edwd. B.

The motion was agreed to unanimously.

REPORT OF THE FINANCE COMMITTEE.

The report of this Committee, which recommended various accounts for payment, was read.

The PRESIDENT in moving the adoption of the Report and recommendations, said the receipts and payments were of the usual character and needed no special comment. During the month a donation of 100 guineas had been received from Mr. Arthur Trentham Maw. That was another mark of the great interest taken by Mr. Maw and his family in the Benevolent Fund.

The report was adopted unanimously.

REPORT OF THE BENEVOLENT FUND COMMITTEE.

The report of this Committee included a recommendation of grants to the amount of £68 in the following cases:—

The widow (63) of a chemist and druggist, who has had three previous grants. (Deptford)

The widow (68) of a pharmaceutical chemist member and founder (1841-1859), and subscriber from 1889 to 1897. The husband had a grant in 1886. The applicant is unable to work and has no means of support. (Middlesex.)

A registered chemist and druggist (79), who has had three previous grants. Applicant is hopelessly invalided. (Cheltenham.)

A registered chemist and druggist (66) and former subscriber, who has had four previous grants. (Shirley.)

A registered chemist and druggist (75), who has had five previous grants. He has an allowance of £40 a year conditionally on receiving some assistance from the Fund. (London.)

A registered chemist and druggist (65), who had a grant last year. He acts as temporary assistant, but cannot do much, and has an invalid wife. (Liverpool.)

The SECRETARY reported the death, on November 19, of Mrs. Kate Keziah Chenery, aged 64, who was elected an annuitant in December, 1886.

Mr. BOTTLE moved the adoption of the report and recommendations. There were six cases, all of the average type, and it appeared that when once their unfortunate friends got on to the list they seldom got off it again. Most of the applicants had previously received grants, and they had evidently been of great service to them.

The report and recommendations were adopted.

REPORT OF THE LIBRARY, SCHOOL, AND HOUSE COMMITTEE.

The report of this Committee stated that the Librarian had presented his usual report, including the following particulars regarding attendance at the Library:—

Attendance.	Total.	Highest.	Lowest.	Average.	
					Day	Evening
October	432	33	5	17	
	81	9	1	4	
Circulation of Books.		Total.	Town.	Country.	Carriage paid.
October	193	103	90		15s. 11½d.

The Committee recommended that the undermentioned books be purchased:—

For the Library in London:—

Slater and Spitta, Atlas of Bacteriology, 1898.

For the Library in Edinburgh:—

Attfield, Chemistry, 17th ed., 1893. Second copy.

Scottish Medical and Surgical Journal, 1899, and continuation.

The Curator's report had also been received, and included the following particulars:—

Attendance.	Total.	Highest.	Lowest.	Average.
October	392	35	5	15
	34	5	1	1

Several donations to the Library and Museum had been received (see *P. J.*, November 12, p. 511), and the Committee had directed that the usual letters of thanks be sent to the respective donors. The PRESIDENT, in moving the adoption of the report, said the fact that several items had been adjourned for further consideration showed that though the report was not long, the Committee had not been idle, in fact, it was a very hard-worked Committee, and generally sat some hours, though on this occasion there was very little to call attention to. They had received from Professor Vogl, who was recently the recipient of the Hanbury medal, a copy of a work which he had just published, on a subject on which he was one of the highest living authorities, which would be a valuable addition to the Library, and a special letter of thanks had been sent him. The report was unanimously adopted.

REPORT OF THE LAW AND PARLIAMENTARY COMMITTEE.

The following report from this Committee was read:—

The President was requested to address a communication to the Lord Chancellor to the following effect:—

1. That it has come to the knowledge of the Council through the public press that the General Medical Council has placed in the hands of the Lord Chancellor a draft Bill to prohibit the assumption by incorporated companies of the professional privileges of persons qualified to practise medicine or dentistry.

2. That the Council is desirous of obtaining the assistance of the Lord Chancellor in extending this prohibition in favour of persons qualified to practise pharmacy in Great Britain.

3. That the object of the Council may be attained by the insertion of a provision in the Draft Bill to the effect that (a) the word "person" in the Pharmacy Acts should be made to include an incorporated company as well as a natural person, and (b) that the compounding and dispensing of all medical prescriptions should, for the protection of the general public, be restricted to persons possessing the statutory qualification under the Pharmacy Act, 1868.

4. That the Council is informed that an alteration of the law in this direction is desired by registered chemists and druggists throughout Great Britain; and the Council further desires to direct the attention of the Lord Chancellor to the circumstance that such alteration has become essential in the public interest in order to prevent the practical repeal of the Pharmacy Act by incorporated companies. It is notorious that in a large number of cases unqualified individuals who have paid penalties for infringement of the law have immediately placed themselves "above the law" by converting themselves into limited companies, and thus becoming able to continue with impunity the business which as natural persons they could not lawfully carry on.

5. The Council is desirous of obtaining his Lordship's assistance, as it is felt that there is no possibility of passing into law in the form of a private Bill such a prohibition as that above indicated.

6. Bearing in mind the remarks which the Lord Chancellor made in the House of Lords on the third reading of the Pharmacy Acts Amendment Bill in July last, and the interview which he was good enough to give the President in August, the Council feels assured of the interest which his Lordship takes in this important question.

The PRESIDENT, in moving the adoption of the report and recommendations of the Committee, said he wished it, in the first place, to be thoroughly understood that this very important subject had received constant attention from the Council, though it was not always advisable or even possible to publish the result of deliberations in committee. Going back some few years, it was well known that the Council, even in the time of his distinguished predecessor, did all that was possible at the time to deal with what most of them considered a great evil, but there were great difficulties in attacking the subject. He would ask all interested in the matter to read the account in last week's Journal of the proceedings at the General Medical Council, or the fuller report in the

Lancet of December 3, because a certain amount of light was thrown on what they themselves had done in the past in connection with the medical, dental, and veterinary bodies. An attempt was made some two or three years ago to bring joint pressure by those bodies on the Departmental Committee of the Board of Trade to obtain an amendment to any Companies Act which might be introduced, the object of which should be to prevent companies being formed for the purpose of carrying on a profession or business for which a personal qualification was necessary. Great difficulties, however, occurred in dealing with the matter on those lines, and it would be noticed that at the General Medical Council it was stated that the chances of any Companies Act Amendment Bill becoming law within any reasonable time appeared uncertain, and it therefore seemed expedient to make an attempt in some other direction. It therefore seemed good to the General Medical Council to apply direct to the Lord Chancellor, and bearing in mind the remarks he made in the House of Lords last July, and to himself personally in August, the Law and Parliamentary Committee came to the conclusion that it would be wise to appeal directly to him to help them in the present difficulty. He believed almost all registered persons were agreed on two points, first, that the Legislature, in passing the Pharmacy Act of 1868, contemplated that those who kept open shop should be qualified persons, *i. e.*, natural persons who could become qualified and registered, and that this was necessary for the safety of the public. Now, with all respect to the judgment of the House of Lords, in the case with which they were all familiar, it did not seem to be consistent with the intention of the Legislature in the Act of 1868. Great stress should be laid on the expression "keep open shop," he thought it meant that the person who kept open the shop was not only the person who financed it, but who had the direction of it, and was responsible for it. But however that might be the majority of registered persons felt that the proprietors of shops in which poisons were sold, dispensed, or compounded should be qualified natural persons. Another opinion in which they were pretty unanimous was that it was always impossible in the present condition of things to get any alteration of the law in that direction without the help of the Government. He believed that, if they were united almost to a man, much might be done to carry out the views he had expressed. It was obvious, as had been recently pointed out, that limited companies could not carry on business if there were not qualified persons willing to aid them. Referring again to the Report of the Proceedings of the General Medical Council, which appeared in the *Lancet* last week, it would be observed that the Companies Act Amendment Committee of that Council came to the conclusion that it was advisable to approach the Lord Chancellor direct, and later on the Chairman of that Committee said the General Medical Council were not promoting the Bill, but that the draft which was handed to the Lord Chancellor was simply a suggestion for a Bill. The Law and Parliamentary Committee came to the conclusion, bearing in mind what had taken place, not only at the General Medical Council, but also the remarks of the Lord Chancellor, and the interest that he was known to take in the matter, that they should appeal direct to the Lord Chancellor in the terms of the resolution then before the Council. He trusted that the Council would see its way to adopt the report, and hoped that the result might be beneficial to all those who practised pharmacy. Of this he was assured, that it was not from any want of sympathy with their friends whether in London or in the country that they had not been in the past apparently more active in dealing with this great difficulty. He trusted that the proposal would not only be adopted by the Council, but would be accepted by those they represented throughout the country as an indication of their desire in every possible way to deal with this great difficulty.

The VICE-PRESIDENT, in seconding the adoption of the report, said it was hardly necessary to add anything to what the President had said, more particularly because the report spoke for itself. It had been said over and over again that they wanted a more united body; if they had the support of all the chemists of the country there would be very little difficulty in carrying out the suggestions of the Law and Parliamentary Committee.

Mr. CARTEIGHE wished to refer back to the year 1895, to place on record the fact that the Council of the Society had been the moving spirit in raising the question before the Government in regard to both pharmaceutical and medical matters. As bearing this out he referred to a statement, bearing his signature as the

then President, submitted to the Departmental Committee on the Companies Acts 1862 to 1890, calling attention to the anomalies of the Acts as bearing upon the practice of pharmacy. In the appendix to this statement many instances were given of "one-man companies." Some difficulty had been experienced in getting Lord Davey to receive the statement and give it his consideration. When they succeeded in getting the statement before the Committee a statement was made with regard to it which he thought was the strongest indictment that had ever been made against the Companies Acts, both in regard to pharmacy and finance. He called attention to this principally as an answer to their friends, who thought they had been doing nothing for many years. The Departmental Committee he had referred to did not think that the specific amendment of the law asked for by the Pharmaceutical Society fell within their scope, and were of opinion that any real grievance ought to be carried out by an amendment of the Pharmacy Act. It was very gratifying that at last the Lord Chancellor had been approached on the matter.

Mr. ATKINS gave the proposition his most hearty support. He had a strong conviction that the resolution which he believed would be passed unanimously that day, would not be marking time but making history. Referring to what Mr. Carteighe had said, those who knew how long and how arduously they had worked in Committee, often despairingly, at this measure, felt in their consciences that they were not open to the charge of having neglected their duty upon this question. They all knew how acutely the question pressed upon hundreds and hundreds of the best and most conscientious men in their calling. Sometimes in the Committee of the Benevolent Fund they had the question practically brought before them. Those who were acquainted with the districts in which company trading flourished knew perfectly well how painful the results were to their brethren. He was glad they had gone in for something big this time. It might be fairly stated that one thing, which, as prudent men, kept them back, was the feeling that they had to get through a measure of consolidation for themselves; but as this had now been accomplished, they might at once fearlessly go in for a very big order. No doubt there were many vested interests in the way, but whatever happened, certainly the kudos of having raised the question might fairly be claimed by the Council. They would, at least, be able to say to their many friends who were going down steadily financially, that they had done the best for them, and if they had not succeeded they had at least their sympathy.

Mr. HARRISON said he thoroughly approved of the action the Committee had recommended. He had taken an interest in this subject for many years, and found it bristled with difficulties, there being large vested interests involved which yearly became larger and more difficult to attack. He was extremely obliged to Mr. Carteighe for his remarks, because he had shown conclusively from the Blue Book that they had done what they could in the matter. When some years ago the question of company trading was referred to a Committee of the Board of Trade, not to deal with matters affecting pharmacy, but mainly on the financial ground, and on that Committee after some difficulty they obtained a hearing, and facts were placed before the Committee which illustrated their position admirably. They were not in a position to go to Parliament and demand a remedy, and unfortunately they did not then represent, as regarded numbers, the interests of chemists and druggists, but they had now consolidated their forces and were in a position, such as they had never occupied before, to go to Parliament, representing such an amount of pharmaceutical opinion as would entitle them not only to a hearing, but to fair consideration. The position to-day was unique; they had had an expression of opinion from the highest legal authority that there was a great grievance with regard to company trading, and though the remedy proposed was inadequate and could not be accepted, he thought it was a wise thing to appeal to one who had so clearly appreciated the grievance, and say—here is a remedy which we believe will meet the evil. He could not but think that going with their medical and dental friends, who were suffering in the same way, with a fair and reasonable statement of the case, they were bound to meet with a respectful hearing, and he trusted some attempt would be made to redress the grievance under which they suffered. He hoped it would be the President's good fortune at the end of the next Parliamentary session to have to report that a deliberate and successful attempt had been made to remove the great evils which at present existed under the Limited Liability Acts.

Mr. MARTINDALE said the document it was proposed to send to the Lord Chancellor seemed to be only a corollary to his statement in the House of Lords last July, and the natural sequence of it, and it might be pressed with even greater force by them than by the Medical Council, because his remarks had been addressed to the pharmaceutical question, and his words had been supported by Lord Herschell.

Mr. YOUNG said the discussion seemed to have rather wandered into the question of what sort of Bill should be brought forward, but he concurred with Mr. Harrison and Mr. Atkins in hoping that a broad and comprehensive measure would be brought forward. There might be some difficulty in getting the attention and consideration of the House of Commons, but they had right and justice on their side, and if they could only get a hearing good must result. He hoped the measure they eventually decided on would be a broad one, and worth working hard for.

The PRESIDENT said he was glad Mr. Carteighe had called attention to what took place in 1895, and he would emphasise the fact that this question had been very sympathetically considered, not only by the Council, but very specially by Mr. Carteighe, who took an infinite amount of pains in the matter, and who succeeded in getting placed on record some very valuable information for the benefit of those who would have to deal with the subject later on. With reference to Mr. Young's remarks, he must point out that in the action now proposed they were not drafting a Bill—they merely pointed out that the remedy for the existing state of things lay in the carrying out of the principle underlying the Pharmacy Act of 1868, and they asked the Lord Chancellor to be good enough, bearing in mind the remarks which he had made in the House of Lords, to do what he could to carry out that principle.

The resolution was then put and carried unanimously.

POISON REGULATIONS.

The PRESIDENT announced that the following requisition had been received, signed by thirty members :—

We, the undersigned members of the Pharmaceutical Society entitled to vote at any meeting of the Society, hereby require the Council of the Society to convene a Special General Meeting of the Society for the purpose of prescribing regulations within the meaning of Section 1 of the Pharmacy Act, 1868, for the keeping, dispensing and selling of poisons, and we make this requisition pursuant to the provisions of the Charter of Incorporation, 1843.

In accordance with the Charter of Incorporation it would be their duty to arrange for a special meeting of the Society within a reasonable time.

Dr. SYMES then moved :—

That a Special General Meeting of the Society be held at 17, Bloomsbury Square, at 3 p.m., on Wednesday, January 11, 1899, to adopt regulations for the keeping, dispensing, and selling of poisons, in conformity with the requirements of the Pharmacy Act of 1868.

He said it might astonish some people that any portion of the Pharmacy Act, now thirty years old, should still remain unfulfilled, and a little explanation might be necessary on his part. For this purpose he referred to the preamble and Sections 1 and 15 of the Act of 1868, and, continuing, said, when a meeting was called to draw up regulations, objections, partly sentimental and partly founded on a substantial basis were made. If they looked at the operation and bearing of the regulations embodied in the Act and the details of some of the regulations they were asked to make, he was quite sure they would feel that having swallowed a camel they were straining at a gnat. The sentimental objections were that they would apply only to qualified men, and would not apply to a large number of persons who were semi-qualified, and would still have to handle poisons. He could respect the argument of men who felt that qualified men should not be trammelled with regulations whilst unqualified men should go free; but they had to take the Act not as it was then read, but rather as it had been interpreted by the judges. Since they had been told that "seller" in every portion of the Act except in Clause 17 meant the man who actually sold and handled the poison; that being the case any regulations which they made must apply to the person who sold. There was no particular form prescribed for these regulations, but those which were offered to the Society some twenty-eight years ago had been voluntarily adopted by some 80 per cent. of the registered men throughout the country, and would no doubt form the basis of any regulations which might be made at the meeting which he proposed should be called. The details of the regulations would probably be considered in the meantime, but he thought there would be a

little advantage in altering the earlier part and providing that the man who dispensed poisons should have the environment of safety contemplated by the Act. He merely threw that out as a suggestion that was worthy of consideration. After all it would depend on whether their resolutions were accepted by the Privy Council. If it were thought that the Privy Council could not fall in with the view that these regulations should attach to a greater surrounding than their own people, then the absurdity of legislating for a small section, and leaving the larger portion still untouched, would be so apparent that the Privy Council would give them assistance in any legislation they might attempt to correct that state of things.

Mr. ALLEN said although the recommendations, as printed in the Calendar, might possibly form a basis of any proposed regulations, he hoped that they would not be bound to adopt them, because in his opinion they wanted revising and strengthening in many points.

Mr. HARRISON felt unable to support Dr. Symes' proposition. There had already been a meeting of the members of the Society to consider this matter, at which meeting the members deliberately refused to accept the suggestion now made by Dr. Symes. There were only two circumstances justifying the Council in again calling a meeting of the members to consider this question. The first was a strong desire manifested by their constituents to have the question re-opened; or, secondly, if from the number of accidents occurring in the several pharmacies of Great Britain there seemed to be some negligence in the business conducted there as to call upon them to make some regulations. Neither of these conditions had been entirely fulfilled. There had been some fulfilment of the first condition perhaps from the fact they had received a requisition to summon a meeting to consider the subject of prescribing regulations. Dr. Symes had failed to make perfectly clear the difference between the two positions—selling and keeping. He felt that the proposal indicated a retrogressive policy, and having regard to the fact that the number of accidents occurring in pharmacies had been so small during the last thirty years, they would be forging a chain to bind themselves, for which there was no reasonable ground whatever. He should propose as an amendment :

That in compliance with the requisition received from thirty members of the Pharmaceutical Society, a Special Meeting of the Society be held at 17, Bloomsbury Square, at 3 p.m., on Wednesday, January 11, 1899, to consider the expediency of adopting regulations for the keeping, dispensing, and selling of poisons in conformity with the provisions of the Pharmacy Act, 1868.

Mr. YOUNG said he thought they had got past the necessity of discussing the expediency of the matter.

After a little discussion, on the suggestion of the PRESIDENT, Mr. Harrison framed his amendment as follows :—

That in compliance with the requisition received from thirty members of the Pharmaceutical Society, a Special Meeting of the Society be held at 17, Bloomsbury Square, at 3 p.m., on Wednesday, January 11, 1899, to consider, and, if thought fit, adopt regulations for the keeping, selling, and dispensing of poisons in conformity with the provisions of the Pharmacy Act-1868.

This amendment, having been accepted by Dr. Symes, was put and carried.

The PRESIDENT said a resolution had been forwarded by the Western Chemists' Association, passed at a meeting on November 30, to the effect that in the opinion of that Association the time had arrived for making regulations for the keeping, dispensing, and sale of poisons, in accordance with the Pharmacy Act of 1868, and that a Special Meeting of the Society should be called to consider the question.

Mr. PARK said the Association at Plymouth passed a similar resolution in April last.

The PRESIDENT said he had received from the Manchester Pharmaceutical Association a resolution passed on November 30, that the Council of the Pharmaceutical Society be requested to take early steps to promote legislation for an amendment of the pharmacy law on practical lines, as it affects limited companies. He had also received from Manchester copies of three resolutions, passed on November 30, as follows :—

1. That this meeting suggests that all registered chemists trading under ancient titles shall be required to use the name of the present owner in conjunction therewith.
2. That this meeting pledges itself to use every effort to induce all registered chemists to ally themselves with the Pharmaceutical Society, and thereby lead to the consolidation of the craft.

3. That this meeting, believing it to be for the best interests of the trade that the present recommendations for the storage, etc., of poisons, should become regulations subject to the provisions of the Pharmacy Act, 1868, requests the Council to take early steps towards this end.

He suggested that these resolutions should be referred to the Law and Parliamentary Committee.

This was agreed to.

THE SALTERS' COMPANY RESEARCH FELLOWSHIP.

The PRESIDENT said a letter had been received from the clerk to the Salters' Company approving the nomination of Mr. Thomas Tickle to the Salters' Company Research Fellowship for the ensuing year. A letter had also been received from the Assistant Secretary to the Marine Department of the Board of Trade, saying that in view of the new Pharmacopœia, the medical scales for merchant and passenger ships would require to be amended, and asking if the Pharmaceutical Society would nominate some one to act on a Committee for that purpose in conjunction with two members of the medical staff and nominees of the Royal College of Physicians and Surgeons respectively. He suggested that the matter should be referred to the Library, etc., Committee, with power to make the nomination. This was agreed to.

THE CHELSEA PHYSIC GARDEN.

The PRESIDENT said a letter had been received from the Charity Commissioners enclosing a draft scheme for the management of the Chelsea Physic Garden, and asking if the Society would be prepared to nominate a member of the Committee which it was proposed to form. The Committee was to consist of fifteen persons, eight nominated by the Trustees of the London Parochial Charities, and the remaining seven by the Treasury, the Lord President of the Council, the Technical Education Board, the London County Council, the Royal Society, the Society of Apothecaries and the Royal College of Physicians in turn, the Pharmaceutical Society of Great Britain, and the Senate of the University of London respectively. He thought it was satisfactory to note that the Society was asked to take a part in this work, and he suggested that he should be authorised to reply that they would be happy to make a nomination when the time came.

This was agreed to.

Mr. MARTINDALE remarked that the name of the Gardens as inscribed on a tablet on the wall was Hortus Pharmaceuticæ.

The PRESIDENT said a letter had been received from the Privy Council saying that the Russian Ambassador had applied for copies of any regulations in force in this country with regard to chemists, and asking if any further regulations were in force beyond such as had been supplied on a former occasion to the Belgian Government. He took it the Council would leave it in his hands to supply the necessary information.

This was agreed to.

REPORT OF THE GENERAL PURPOSES COMMITTEE.

The report of this Committee, so far as it dealt with the appointment of local secretaries, examiners, etc., was read.

The PRESIDENT said he regretted that replies had only been received from five places with regard to the appointment of local secretaries, but it was open to the Council to make appointments at any time, and he still hoped that further replies would be received. In the meantime he moved the appointment of the following:—

Local Secretaries.

Enfield	Goldby, Frank.
King's Lynn	Palmer, W. J.
Leominster	Sandiland, R. B.
Richmond (Yorks.)	Walton, E. Bridges.
St. Helens	Wallbridge, J. G.

Assistant Local Secretaries.

Birmingham (North)	Poole, Jeffrey.
„ (South)	Jones, Wm.
Dundee	{ Russell, J. W. Park, Wm.
Glasgow	{ Moir, James. Russell, J. Anderson. Boyd, A.
Liverpool	{ Buck, Anthony S. Grace, W. A. Walker, F. Hudson, T. H. Thompson, C. J. S.

Divisional Secretaries.

West Kensington	Worsley, Albert Geo.
South St. Pancras	Churchyard, Robt. L.
Greenwich	Parsons, Wm.

The PRESIDENT explained that Mr. Parsons, of Greenwich, had been appointed in place of Mr. A. J. Brown, who had been obliged to retire owing to ill-health, but who they would all hope would soon recover his strength, and to whom they were much indebted for his services in the past.

APPOINTMENT OF EXAMINERS.

The PRESIDENT moved, on the recommendation of the General Purposes Committee, that the following be appointed Examiners for the ensuing year:—

ENGLAND AND WALES.

Arkininstall, William; London.	Phillips, Alfred James; London.
Farmer, John Bretland; London.	Saul, John Edward; London.
Farr, Edward H.; Uckfield.	Tanner, Alfred Edward; London.
Harvey-Gibson, John; Liverpool.	Taylor, George Spratt; London.
Kipping, F. Stanley; Nottingham.	Thomson, John Millar; London.
Lucas, Edward William; London.	Wright, Robert; Buxton.

Also, on the recommendation of the Executive of the North British Branch, that the following gentlemen should be appointed Examiners for the ensuing year in

SCOTLAND.

Balfour, Isaac Bayley; Edinburgh.	Jack, James; Arbroath.
Davidson, Alexander; Montrose.	Lunan, George; Edinburgh.
Dobbin, Leonard; Edinburgh.	Maben, Thomas; Hawick.
Ewing, James Laidlaw; Edinburgh.	Nisbet, John; Portobello.

The PRESIDENT moved a vote of thanks to each member of the Board of Examiners in England and Wales and in Scotland for their services during the past year. He said this was by no means a formal vote in any case, but he wished specially to mention three gentlemen, Professor MacLeod, Mr. A. G. Seward (Cambridge), and Dr. Gibson in Scotland, who, under the regulations adopted in 1894, were ineligible this year. These gentlemen came on the Board when the new regulations were made, and by their urbanity and courtesy had done much to make things work smoothly and to advance and maintain the standard of the examinations.

The resolution was carried unanimously.

NEW SCHEDULE FOR THE EXAMINATIONS.

The PRESIDENT moved that the recommendation of the General Purposes Committee with regard to new examination schedules be adopted, and that they come into force as from September 1, 1899. These had been considered very fully by a sub-Committee and by the General Purposes Committee, and the subject of a revision of the schedules had been for a long time under the consideration of the Boards of Examiners, because in such a matter absolute unanimity was required, and that necessarily caused delay. The great object kept in view had been rather definition than increase of stringency, and if the new schedules were carefully examined he thought it would be found that that was the result. The only point to which he thought it desirable to call attention was in connection with the practical examination in chemistry, where this sentence was added, "To analyse a mixture containing not more than two metals and two acid radicles." One of the examiners in chemistry, in reference to that, said he did not think it would be a hardship to the candidate, as they were already prepared for it by being required to detect one substance in the presence of another.

The motion was agreed to unanimously.

CONCLUDING BUSINESS.

The Council then went into committee to hear and consider the report of this Committee on legal matters.

On resuming, the report and recommendations were adopted, and resolutions passed authorising the Registrar to take proceedings against the parties named therein.

METHYL SALICYLATE IN GONORRHOEA.—Durange finds that the following injection rapidly effects a cure in cases of gonorrhœa in all stages of the disease: Methyl salicylate, 1; bismuth subnitrate, 20; liquid vaselin, 100; to be employed in three injections per diem. The liquid should be retained as long as possible in the urethra.—*Bullet. de la Societe de Pharm. du sud-ouest*, xx., 257, after *Semaine Med.*

NOTICES OF BOOKS AND OTHER PUBLICATIONS.

'THE PHARMACEUTICAL FORMULARY,' edited by J. Oldham Braithwaite (London: J. and A. Churchill. Price, 6s. 6d.), is an old friend with a very new face, being the twelfth edition of Beasley's 'Pocket Formulary.' Inasmuch, however, as the work has been entirely re-written, it is a new book. As stated by the editor in the preface, the object kept in view in compiling the book has been to bring together, in a compact and convenient form, the whole of the formulæ in the British, French, German, and United States Pharmacopœias, together with those of the chief unofficial formularies in common use in this country and abroad, and such other medicinal formulæ as experience has proved to be of more than merely local importance. That object would appear to have been very thoroughly effected, and it would be difficult to mention any medical formula of real importance that is not included in the book. It embodies the whole of the British Pharmacopœia, B.P.C. Unofficial Formulary, Codex Medicamentarius, Arzneibuch für das Deutsche Reich, Arzneimittel die im Deutschen Arzneibuch nicht enthalten sind, U.S. Pharmacopœia, and National Formulary, with judicious selections from other works, boiled down into one small compact volume of less than five hundred pages, in which are presented "all that is best in what is practically the world's pharmaceutical practice." No more useful addition to the library of the modern pharmacist could well be conceived, for in addition to supplying so much definite information, it is also packed with suggestions for the production of new and elegant formulæ, and Mr. Braithwaite is to be congratulated upon the completion of a difficult and most praiseworthy task.

IN 'PLYMOUTH AS A TOURIST AND HEALTH RESORT,' by F. M. Williams, M.R.C.S., D.P.H., the members of the British Pharmaceutical Conference will find a plain and trustworthy account of the attractions offered by the town selected for their next meeting, and by its beautiful surroundings. The book commences with a concise historical summary, contributed by the Plymouth Borough Librarian, and subsequent sections treat of Plymouth as it exists to-day, objects of interest in and about the town, the facilities offered to tourists who make Plymouth a holiday centre, the climate of Plymouth, and places and objects of interest in the neighbourhood. There is no doubt that the more persons who read this well-illustrated little book, the larger will be the attendance when the Conference visits Plymouth next July. Mr. A. D. Breeze, Hon. Secretary of the Plymouth Incorporated Mercantile Association, is therefore doing his town good service in offering to send a copy of the book to any chemist who will remit 2½d. in stamps to cover postage.

THE XMAS 'PHOTOGRAM' contains several features of interest, and is printed in the first-class style with which readers of the *Photogram* are now familiar. The Holy Shroud of Turin is reproduced in two supplements, the larger—measuring 20 in. by 5½ in.—being intended for framing. It represents the shroud exactly as it appears, with the distinct impress of the front and of the back of a body. The smaller (full-page) reproduction shows the face and front of the body as they would appear on Signor Pia's negative which has been so much referred to in the daily press. A special article in this issue directs attention to the many objects of historical interest and natural beauty which are threatened with destruction, and calls upon photographers to resist, where possible, the destruction, or, failing this possibility, to faithfully record the scene. "Hand-Camera Work in Winter" is

shown in the course of an illustrated article by Paul Martin to be both possible and enjoyable, and altogether the Christmas number of the *Photogram* is most attractive and useful.

THE 'LONDON UNIVERSITY GUIDE' for the year 1898-9, published at the University Correspondence College Press, London, and supplied gratis to anyone applying for a copy, is probably the most useful book intending candidates for the London University examinations could refer to for information. There is a brief but interesting account of the history and constitution of the University, and full particulars are given as to the requirements for all the examinations. Then follows a list of the special subjects for 1899 and 1900, detailed and well-considered advice regarding the choice of text-books, and short descriptive articles on special subjects for 1900. The new regulations of the University of London, which come into force next year, are fully explained in this issue of the Guide.

'NATURAL SCIENCE' closes the first stage in its career with the December issue, which contains a criticism of Mr. Herbert Spencer's biological hypotheses by Professor C. Lloyd Morgan; the second part of a contribution on the artificial formation of a rudimentary nervous system, by Professor A. L. Herrera; an illustrated article on the neuration of Rhopalocera, by A. Quail; the presentation of a theory of retrogression, by G. Archdall Reid, M.B., and a paper on the movements of diatoms, with a full-page plate illustrating the structure of those organisms, by F. R. Rowley. Notes and comments on scientific affairs of current interest, notices of new books, and other matters of interest help to make up a most entertaining number of a publication that is well worthy of support. *Natural Science* will henceforth be published by Mr. Young J. Pentland, Edinburgh, and the subscription is thirteen shillings per annum.

DR. BLAKE'S BOOK on "The Hand" (London: Henry J. Glaisher. Price 2s. 6d. net.) treats of the study of that organ for indications of local and general disease. It is well-known that when the aid of a European physician is sought for a female member of a Mohammedan family of distinction, a hand, thrust through a small opening in a curtain, is the only part of the patient which the doctor is permitted to see. That such a course of procedure is not altogether absurd is shown by Dr. Blake, for he clearly demonstrates how a large amount of general information may be gleaned from a patient study of the hand. The book is illustrated by photographic reproductions of hands affected in various ways, and much curious information is imparted by the author.

LETTS'S 'MEDICAL DIARY' for 1899 is a most useful book, containing much information compiled expressly for the use of the medical profession, besides ruled pages for noting obstetric engagements, vaccination, nurses' addresses, thermometrical or other fluctuations, monthly cash account, etc. It can be obtained with space for 54 or 108 patients' names daily, and in various styles, at prices ranging from 2s. 6d. to 5s. 6d.

'THE MEDICAL AND SURGICAL REVIEW OF REVIEWS,' edited by Nathan E. Boyd, M.D., which has now reached its second number, purports to be a monthly summary of "the best in the medical and surgical periodical literature of the world," and already it goes far to justify that description. All the abstracts included in the paper are accompanied by full references to original sources, and the busy man can have no better guide to what is worth consulting in the numerous publications that appear every week and month.

THE PHARMACY OF THE ORGANOID.*

BY DR. J. C. MCWALTER.

An organ is a part which has a determinate function in the animal economy. By an organoid is meant a medicine which is supposed to fulfil the function of the organ from which it is prepared. The organs of most interest to therapeutics are those which modify the condition of the blood stream by adding, or extracting, some ferment or otherwise influencing it. The problem for pharmacy is two-fold—on the one hand to isolate, elaborate, and present in active and agreeable forms those secretions or ferments on which the activity of the various organs depend, and on the other to investigate their nature and conditions of action. Many pharmacists seem to think that professional etiquette should restrain them from the prosecution of researches in physiological chemistry lest they should seem to be trespassing on the physician's territory, but surely it is a hopeless task to endeavour to make a preparation of the active principles of an animal gland if one has not the remotest idea of what that principle might be. The impudence of the advertising person who seeks to persuade the medical profession that his preparation must represent the active principles of a gland because he has powdered a dead gland and pressed it into tablets seems on a par with the countrywoman described in one of Ian MacLaren's stories, who, being ordered by her doctor to administer three leeches, toasted them carefully and swallowed them down. The process of ratiocination by which that excellent lady concluded that by swallowing the leeches whole she was certain of the benefit of any virtue they possessed is very similar to that of certain manufacturers who give the assurance that if some desiccated portion of a gland be swallowed its properties must thereby be gained, and the relief which follows in many cases is probably due to the same causes as in the case of the Lady of the Leeches.

The science of therapeutics must be grounded on the effects which certain medicines exercise on the blood cells. Every blood cell contains a nucleus, and the chief constituents of these nuclei are called nucleins. They are highly complex phosphorous compounds whose number and complexity depend only on the variety of the cells. These nucleins are found in both animal and vegetable tissues, in yolk of eggs, yeast, liver, spleen, and in the thyroid and thymus glands, cow's milk, etc. The nucleins correspond to the empirical formula, $C_{29}H_{49}N_9P_3O_{22}$, and, besides phosphorus, most nucleins contain also sulphur. The power of the body to resist the attacks of pathogenic microbes and the ravages of epidemic diseases depends on the property which the blood cells possess of exercising a bactericidal or phagocytic action on these micro-organisms, and that power which suffices for the preservation of health under normal circumstances is found to be dependent on the integrity of the blood cells, and these in their turn must rely on the condition of the nuclei. When, therefore, the nuclei of the blood cells are unable to discharge their normal functions it is an obvious rule of therapeutics to refresh and invigorate them by the introduction into the blood stream of healthy nucleins. Such nucleins have been prepared from yeast, and taken either by the mouth or hypodermically, with considerable success. They are found to possess powerful therapeutic properties, and to have the power of stimulating an increase of the white blood cells. They require for their solution a weak alkaline preparation, and it has been found by direct experiment that the bactericidal power of certain of the nucleins is due in a large measure to the carbonate of soda necessary to dissolve them. Now, to pharmacists a detail of that nature is what renders their work at once necessary and interesting. It has been seen that an alkaline solvent is necessary, and only a skilled pharmacist could have suggested such a solvent. If the experimenters had relied on some desiccated preparation, some tablet or alcoholic solution, their efforts would have been in vain. Nucleins are found to be useful in assisting the organisms to combat disease, and it behoves the pharmacist to help the physiological investigator by suggesting what solutions will give the substance the greatest efficacy. A simple alkaline solution is found to be best, but unless the pharmacist has some *à priori* knowledge of the constitution and properties of the cells, he will not be in a position to help the doctor, and the latter will be reduced to blind empiricism in trying one solution after another. Pepsin of the B.P. is an organoid, and the suggested test in the Pharmacopœia is utterly impracticable for ordinary purposes, and very liable to

mislead unless strictly followed. The test laid down in the the 1885 edition demands only half an hour's trial, while the present B.P. requires six hours' attention. It would be very erroneous to assume that, because the test of the new Pharmacopœia requires pepsin to dissolve fifty times as much albumin as did the old, that the former is fifty times as strong. The fact is that acidulated water will dissolve white of egg without any pepsin, if only it be left long enough at the proper temperature. A pepsin, therefore, of which 1 grain would cause solution of 250 grains of albumin in half an hour, would probably be of greater digestive power in the human stomach than one which dissolves 2500 grains in six hours. Passing onto the liquor pancreatis, it will be observed that there is not the slightest admonition to observe aseptic precautions. It is not stated whether the pancreas must be hot from the animal or otherwise, neither are any particulars as to the appearance of the liquor given. We are told that it is a liquid, but beyond that no hint as to colour or consistency is conveyed. That muddy preparation depositing greyish flakes so familiar in some pharmacies might claim to be the liquor pancreatis of the British Pharmacopœia, if only it answers the very modest test given in the book, and that test is a perfect farce as a criterion of potency. It has been suggested by Mr. C. Umney that liquor pancreatis may be made by digesting an ounce of pancreatin in a pint of 20 per cent. of alcohol, but there is a pancreatin on the market of which a grain will peptonise more milk in half the time than twenty times the quantity of the liquor pancreatis. Moreover, nothing is stated as to the milk in the directions for testing pancreatis. Complete directions are given as to boiling the egg, removing the membranes, etc., but as to whether the milk should be fresh from the cow, alkaline and warm, or many hours old, charged with bacteria, and undergoing lactic fermentation, not a word is said. Mr. Umney gives the credit for the formula for liquor thyroidei to Mr. E. White, a pharmacist to one of the London hospitals, and who had done much work on the subject, but Dr. Murray, of Newcastle-on-Tyne, appears to regard it as his offspring. There are complaints that this preparation does not keep, but this is probably due to the proportion of carbolic acid being too small, and to the want of specific instructions as to sterilising the mortar, flask, etc., in which it is supposed to be prepared. Instead of the carbolic acid should be substituted a little common salt, which—pharmaceutically—should suggest itself as a solvent for the serum globulin and iodine compounds. Pharmacists accustomed to microscopic work may have noticed the wonderful effect of a few drops of salt solution on blood cells in preserving their vitality and preventing necrotic changes. Some discussion has recently been raised about testing for iodine in thyroid tablets. Certain tablet makers complain that the ordinary test for iodine, consisting of the addition of a few drops of hydrochloric acid to the solution and the subsequent agitation with chloroform to which the iodine gives the characteristic violet tint, does not demonstrate iodine in their preparations, and it certainly is difficult to do so; but it has been observed that if a tablet which contains iodine be subjected to the test, and the test solution allowed to remain in the light for some hours, a very notable quantity of chlorine is evolved. This is apparently due to the conversion of the chloroform and iodine into chlorine and iodoform, but the rapidity of the change seems to be due to some ferment in the gland. On this point, however, a personal investigation should be made by pharmacists.

When the history of medicine in the last decades of the nineteenth century come to be written no more humiliating chapter can appear than that which describes how certain manufacturers seek to torture every new remedy into the form of tablets, gelatinoids, pills, or pastilles, without the slightest regard as to whether such form is calculated to preserve or enhance the properties of the gland. The gland should be extracted with sterilised glycerin, and a solution of common salt (5 per cent.) added, whilst after filtering the solution should be rendered aseptic by being subjected to a pressure of twenty atmospheres of CO_2 . With the exception of a few preparations of the thyroid, stomach and pancreas, there are very few animal extracts produced in Great Britain which at all represent the active principles of the glands or are any credit to pharmacy. This is largely due to the absurd attempts to desiccate the organs. There is, in consequence, a very wide field of work open to the scientific pharmacist in examining the functions and properties of the various organic remedies used in medicine, and ascertaining what solvents will best extract their virtue, and what are the cardinal principles governing the pharmacy of the organoids.

* Report of a lecture delivered before the Pharmaceutical Society of Ireland.

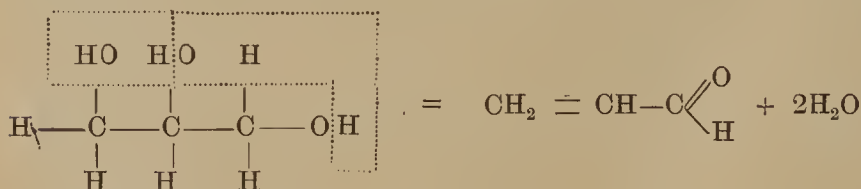
THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P. 1898.*

Extractum Ergotæ.—The process for this extract is very similar to the one contained in the Swiss Pharmacopœia. When the alcoholic filtrate is evaporated and diluted with water, resinous and oily substances are deposited and removed by filtration. The addition of hydrochloric acid causes the precipitation of a quantity of the colouring matter—the so-called sclererythrin. To the filtrate sufficient sodium carbonate is added to almost neutralise the acid, and the liquid is then evaporated to a *soft extract*. The directions for evaporation are somewhat vague, but this is perhaps unavoidable in the present stage of our knowledge concerning the active principles of ergot and their relative value as medicinal agents. It must also be remembered that different samples of ergot do not yield a constant quantity of total extractive, so that evaporation of the final product to a given weight, bearing some proportionate relationship to the weight of ergot taken, would result in a product of very variable consistency.

Glusidum.—A printer's error crept into the explanatory note on this substance. At page 594, column 2, line 11 from the bottom, for "glucoside" read "gluside."

Glycerinum.—The official tests for this substance have been considerably increased. Although insoluble in ether or chloroform, it is soluble in a mixture of either of these fluids with absolute alcohol. Its solubility in these mixtures may be utilised in analysis to separate glycerin from such substances as sugar, gum, gelatin, and many inorganic salts which are insoluble in ether-alcohol or chloroform-alcohol. The specific gravity is now given as 1.260, which corresponds to about 98 per cent. glycerin. Absolute glycerin has a sp. gr. of 1.265, but the removal of the last traces of water is somewhat difficult and not necessary in the case of glycerin for medicinal purposes. When heated it is decomposed, the chief product being acrylic aldehyde, to which the irritating odour of the decomposition products is due—



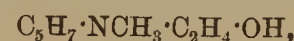
The darkening with ammonia and silver nitrate would indicate substances of an aldehydic nature (*e.g.*, formic and acrylic aldehydes), which consequently reduce silver nitrate in neutral or alkaline solution (compare the behaviour of aldehydes in your text-book). Such bodies might be produced by overheating during the distillation in the process of manufacture. The addition of ammonia may be regarded as a precautionary measure to neutralise any acid present, since the black precipitate of silver cannot be obtained in strongly acid solutions. The test for butyric acid depends upon the production of ethyl butyrate. Butyric acid, $\text{C}_3\text{H}_7\text{COOH}$, is homologous with acetic acid, and the production of its ethyl ester under the circumstances described is quite similar to that of ethyl acetate (*vide* *Æther Aceticus*, *P. J.*, November 26, 1898, p. 552). The butyric acid is derived from butyrin (the glyceryl ester, analogous to olein and stearin), which is a constituent of some of the oils and fats from which glycerin is made. In performing the test for arsenic particular care should be taken to ensure that the materials and apparatus employed are free from arsenic. The best plan is always to make a blank experiment first, *i.e.*, without the glycerin.

Homatropinæ Hydrobromidum.—If atropine be heated with alkalis it undergoes hydrolysis, a base called tropine and an organic acid, tropic acid, being the products. The tropic acid combines with the alkali, and the tropine may be removed by "shaking out" the hydrolysed product with ether. If the tropine be then heated with certain organic acids (in presence of hydrochloric

acid) the acid and base combine with formation of an ester, water being eliminated. The group of mydriatic alkaloids having the constitution of esters derived from tropine, or some allied base, and tropic acid or allied acid are called tropëines. To obtain homatropine the tropine, obtained as described above, is recombined with mandelic acid. Homatropine belongs, therefore, to the group of artificial tropëines, and may be called tropine mandelate, just as atropine may be regarded as tropine tropate. The tropëines are esters because they are derived from an acid and an alcohol just like ethyl acetate, according to the general reaction:—



The esters derived from alcohols like ethyl alcohol, containing a hydrocarbon radicle, are neutral bodies. The tropëines, however, although esters, are strongly basic alkaloids, for tropine has the constitution of methyl-oxyethyl-tetrahydro-pyrine—

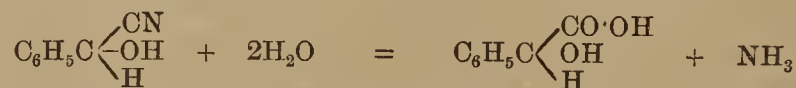


and while, therefore, it contains a hydroxyl group, like ethyl alcohol, it is a strong base by virtue of the nitrogen atom in the pyridine nucleus. The basic properties of this group cause the esters—the tropëines—to be also basic bodies. Homatropine is used in ophthalmic practice, because, while it dilutes the pupil, like atropine and the other mydriatic alkaloids, its effects do not persist so long. Dilatation of the pupil is required for the examination of the interior structure of the eye, but after the examination the patient suffers considerable inconvenience from the entrance of too much light through the widely-dilated pupil: hence the reduction in the after period of dilatation is an advantage. Homatropine is a homologue of atropine, the difference of CH_2 in their formulæ being due to the homology of tropic and mandelic acids. Tropic acid is α -phenol- β -hydroxy-propionic acid, $\text{CH}_2(\text{OH})\cdot\text{CH}(\text{C}_6\text{H}_5)\cdot\text{COOH}$,

while mandelic acid is phenyl-hydroxy-acetic acid, $\text{CH}(\text{OH})(\text{C}_6\text{H}_5)\cdot\text{COOH}$. It is so called because it was first obtained by the action of hydrochloric acid on amygdalin (Ger., mandel, an almond). It is now made from benzaldehyde. Like other aldehydes, this combines with hydrocyanic acid to form an additive compound—a cyanhydrin.



By boiling with hydrochloric acid the cyanide group is converted by hydrolysis into carboxyl (compare *nitriles* in your text-book) and mandelic acid obtained.



Infusions.—The changes effected in this group of preparations by the 1898 Pharmacopœia may be briefly summarised as follows: Six formerly official are now omitted, *viz.*, the infusions of chamomile, catechu, kousoo, jaborandi, linseed, and matico, while a formula for infusion of broom has been introduced to replace the decoction of the same drug. The omissions are justified by the disuse into which the six infusions mentioned have fallen. The time of infusion has been in most cases reduced, and is now fifteen minutes in all cases, except infusions of calumba and senega (half hour each), and acid infusion of cinchona (one hour). Several changes in strength have been ordered, mostly tending to produce uniformity, one infusion (cascarilla) having been reduced from 1 in 10 to 1 in 20, and four (chiretta, ergot, rhubarb, and serpentina) increased from 1 in 40 to 1 in 20. Changes of lesser magnitude have also been effected in the infusions of quassia (now 1 in 100) and digitalis (now 1 in 146). The doses have been mostly reduced, the maximum being one fluid ounce, except for digitalis (four fluid drachms), and six others, *viz.*, buchu, cusparia, ergot, hops, broom, and senna (two fluid ounces). The infusions of cusparia and chiretta are made with boiling water in place of water at 120° F.—another change in the direction of uniformity, which is justified by the absence of sufficiently good reasons for the exceptional treatment of these two infusions.

* NOTE.—This series of articles should be read in conjunction with the series referring to the 1885 B.P., and published in the *P. J.* during 1897 and the earlier portion of the current year.

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THE COUNCIL MEETING.

AFTER the minutes of the previous meeting had been confirmed, Mr. MARTINDALE gave expression to his grateful sense of the honour done him by his colleagues in appointing him to the office of Treasurer, which has been held by so many distinguished members of the Society.

The PRESIDENT mentioned the receipt of a letter from Mr. HAMPSON, thanking the Council for the resolution of generous appreciation passed at the last meeting, and members of the Society will be pleased to learn that in a postscript he conveyed the information that his health is improving.

Mr. STORRAR, in writing to express regret that he could not attend the Conference of Divisional Secretaries, stated his conviction that any attempt by the Society to obtain further or amended legislation would have no chance of success until it represented the whole trade, and that the first thing to be done is by a determined personal canvass to demonstrate the advisability of joining the Society.

The PRESIDENT also mentioned that he had written to Dr. BAILDON, congratulating him, on behalf of the Council, on his appointment of Professor of English Literature in the University of Vienna, and had received a letter from Dr. BAILDON asking him to convey his thanks to his former colleagues for their good wishes.

Sympathetic reference was made to the death of Mr. HORSLEY, the Society's divisional secretary for North Kensington, as an unexpected loss of an active supporter.

The letter from the Privy Council communicating the confirmation of the Bye-laws, recently made "for the better regulation of the Society's business and for the better administration of the public duties imposed upon the Society by Statute," was read.

On the motion of the PRESIDENT and Vice-President, the persons who were, on July 25 last, registered as associates in business on their own account, were elected members of the Society, and thus the first step was made to give effect to the amended constitution by which opportunity is afforded for all registered persons to co-operate together, on a footing

of equality, in promoting the objects of the Society's Charter and assisting in the attempt to remedy those defects of subsequent legislation which have now become so detrimental. Mr. BATESON and Mr. PARK stated that in their districts a very general intention had been expressed to join the Society as members, and the PRESIDENT added that the numerous encouraging reports from other places led him to anticipate a very large addition to the ranks of the Society at the opening of the next year.

Mr. JOHN FREDERICK HARRINGTON was elected a Member of the Council in the place of Mr. HAMPSON, and in proposing him for election the PRESIDENT explained that it had been thought desirable to select one of the number of those who had, under the new Pharmacy Act and Bye-laws, acquired the status of member of the Society.

The Superintendents and Deputy Superintendents of Written Examinations were elected according to the lists given at page 614.

The report of the Finance Committee had no unusual features, and its recommendations were consequently adopted without remark.

On the recommendation of the Benevolent Fund Committee, six grants, amounting in the aggregate to sixty-eight pounds, were ordered to be paid. The Secretary reported the death of Mrs. KATE CHENERY, who has been an annuitant since 1886, and the PRESIDENT announced that Mr. A. T. MAW had made a donation of one hundred guineas.

The report of the Library, School, and House Committee was unusually brief, but the PRESIDENT observed that the work done by that Committee was very considerable, and that the present brief report must not be supposed to indicate that the Committee had been idle.

The report of the Law and Parliamentary Committee stated that the PRESIDENT had been requested to address a communication to the LORD CHANCELLOR, to the effect that the Council is desirous of obtaining His Lordship's assistance towards extending, in regard to persons legally qualified to practise pharmacy, the prohibition of the assumption of professional titles by incorporated companies now being sought for by the General Medical Council.

In moving the adoption of the report, the PRESIDENT said he desired that it should be thoroughly understood that the important subject referred to has not been neglected, but has received the constant attention of the Committee. Some years ago, in the time of his predecessor, everything possible had been done to deal with the evil which has become so pressing, but great difficulty had been encountered, causing delay. Now that the action of the General Medical Council has thrown some light on what the Council has done, the Committee concluded that it would be wise to appeal directly to the Lord Chancellor for help in the present difficulty. Assuming all registered persons to be agreed in thinking that the Act of 1868 was passed in order that all who kept open shop as chemists and druggists should be qualified and registered, and that its object was the safety of the public; with all due respect to the House of Lords the decision in the case of the London and Provincial Association did not appear to be consistent with the intention of the Legislature. He thought that instead of the present state of things, it was intended that keeping open shop should not be permitted for any but persons who have the actual direction of the business as proprietors—qualified natural persons responsible for its proper conduct.

Alteration of the law in that direction cannot be obtained without the assistance of the Government, but he believed that a representative Society could do much in carrying out the views he had expressed. Obviously, they could help themselves without going to Parliament, for companies could not carry on the business without assistance from legally qualified persons; but he hoped the action now taken would be accepted throughout the country as an indication of earnest desire on behalf of the Council to deal with the difficulty in every possible way, and of the necessity for the support of all registered persons.

In seconding the motion the Vice-President dwelt upon the necessity for general support from all legally qualified chemists and druggists as the most essential condition of success in carrying out the suggestions of the Law and Parliamentary Committee.

Mr. CARTEIGHE referred to the action taken in 1895, in order again to place on record that the Council has been the moving spirit in raising the question as to the legality of company trading, and he mentioned the report of the Departmental Committee of the Board of Trade as furnishing evidence to that effect. He called attention to that as an answer to the statement that the Council has done nothing. Mr. ARTINS, Mr. HARRISON, Mr. MARTINDALE, and Mr. RYMER YOUNG spoke to the same effect, expressing a hope that adequately united action on the part of chemists and druggists would be the means of awakening the national conscience to a sense of the gross injustice which legally qualified chemists and druggists have to contend with, and that the result would be a recognition of the fact that they have common sense, right, and justice on their side.

A requisition was presented duly signed by thirty members and calling upon the Council to summon a special general meeting for the purpose of prescribing regulations for the keeping, dispensing, and selling of poisons, after which Dr. SYMES moved, in pursuance, a previous notice of motion, that the meeting for that purpose should be held on January 11 next. In accordance with an amendment moved by Mr. HARRISON, a resolution was passed that the meeting should be called to consider and, if thought fit, to adopt regulations for the keeping, selling, and dispensing of poisons in conformity with the provisions of the Pharmacy Act, 1868.

BRISTOL PHARMACEUTICAL ASSOCIATION.

WE are requested by Mr. B. KEEN, Hon. Secretary of the Bristol Pharmaceutical Association, to announce that a conference of registered chemists will be held at the Grand Hotel, Broad Street, Bristol, on Thursday next, December 15, at 9 p.m., to consider the position and prospects of the retail trade. Mr. KEEN will introduce the subject, and a free discussion will be invited upon the following points:—1. The urgent necessity there is that every registered chemist should avail himself of the privilege given by the amendment of the Pharmacy Acts of becoming a member of the Pharmaceutical Society. 2. That legislation is much needed to supplement the Pharmacy Act, 1868, which is based upon the principle of personal proprietary of all retail shops, and the restricting to qualified persons of the compounding and dispensing of medicines, as well as the sale of pharmaceutical preparations. 3. That it is desirable to adopt regulations for keeping and storing poisons. 4. That the so-called "Widows' Clause" ought to be modified or abandoned.

ANNOTATIONS.

THE PROPOSED INDIAN AND COLONIAL ADDENDUM to the British Pharmacopœia is now, as explained last week, in the draft stage, and copies of the draft have been sent to all Indian and Colonial authorities interested in the matter, with a request that they will (1) criticise and amend the descriptions given of the various drugs, in order that such descriptions may apply to satisfactory commercial specimens; (2) supply a few complete descriptions asked for in certain cases in which the Pharmacopœia Committee of the Medical Council has been unable to obtain such descriptions; (3) express an opinion as to the suitability of the preparations proposed, and state the doses of the preparations; (4) make suggestions respecting such additional drugs and preparations as may be deemed desirable in order that the Pharmacopœia with the completed Addendum may meet the requirements of the various Colonies and Dependencies. It is requested that all suggestions and criticisms should be sent in within three months, and with the view of facilitating matters, the full text of the draft Addendum is now being published in the *Pharmaceutical Journal* (see p. 611). Any suggestions and criticisms that may be communicated to the Editor by readers of the Journal will receive prompt attention, and be brought under the notice of the proper authorities in due course.

THE REPORT ON THE ADDENDUM, which prefaces the draft monographs, states that it has not been deemed desirable to recognise the drugs suggested, or those which may hereafter be suggested, as mere substitutes for drugs entering into preparations now official, save in the case of a very few substances. The drugs suggested by Indian and Colonial authorities for official adoption have, as far as possible, been recognised for their own merits, and are described more or less fully in the report in accordance with the plan followed in the Pharmacopœia, the descriptions being founded on the characters of specimens at Kew and in the museums of the Pharmaceutical Society of Great Britain, of the Owens College, and of the Imperial Institute. In a few cases it has not yet been found possible to obtain satisfactory specimens, and in cases where the advisability of introducing a new drug or preparation has seemed doubtful, brief reasons for the doubt have been given. The Pharmacopœia Committee owes the description of the specimens in the draft Addendum for the most part to Mr. William Kirkby, lecturer on Pharmacognosy at the Owens College, Manchester. He has been aided by Mr. E. M. Holmes, Curator of the Pharmaceutical Society's Museums, who has written some of the descriptions.

IN A COMMUNICATION FROM DR. LEECH, Chairman of the Pharmacopœia Committee, he refers to the *Times*, for December 2, where a letter from Dr. Nestor Tirard, Secretary of the Committee, corrects certain inaccuracies in a report of the proceedings of the General Medical Council, published in the issue of the previous day. In that letter it is stated that, whilst it is true that Dr. Attfield was desired to furnish a report upon the criticisms passed on the Pharmacopœia and on the progress of pharmacy and pharmaceutical chemistry during the years 1897 and 1898, it was also felt by the Committee that it was desirable "to submit to experts for investigation and report some of the criticisms which appeared to necessitate further experimental research." We understand that periodic conferences are to be held between representatives of the Pharmaceutical Society and representatives

of the Pharmacopœia Committee of the Medical Council. All criticisms worthy of notice and all new work bearing on the Pharmacopœia will be taken into consideration by this joint Committee, which will have the power of referring to specially appointed experts such points as may seem to require investigation. Those experts will be paid by the Medical Council, and the reports furnished by them will probably be submitted to the Pharmaceutical Societies and to pharmacists generally for criticism, as suggested in the *Pharmaceutical Journal* for April 23 last. That will be a real advance, and should be cordially welcomed as such.

THE WORSHIPFUL COMPANY OF SPECTACLE MAKERS will hold its next "modified" examination for opticians on March 1, 2, and 3. Already nearly thirty candidates have entered for the examination, and we understand that an attempt will be made to enable students from the country to go through the written and the *viva voce* portions in one day instead of two. Applications must be made on the official form, and should reach Colonel T. Davies Sewell, the Clerk of the Company, at the Guildhall, London, E.C., not later than February 14 next. A revised syllabus will shortly be issued. Meanwhile, it is announced that more practical work will be required by the examiners than was the case at the last examination.

THE CHELSEA PHYSIC GARDEN, as mentioned in a note in last week's Journal, is in future to be administered in accordance with an extended scheme. The Apothecaries' Society has decided, owing to considerations of expense, to abandon the management of the garden which, it will be remembered, was founded by Sir Hans Sloane in the early part of the eighteenth century, and was subsequently transferred to that Society in trust. A scheme has accordingly been drawn up for vesting the control in the Trustees of the London Parochial Charities, but it is proposed that the actual management should devolve upon a committee of fifteen members, eight to be nominated by the Trustees, and one each by the Treasury, the Lord President of the Council, the Technical Education Board, the Royal Society, the Society of Apothecaries and the Royal College of Physicians in turn, the Pharmaceutical Society of Great Britain and the Senate of the University of London. It is intended that the existing garden should be fully maintained, a suite of rooms being provided for lectures and experimental teaching, whilst the Trustees are to be given authority, if they think fit, to erect and fully equip a physiological laboratory.

AN ANNUAL INCOME of eight hundred pounds is to be provided by the Trustees, and it is proposed in addition that the committee shall be furnished with such a capital sum as may be necessary to enable them to enforce the scheme to its full extent. The committee is to appoint a curator for the scientific supervision of the garden, and other members of the staff. Further, the committee will be authorised by the scheme to provide instruction in botany by means of lectures, demonstrations, etc., with special reference to the requirements of elementary education; to arrange for the maintenance of botanical collections of living plants for teaching purposes, and, so far as practicable, for the supply of botanical specimens for the purpose of external instruction. Students of institutions receiving aid from the funds of the City Parochial Foundation are to be eligible for admission without payment of fees; and it is provided that, so long as a yearly payment of not less than one hundred and fifty pounds is made to the Trustees out of the moneys provided by Parliament, students of

the Royal College of Science shall also be admitted to the garden without payment, while they, the professors, and teachers of the College, shall be entitled to the use of the garden, the botanical collections, and the lecture rooms for such time as may be approved by the Charity Commissioners. It will thus be seen that the scheme is of a far-reaching character, and calculated materially to increase the usefulness of the garden.

AT AN INQUEST held at Chelsea on November 30, it was stated that two cooling powders had been administered to the deceased—a child aged five years—prior to an attack of convulsions, which terminated fatally. The medical evidence showed that the cause of death was failure of the heart's action, and that the powders had nothing whatever to do with the matter. The jury, also, was satisfied that death resulted from natural causes, and returned a verdict to that effect without any comment. Nevertheless, the coroner—Mr. Luxmoore Drew—felt it incumbent upon him to rebuke the chemist—Mr. Thomas Davies—who had sold the cooling powders. He accused him of permitting an unqualified assistant to prescribe, though the evidence clearly showed that the powders had only been supplied as asked for in the ordinary course of business, and the unfortunate chemist was browbeaten in a manner that was totally unjustified under the circumstances. We understand that the powders contained calomel as the active ingredient, but one organ of the drug trade has cast an unnecessary slur upon Mr. Davies by attaching a heading to the report, which implied that he had sold poison by the hand of an unqualified assistant. That, of course, was not the case, and the sensationalism of the headline must doubtless be attributed to the fact that the numerous sub-editors of the organ in question have not yet overcome the effects of a recent convivial gathering. But it is none the less hard upon Mr. Davies, in such a case, that he should have to suffer under so unmerited a stigma.

THE NEW FRANCO-ITALIAN TREATY OF COMMERCE provides for an abatement in the Italian conventional tariff in favour of France, and a similar abatement will, according to the *Economist*, be also conceded to British products in virtue of a most-favoured-nation treaty. A list of the principal articles in respect of which reductions are made includes essential oil of roses, spices, compound medicines, scented soap, perfumery, etc., and the reduction in the duties varies from 10 to 50 per cent. in different instances. There are some other articles, not previously classed in the Italian tariff, on which a fixed duty is now established, but in connection with those a comparison between the old and new duties is, of course, not possible. France does not make any reduction on her conventional or minimum tariff in exchange for the concessions made by Italy.

THE NATIONAL PHOTOGRAPHIC RECORD ASSOCIATION held a meeting at the Imperial Institute on Monday last, when Sir Benjamin Stone, M.P., the President, delivered an address in which he dealt with the proposed national photographic record. The object of that record is the collection of photographic records of objects and scenes of interest throughout the British Isles. Those records it is proposed to deposit in the British Museum, where they would be safely stored and accessible to the public under proper regulations. Such a collection, it is thought, would not only possess a great interest for the public, but it would be almost invaluable for the historian. There must be in many parts of the country customs and habits and observances of which we possess no pictorial representation whatever, and if those were

photographed they would form most important material for a social history of the people. Then, too, there are buildings, rooms, and other places of high historical and literary interest and importance. Of many of those there are pictures in the possession of individuals, but pictures fade and perish, and it is imperative that the aid of photography should be invoked to produce records of an absolutely permanent character.

THE ROYAL COLLEGE OF PHYSICIANS OF LONDON, at a meeting held last week, received a report from the committee of management of the joint examining board of the Royal Colleges of Physicians and Surgeons, recommending the Colleges to adopt a synopsis of practical pharmacy which had been drawn up by the examiners in that subject in consequence of the issue of the new British Pharmacopœia, and that it should come into force on May 1, 1899. The report also recommended that the examination in materia medica and pharmacy applicable only to candidates under the old regulations, which has hitherto been conducted by papers and *viva voce*, be conducted in future *viva voce* only, on account of the small number of candidates under the existing regulations. The committee further requested that, in consequence of a desire expressed by the teachers and examiners in physiology that there should be an examination in practical physiology, it may be empowered to consider the question, and to take the opinion of the several medical schools and report to the Colleges on a future occasion. The report was adopted, subject to the approval of the Royal College of Surgeons.

MASON UNIVERSITY COLLEGE, BIRMINGHAM, may probably before long have a school of malting and brewing established in connection with it. In an appeal for funds for that purpose, it is pointed out that, whilst England has a greater interest than any other country in brewing and malting, it is the only country interested in those trades in which there is no public systematic education given in the manufacture of malt and beer. In Germany (as the *Times* points out) there is the great school at Weihenstephan, near Munich, and in addition there are others in Berlin, Worms, Augsburg, and Munich. Austria has schools at Vienna and Prague; Belgium at Liege and Louvain; and at Copenhagen the Brewing School will for ever be connected with the classical researches of Hansen on the yeasts. Brewing is one of the businesses which manufacturers have allowed to be partly taken away from this country by foreign competitors, but it is now proposed that the training to be given at Birmingham shall be of the fullest nature both for maltsters and brewers, and that neither in the character nor extent of the instruction given shall the Birmingham school be inferior to any of those on the Continent. It is intended that the instruction shall be both scientific and technical. Examinations will be held, and diplomas awarded to successful students, and a proper standard by which a maltster's and brewer's training may be gauged will thus be established. It is estimated that £50,000 will be necessary to carry out this project adequately, and of that £21,422 has already been promised.

NEW SCHEDULES FOR THE EXAMINATIONS of the Pharmaceutical Society, which come into force as from September 1 next, were adopted by the Council of the Society on Wednesday last (see p. 617). We are asked to state that the schedules have, for the present, been left in the hands of the President for final editing. When they are ready for publication they will be dealt with in the *Pharmaceutical Journal*. Meanwhile no copies of the new schedules can as yet be obtained.

ANALYTICAL NOTES.

DETECTION OF LACTIC ACID IN THE GASTRIC CONTENTS.—As a more delicate, simple, and satisfactory test than those at present in use, J. P. Arnold advocates the employment of the following method for detecting lactic acid in the contents of the stomach. Two solutions are used, the first of which should not be kept longer than a month. No. 1: Saturated alcoholic solution of gentian violet, 1/10 C.c.: distilled water, 250 C.c. No. 2: Solution of ferric chloride, U.S.P., 5 C.c.; distilled water, 20 C.c. Into a test tube put 1 C.c. of solution No. 1 and add a drop of No. 2. The violet colour changes to bluish-violet. To this mixture add drop by drop the filtered gastric contents. If lactic acid be present, the colour of the solution changes to a greenish-yellow. The test may be made roughly quantitative by comparing the tint produced by a known volume of material with that given by a 0.02 per cent. solution of lactic acid. Alcohol, butyric and acetic acids, and phosphates up to 2 per cent. do not interfere with the reaction, nor do albumoses, albuminoids, and peptones.—*Therapist*, viii., 196, after *Univers. Med. Mag.*

DETERMINATION OF ALKALOIDS IN EXTRACTS.—N. Rustig advocates the following method for determining the alkaloidal value of pharmaceutical extracts. The novelty consists in using tragacanth to aid the separation of the fluids. From 2 to 3 grammes of the extract—for instance, of cinchona—are weighed out, diluted with water 5 C.c., and then 50 C.c. of ether and 5 C.c. of 5 per cent. soda solution are added, and the mixture well shaken. In order to rapidly separate the ethereal layer 2 grammes of powdered tragacanth are added to the mixture, and the whole again shaken for thirty seconds. This fixes the watery solution, whilst forming an adhesive mass which adheres to the glass and allows 40 C.c. of the ether to be poured off; the solvent is then distilled and the alkaloidal residuc weighed. The alkaloids so extracted are stated to be free from the usual impurities. Other extracts may be determined in a similar way, employing (instead of ether) chloroform or other solvents suitable for the alkaloids they contain. In the majority of cases a mixture of chloroform, 2 volumes, and petroleum ether, 8 volumes, is recommended. The alkaloids may, if desired, be determined by titration instead of by weighing.—*Pharm. Cent.*

QUANTITATIVE DETERMINATION OF THE BITTER PRINCIPLE OF HOPS.—C. S. Lintner and G. Barth in the course of their researches on hops, found that one of the chief bitter substances, lupulinic acid, which they isolated in a crystalline condition, was capable of being titrated in the ordinary way with alkaline solutions. Since the other bitter resins have also acid reactions, Lintner now proposes that an approximation of the bitter principle in hops may be obtained as follows:—Ten grammes of hops are placed in a half-litre flask, graduated at 505 C.c., with 300 C.c. of petroleum ether, and boiled for several hours on the water bath, under a reflux condenser. The mixture is then cooled, more solvent added to bring it up to the volume, and then filtered, 100 C.c., which represents 2 grammes of the original hops, being taken for titration. This is mixed with 80 C.c. of strong alcohol, and titrated with decinormal alcoholic potash, using phenol-phthalein as an indicator. The result is expressed in terms of lupulinic acid, the molecular weight of which is 400. The process will give figures which are of value for purposes of comparison. The average figure of fifteen samples ranged from 14.6 to 12.7 per cent.—*Zeitsch. für Brauw.*, through *Chem. Zeit.*, xxii., 219.

DETERMINING TARTARIC ACID.—J. Moszczenski treats the material with dilute sulphuric acid, and then with alcohol, which removes all the tartaric and free sulphuric acids. A definite volume of the alcoholic solution is filtered off, and alcoholic potassium acetate added to it, which precipitates the sulphuric acid as K_2SO_4 , and the tartaric acid as $KHC_4H_4O_6$. The precipitate is collected, washed with strong alcohol, and titrated with alkali.—*Journ. Soc. Chem. Ind.*, xvii., 215.

DETERMINATION OF BORAX.—Heid (*Montreal Pharm. Journ.*) adds to the solution of borax an excess of hydrochloric acid and evaporates to dryness. The boric acid thus liberated is removed by washing with absolute alcohol, and the sodium chloride in the insoluble residue, equivalent to the borax, is titrated in the usual manner with silver nitrate.—*Annales de Pharm.*, iv., 920.

CHEMICAL SOCIETY.

A meeting was held on Thursday, December 1, at 8 p.m., the PRESIDENT, Professor Dewar, F.R.S., in the chair. Besides the reading of papers, the business of the evening included a ballot for the election of Fellows. The President remarked that two foreign members were present, Professor Rennie (of Baddeley) and Professor F. D. Brown (of Auckland), and announced that the rare bust of Sir Humphrey Davy, which was exhibited on the table, had been given to the Society. The first paper, by HENRY J. HORSTMAN FENTON, M.A., and HENRY JACKSON, B.A., B.Sc., dealt with

The Oxidation of Polyhydric Alcohols in Presence of Iron.

It will be remembered that Mr. Fenton showed early in the year that ferrous iron exerts a remarkable influence upon the oxidation of tartaric and certain other hydroxy-acids. The present investigation was made with a view of studying the behaviour of various alcohols under similar conditions. The substances were treated with hydrogen peroxide with and without the addition of ferrous iron. On careful comparison of the results no apparent change was observed in the case of the *mono-hydric* alcohols, but with all the *polyhydric* alcohols under examination an energetic oxidation took place in presence of iron, accompanied by a considerable rise of temperature and formation of an aldehydic substance. In the corresponding blank experiments, where iron was absent, no such effects were obtained. In the case of glycol the oxidation product is glycollic aldehyde, while glycerol appears to give glycer-aldehyde only, little or no dioxycetone being detected; erythrite gives rise to a reducing substance which yields erythrosazone, mannite gives mannose, and dulcitol and sorbitol are similarly oxidised. It was further shown that atmospheric oxygen, in presence of ferrous iron, produces in many cases similar oxidation effects on exposure to sunlight.—In the ensuing discussion, as the PRESIDENT neatly remarked, Mr. Cross expressed the opinion of every Fellow present when he warmly praised the work of the authors in generalising the reaction in which ferrous iron plays so important a part.—After the usual vote of thanks had been warmly passed, Mr. WYNDHAM R. DUNSTAN, M.A., F.R.S., communicated the result of an investigation by himself and Harold Brown, on

The Occurrence of Hyoscyamine in the *Hyoscyamus muticus* of India.

This plant, which is extensively used externally in Indian medical practice, abounds in the Punjaub, Beloochistan, Afghanistan and elsewhere. On account of its powerful excitant properties by virtue of which mania may be produced, it has also received the name *Hyoscyamus insanus*. According to Dr. Praed, of the Botanical Survey of India, the intoxicant known as "bhang," so largely used throughout India and Persia, is not prepared so exclusively from *Cannabis indica* as has been imagined, but, especially in Persia, from species of *Hyoscyamus*. It appears, also, that in Beloochistan the *Hyoscyamus muticus* alone is employed in making both this preparation and the well-known "haschish." With the assistance of Mr. Andrews, the authors have extracted the alkaloid from a sample of the drug furnished by the Indian Government. It was exhausted with alcohol, which was distilled off at a low temperature to avoid conversion of hyoscyamine to atropine, and impurities were removed in the usual way, such as was adopted by the speaker and Mr. Chaston in the case of other *Hyoscyamus* species. The gold salt was prepared with a view of separating the alkaloids by means of the different solubilities and melting points of their salts. The whole of the alkaloid, however, proved to be hyoscyamine, because only one auric chloride was produced, melting at a definite temperature. The authors have extended the investigation to a comparison of this drug with the *Hyoscyamus niger*. They find that the former yields hyoscyamine in a pure state, whereas that obtained from the official drug is mixed with varying quantities of atropine and scopolamine.—This paper gave rise to a lengthy discussion. Mr. GROVES asked whether, seeing that the authors had operated only on a small quantity of the plant obtained from one part of India, atropine might not be found under certain conditions of age and climate in other specimens of the plant. It was asked how far the alkaloid hyoscyamine represented the medicinal value of the drug, and Mr. DAVID HOWARD asked what was the proportion of hyoscyamine present.—Mr. PAGE inquired

whether the residue that remained after separation of the hyoscyamine was capable of producing any physiological action.—In reply, Mr. DUNSTAN stated that, just as in belladonna almost pure hyoscyamine is present in the *young* plant, becoming more and more mixed with atropine with increasing age, such might be the case with *Hyoscyamus muticus*. Only the stem and leaf were examined, and not the root; 0.1 per cent. of hyoscyamine was found. With regard to the medicinal value of a drug depending on the presence of one or more alkaloidal constituents differences of opinion existed, but in this case he considered that the physiological action was entirely due to hyoscyamine.—Professor Dewar temporarily left the chair in favour of Dr. W. H. Perkin, F.R.S., while he gave an account of "The Comparison of the Colour of the Vapour of Iodine at Atmospheric Pressure and in Vacuo."—After a lengthy discussion, in which Dr. Thorpe, Professor Brown, Mr. Elworthy, Mr. C. M. Jones, Dr. Travers, and Dr. Forster joined, the meeting adjourned.

SHEFFIELD MICROSCOPICAL SOCIETY.

At a meeting of the above Society held on Friday, December 2, Dr. GEORGE WILKINSON, B.A., F.R.C.S., in the chair, there was a crowded assembly of members and friends to hear a lecture by Mr. A. H. Allen, F.I.C., Sheffield city analyst, on the

Microscope in Chemo-Legal Investigations.

The lecture was illustrated throughout by lantern slides, and a series of very beautiful experiments. At the outset Mr. Allen explained the construction and manipulation of the spectroscope, and went on to describe its great usefulness in the detection of minute quantities of blood. He prepared a dilute solution of fresh blood and placed it in a flat glass trough in front of the slit of a spectroscope, and the spectrum produced was thrown on to a small screen. The characteristic double absorption bands of oxy-hæmoglobin were at once sharply defined. The solution of blood was next de-oxidised by means of a minute quantity of true sodium hyposulphite ($\text{Na}_2\text{S}_2\text{O}_4$), which gradually reduced the oxy-hæmoglobin to hæmoglobin; the double absorption bands of the spectrum were now seen to coalesce to form one single broad band. On bubbling air through the solution the hæmoglobin became re-united with oxygen, and the double banded spectrum re-appeared. These two spectra are, of course, characteristic of arterial and venous blood respectively. The decomposition products of hæmoglobin, such as methæmoglobin acid and alkaline hæmatin, hæmochromogen, etc., were explained, and the variation in their spectra was demonstrated. The manner of the formation of blood crystals was minutely described, and a number of variously shaped hæmoglobin crystals were depicted on the screen. The very important hæmin crystals (Teichmann's blood crystals) were also shown, and stress was laid on the fact that the formation of these crystals affords one of the most delicate and characteristic tests for the colouring matter of blood. The lecturer then proceeded to show how blood stains may generally be treated; thus, if the stain be on cotton, linen, silk, wool, etc., a portion of the fabric on which the stain exists should be cut out. If on wood, stone, or other porous material the stained portion should be carefully scraped away for some depth and reduced to fine powder. Stains on iron and other metals may be removed by scraping. If the stains are at all recent, water will be sufficient to extract the colouring matter. If the stain is old it should be soaked and warmed with ammonia or caustic soda. The hæmatin is thus readily dissolved, and may be detected by reducing it to hæmochromogen. Very few colouring matters yield absorption spectra which can be mistaken for that of blood. The red colouring matter of *Cineraria* petals, turacin, cochineal, soluble indigo (hot solutions only), lac-dye alkanet, madder, etc., give the nearest spectra to that of blood, but these may be absolutely distinguished by the application of reagents. Ganther's test for blood had proved useful, and this was next demonstrated. A glass trough containing peroxide of hydrogen was placed in the lantern in such a way as to allow the experiment to be seen distinctly on the screen. A slip of glass well besprinkled with dried spots of blood was now immersed in the peroxide trough, immediately numerous large bubbles of gas were developed on the blood spots. This test is of great use as a means of detecting blood stains on rusty iron. Stains on rust six months old respond to this test as sharply as when fresh. Although Ganther considered that a negative reaction proved the absence of blood, yet the

formation of bubbles is not an absolute proof of its presence, as other animal fluids behave in a similar manner with peroxide of hydrogen. Mr. Allen then went on to describe the microscopic characters of blood corpuscles, giving comparisons as to the sizes and shapes to be found in different animals. Thus the microscopic recognition of the corpuscles becomes a valuable confirmation of the spectroscopic indications, and derives its chief value from the possibility it affords of identifying the blood as of human origin. Although it might not be possible to affirm positively from the microscopic examination that a stain contained human blood, yet it was possible to differentiate it to such an extent that by a process of elimination other sources are excluded. In a case within the lecturer's personal experience a man accused of murder asserted that certain stains were caused by the blood of a sheep, an explanation which the size of the corpuscles showed to be false. In another similar case the stain was attributed to the blood of a fowl, an origin which the circular shape of the corpuscles proved to be impossible. The following diameters of the red corpuscles from eight different animals are interesting:—

Man	·0078 millimetre.
Dog	·0071 "
Rabbit	·0069 "
Ox	·0060 "
Horse	·0059 "
Pig	·0059 "
Sheep	·0052 "
Goat	·0041 "

Mr. Allen then passed on to the microscopic identification of different hairs, and showed slides of the following:—Hair of child, adult, eyebrow, spaniel, horse, goat, fox, fallow deer, and the fur of rabbit and hare, pointing out the characteristics of each. In a similar manner various fibres were also shown, such as silk cotton, jute, linen, wool, and the importance of the microscope in detecting adulterations in various fibres was commented upon.—At the close of the meeting a very hearty vote of thanks was accorded to Mr. Allen, on the motion of Mr. W. BARRACLOUGH seconded by Mr. C. F. GIDDINGS.

SOCIETY OF PUBLIC ANALYSTS.

At a special meeting of this Society, held at the Chemical Society's Rooms, Burlington House, Piccadilly, on Wednesday, the chair was taken by Dr. Bernard Dyer, when Mr. A. H. ALLEN, F.I.C., delivered a lecture on

The Use of the Micro-Spectroscope.

Mr. Allen commenced by describing and showing with the lantern the absorption-spectra of various coloured substances, including nitrous fumes, cobalt glass, and solution of potassium permanganate. He next exhibited the spectrum of blood, both in an oxidised and unoxidised condition, and described the changes undergone by the colouring matter of blood under the influence of time, application of acids and alkalis, etc. The spectrum of hæmatin, which resulted from the splitting up of the colouring matter of blood by the action of acids and alkalis was not characteristic, but if a solution of hæmatin were made alkaline and a reducing agent added, the absorption-spectrum of hæmochromogen—characterised by an exceedingly deep and well-defined band in the green—was obtained. This spectrum could always be obtained from a blood-stain, however old. The lecturer went on to describe and illustrate by lantern slides the construction of various forms of micro spectroscope, and showed the method of manipulation. He then proceeded to discuss the microscopic characters of blood and the size of the corpuscles from the blood of various animals. Illustrations of human blood and of the blood of various other mammals were exhibited, and their difference in size pointed out. Mr. Allen expressed the opinion that although the difference in the size of the corpuscles did not afford an absolute distinction between human blood and that of other animals, it served in many cases as a means of eliminating unsupported allegations. Thus, while the corpuscles of human blood could not be distinguished with certainty from those of the dog, the corpuscles of the blood of the sheep and goat were so much smaller as to render the difference striking, if not absolutely conclusive of their origin.—The discourse was listened to with the closest attention throughout and was well received by the audience, consisting largely of analytical chemists, medical practitioners and microscopists.—A discussion followed in which the President and other gentlemen took part.

MEETING OF PRESTON CHEMISTS.

An important gathering of chemists was held at the Old Bull Hotel, Preston, on Thursday, December 1, to confer on various topics of interest to the trade and to consider the advisability of forming a pharmaceutical association for Preston. Mr. Arkle (Preston) was voted to the chair, and opened the proceedings by commenting upon the lack of interest chemists exhibit in their own affairs. He said he could not help thinking that it was entirely owing to this apathy or carelessness that they were in the present slough of despond, and it was only by inducing every registered chemist to become a member of the Pharmaceutical Society that any satisfactory approach could be made to Parliament.

Councillor SHORROCK said all the Darwen chemists had joined the Blackburn Association, and had since become subscribers to the Pharmaceutical Society. They had realised that this was the right course to pursue, for unless chemists gave to the Society all the help and assistance possible, they could not expect to secure the passing of parliamentary measures dealing with their grievances. The chemists of the Empire were suffering from the effects of that unfortunate decision of the House of Lords to the effect that a company is not a "person" within the meaning of the Pharmacy Act, 1868. Since that decision the country had become inundated with companies, and chemists were now beginning to feel the pinch. It was quite time they began to put their house in order by forming themselves into associations, and so create a power which would influence members of Parliament, and thus secure a much-desired reform in the law. As one of the representatives who attended the Federation meeting at Belfast, he was astonished to find that many associations in the country were absolutely ignorant of the existence of such a useful connecting link, and he was also impressed with the want of unity amongst chemists. They seemed to be altogether out of touch with one another, and common experience proved that nothing could be more harmful to a cause than the existence of such a state of affairs. At Darwen, Blackburn, Burnley, Colne, and Accrington chemists had been brought together with advantage, and if the chemists of Preston would also form themselves into a strong association or join the North-East Lancashire Association, he predicted that the result would reward them for their pains.—After a brief discussion as to the nature of the proposed local organisation,

Mr. GIFFORD (Blackburn) said what was wanted was unity, and it did not matter in the least how that was secured. The intentions of the Legislature in 1868 had not been carried into effect, or the position of the pharmacist to-day would have been vastly different. Twenty years ago the dentists secured an Act of Parliament, and to-day they were directly interested in a Bill which the General Medical Council was introducing to prevent the registration of companies to carry on medical, surgical, or dental practice. He contended that the public was in greater need of the pharmacist than of the dentist. Yet to-day the chemist had lost what he was supposed to have gained in 1868, when there existed a well-defined body of men doing a certain work. To-day chemists had the privilege, shared by corporate bodies, of selling, subject to certain regulations, about twenty defined substances. Chemists have nothing to lose, but everything to gain, by seeking to improve the Pharmacy Acts. At any rate they should ascertain what the functions of a chemist were really supposed to be, and they hoped to make it clear that it was for the public benefit that the profession of pharmacy should exist in fact and not in name only. They needed a new and adequate Pharmacy Act which would define and regulate the practice of pharmacy. There was ample room for the profession of pharmacy, and their business should consist in the handling and distribution of all powerful herbs, drugs, and chemicals. It was the duty of the Pharmaceutical Council to draft a Bill to that effect, and it was unreasonable to expect the rank and file to take the initiative in the matter.

Mr. LIVESLEY thought it was eminently desirable that Preston should have an Association, but he was convinced that they could not persuade the governing powers to do anything for them as chemists. If, however, they could convince Parliament that it was desirable the public should be protected against the irresponsible sale of poisons, then the Legislature might be induced to move. The Act of 1868 was not passed for the benefit of chemists, but entirely for the protection of the public. He deprecated the attitude taken up by the apathetic chemist who thought more of his till than his profession.

Mr. WILLIAMSON was of opinion that the Pharmaceutical Society should follow the example of the General Medical Council, which had drafted a recommendation for submission to the House of Lords in connection with the Companies Bill. He also proposed that a committee should be formed to consider the advisability of immediately organising a chemists' association for Preston.

Mr. STUART seconded the motion, and it was unanimously agreed that the Committee should consist of Messrs. Arkle, Livesey, Stuart, and Williamson.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY.

The usual monthly meeting of the above organisation was held at the Liverpool School of Pharmacy on Thursday evening, the 1st instant, the VICE-PRESIDENT, Mr. H. Wyatt, jun., taking the chair in the absence of Mr. R. C. Cowley, the President.—After the election of one new member (Mr. Patridge), an exceedingly interesting address on

Dispensing and Dispensing Problems

was delivered by Mr. T. S. WOKES, who, prefacing his remarks by a general definition of the term "dispensing business," and as to where such businesses were to be found, proceeded to discuss fully the numerous important details essential to the proper conduct of such businesses, and laid down certain well-known and generally received rules applicable to the control of the daily routine of a pharmacy with a dispensing connection. It was essential that only the best glassware, corks, boxes, and sundries should be used, and that the labels should be of a special and characteristic style peculiar to the pharmacy, which should not be changed when once decided upon, except after mature and judicious consideration.

BOTTLES.—For mixtures flat or square bottles were generally used, whilst for gargles and such preparations as were not intended to be taken, but which were not of a dangerous nature, actinic green bottles were becoming usual. Poisonous lotions and liniments should invariably be dispensed in green or blue fluted special bottles. Thick liquids for throat or mouth application were conveniently sent out in wide-mouthed bottles capable of allowing a camel hair brush or mouth sponge being introduced.

SUPPOSITORIES were normally of 15-grain size, except the Pharmacopœia glycerin, and pessaries, of 60 grains, except quinine, which were mostly 30 grains.

SALTS in mixtures when in quantities above the saturation point of the liquid menstruum should be rubbed down to a fine powder and suspended. Heat should never be used to effect solution, for the excess of salt on cooling would be deposited as crystals.

ETHER AND CHLOROFORM were best dispensed in corked bottles, glass stoppers being very unreliable and apt to be blown out on a rise in temperature. Whilst speaking of chloroform he would mention its applicability to the preservation of fresh infusions, for which it was very handy.

POWDER PAPERS could be bought ready cut and trimmed up by the printers and were neater and better than those cut by hand.

FILLING DIRECT from the distilled water bottle was risky in dispensing, for the vapour or flavour of the mixture might rise in the air space of the water bottle by displacement, and so flavour or contaminate the whole supply. He had once had a case of this sort where elixir phosphori was the cause of a bottle of medicine being returned to him, owing to its tasting of the phosphorus.

SYRUP OF IODIDE OF IRON was, contrary to general notion, improved by exposure to direct sunlight, and should always be kept in the lightest part of the shop.

COPIES OF PRESCRIPTIONS were a fruitful source of annoyance, and he should like to know under what circumstances they should be given.

As examples of dispensing problems, he submitted the following prescriptions he had recently handled:—

No. 1.	
℞ Liq. Ammon. Acet.	ʒvi.
Sp. Ætheris Nit.	ʒiii.
Sp. Camphoræ.	ʒii.
Aquæ Chlorof. ad	ʒvi.
Fiat mistura.	

The camphor was deposited, so he used spirits of chloroform, ʒii., and made up with aqua camphoræ, thus finding a way out of the difficulty.

No. 2.	
℞ Ung. Zinci	ʒi.
Aquæ Calcis	ʒii.
Fiat unguentum.	

The ointment was melted in a bottle, the aqua calcis added, and the whole shaken until a smooth cream was formed.

No. 3.	
℞ Lanolini Anhydrosi	ʒi.
Adipis Benzoati	ʒii.
Liq. Plumbi Subacet. Dil.	ʒvi.
Fiat unguentum.	

This submitted to the same treatment as No. 2, and turned out satisfactorily.

No. 4.	
℞ Ammon. Chlorid.	ʒii.
Lithii Carbonatis	ʒi.
Liq. Bismuthi	ʒi.
Sp. Ætheris Nit.	ʒss.
Aquæ Chlorof. ad	ʒviii.
M. ft. mist.	

When the ammon. chlor. and lithium carbonate were shaken with the chloroform water, the lithium salt dissolved with difficulty, but on the addition of the sp. ætheris nit. the solution became at once clear. The liq. bismuthi subsequently gave a white precipitate. He should like to ask the opinion of the President upon this and other decompositions which occurred in the prescriptions submitted to the meeting.

No. 5.	
℞ Potas ii citratls	ʒii.
Sp. Chlorof	ʒii.
Aqua	ad ʒviii.
M. ft. mistura.	

The potassium salt threw out the chloroform from the spirit.

No. 6.	
℞ Salicin	ʒi.
Potass. Chlor.	gr. ʒ6.
Syr. Limonis	ʒss.
Infusi Quassia	ad ʒvi.
M. ft. mist.	

The salicin dissolved clear after adding the syrup of lemons, though it was feared the acidity of this syrup might cause a precipitate of salicylic acid.

No. 7.	
℞ Pepsin Porel	gr. 80.
Acid Hydroch. Dil.	ʒ 80.
Liq. Strychninae	ʒ 80.
Tinct. Aurantii	ʒii.
Tinct. Zingiberis	ʒi.
Sp. Chlorof.	ʒi.
Aquæ	ad ʒviii.
M. ft. mist.	

The pepsin at first on dilution came out in clots, but these, strained out and rubbed down again, furnished a fairly satisfactory mixture. Would the use of a soluble pepsin have been allowable so as to obtain a clear and presentable mixture?

No. 8.	
℞ Pulv. Boracis	ʒi.
Alum Sulph.	ʒi.
Glycerini	ʒi.
Aquæ Rosæ	ad ʒviii.
M. ft. gargasima.	

The addition of the alum caused a white, finely divided precipitate to form. What was this?

No. 9.	
℞ Ferri et Quininae Cit.	gr. 40.
Liq. Ammonia Acet.	ʒss.
Syrupi Aurantii	ʒii.
Aquæ	ad ʒiv.

Although this when dispensed was clear a precipitate formed upon standing. To what was this reaction due?

At the conclusion of his address Mr. Wokes exhibited a press for the production of suppositories in the cold, a mould for making the pastilli of the Throat Hospital Pharmacopœia, and a pyramidal stand for round labels, consisting of a set of wood boxes of different sizes holding the labels, these boxes being placed on their sides one above the other in a pyramid-shaped box of handy size for the dispensing counter. The remarks of such a well-known dispenser as Mr. Wokes were naturally listened to with the greatest interest by a full meeting of the students, who showed their appreciation by hearty applause.—In moving a vote of thanks to the speaker, the CHAIRMAN congratulated his fellow members on having been privileged to listen to such a well-ordered and practical address

on a subject which to them was of the utmost importance. Such papers were of inestimable value to real students, and were exactly what their Society had always striven to encourage. Scientific papers were good, undoubtedly, in their proper place, but they were luxuries for which most students had no spare time, whereas it was remarkable that these really practical papers were invariably delivered to a goodly and appreciative audience, which seemed to enter into the spirit of the subject and find all its good points. He, the Chairman, was flattered that Mr. Wokes should in a way look upon him as an authority upon dispensing difficulties; it was a position to which he could lay no claim. However, he would try and explain those indicated as far as he was able to do so. The hints Mr. Wokes had given were likely to be of use to many, for instance, the use of wide-mouthed bottles for glycerin of borax. The advice concerning the filling of bottles direct from the stock bottle of distilled water had been emphasised by one of the members, Mr. Pierson, during a previous session. The ointments made by shaking were very satisfactory indeed. Now as to the difficulty with No. 4, the explanation was in his opinion this, the acidity of the spirits of nitre first carried the lithium carbonate into solution, the haze from the chloroform partly thrown out by the salts being at the same time removed by the alcohol in the spirit. The white precipitate subsequent to the addition of the liq. bismuthi, was, no doubt, bismuth subcarbonate, caused by the lithium carbonate acting as any other carbonate of the alkali group would do. The separation of chloroform in No. 5 might be obviated by using an equivalent of chloroform water instead of the spirit. In No. 6, the acidity of the syrup of lemons would assist in the solution of the glucoside salicin, from which salicylic acid could only be liberated by the prolonged action of an oxidising agent. Pepsin porci was an awkward thing to make into a mixture, and could be with advantage replaced by a soluble pepsin, if the prescriber agreed to such a course. Continental prescriptions often contained pepsine in "potions," and in France a moist pasty pepsin, known as "pepsine extractive" was used in such cases as it was easy to suspend, and made a tolerably elegant mixture, whose only drawback was its rather disagreeable smell. The cloudiness noticed in the gargle No. 8 was due to double decomposition between the alum—an acid salt—and the borax, with formation of gelatinous aluminium borate, and sodium sulphate. In the ninth formula the alkalinity of the solution of ammonium acetate was the disturbing element, giving rise to a precipitate of quinine hydrate or carbonate readily soluble on the addition of a little acetic acid.—The vote of thanks was seconded by Mr. PRATT, who remarked that the new pepsin was of the soluble variety, which would remove one of the dispenser's difficulties in the future. Anent the use of "Shake the bottle" labels he would advise their being placed above the ordinary label, so as to be more striking to the eye. Mr. Wokes's address had been of the greatest interest to the younger members present, in whose name he (Mr. Pratt) wished to second the vote of thanks.—After the vote had been unanimously recorded, and Mr. WOKES had replied, Mr. A. H. MORGAN read a paper on

Suppositories,

which consisted of a general review of the various recognised methods of making suppositories, pessaries and bougies, the most suitable bases, and the special methods of manipulation to be adopted in certain cases. The extended use of a gelatin base for suppositories was advocated; owing to its dissolving relatively large quantities of such salts as potassium bromide, quinine bisulphate, and iron salts generally, the aperient action of the glycerin could be modified by using less of it and more water and gelatin. The too ready melting of cacao butter when made into urethral bougies had been overcome by a French chemist, who, in the Bulletin of the Bordeaux Society of Pharmacists, published a formula for a plastic mass, softening, but not melting at the temperature of the body. It ran as follows: Cacao butter, 2 parts; lanoline, 1 part; white wax, 1 part. The pouring of bougie mass into moulds was difficult, because of their narrow diameter. Placing a warm wire down the mould so as to direct the flow of the melted base was one method of making things easier, but the quickest method was undoubtedly that recently advocated and followed on the Continent, which needs no mould in the ordinary sense of the term. The melted mass is drawn up by suction into glass tubes of the right diameter, and after setting is forced out as a long rod by means of an iron wire, terminated by a plug accurately fitting the tube. The bougies in this case are

naturally perfect cylinders, which can be cut to any size and pointed by rubbing down with a piece of lint. A special way of manipulating such drugs as chloral hydrate, devised by Mr. Morgan, gave good results, the suppositories when finished being all that one could desire. Cacao butter was heated in a capsule to 100° F. or 105° and poured into the carefully cleaned mould previously cooled in a freezing mixture. After standing thirty to sixty seconds, the excess of cacao butter was poured off, leaving the interior of the moulds covered with a lining or hollow suppository of chilled cacao butter. The tops were then levelled with a palette-knife, and the chloral or other drug, worked up previously with grated cacao butter in a mortar, was filled into these hollows, which were afterwards sealed by pouring a layer of butter over their bases. Removing the surplus base, a set of perfect suppositories was obtained on opening the mould. In prescribing suppositories Mr. Morgan thought doctors would be well advised if they ordered the active ingredient in percentages, for instance:

R Morph. Hydrochlor.
Olei Theobromæ
Fiat Suppos. 10 per cent. Mitte vi. 15 Gr.

for it is difficult to know how much space the drug will take up, and in the case of zinc oxide, extracts, acetate of lead, etc., this varies considerably.—A good discussion followed, the CHAIRMAN saying that the method used by Mr. Morgan for chloral suppositories was decidedly novel and, besides, of practical interest. The use of glass tubes for making bougies was not a new invention by any means, and though many good things came from the Continent, it would not do to credit their brethren across the Channel with every seemingly new idea. He had made bougies in the same way at least four years since, and obtained the notion from either the 'Art of Dispensing' or the pages of one of the trade journals. In turning out such bougies he simply re-warmed the tube slightly, after the mass had set, and then blew the rod out. Tinfoil was a good thing to make moulds from for pessaries, rolling it round sticks of various lengths and diameters. In hot weather, when pessaries were wanted in a hurry, the tinfoil moulds had advantages over the solid metal ones, first, because they allowed the mass to cool quickly and, secondly, because the pessaries did not stick to the mould, and, thirdly, because the finished pessaries could be cut down to a given weight and absolute accuracy of dose thus insured. If the tinfoil was allowed to project about half an inch above the surface of the mass when this was run into the moulds, they could be at once taken and floated on the surface of a vessel of iced water and cooled ready for finishing off within five minutes of casting.

Mr. WOKES proposed a vote of thanks to Mr. Morgan for his contribution to their evening's instruction, in which he was seconded by Mr. PICKERING, and supported by Mr. J. HARRIS BURNS, who mentioned that he had some suppositories, containing 6 or 8 minims of balsam of Peru and 10 grains of iodoform in each, whose manipulation was very difficult. He had also to make suppositories of ammonio-citrate of iron, and others of iodine and iodide of potassium where the gelatin base was of great utility.—In reply to the vote of thanks, Mr. MORGAN said he had never heard of the glass-tube method of making bougies before, so he must confess himself behind the times. The iodoform and balsam of Peru suppositories would be difficult to make with heat, and the ammonio-citrate of iron was one of the cases he had in mind when he recommended the glycerin and gelatin base.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.

At a meeting held on Wednesday, November 30, Mr. G. H. C. ROWLAND, President, in the chair, the SECRETARY read the report of the Prize Committee at the herbarium competition, from which it appeared that the prize had been awarded to Mr. Ernest James Pike, 139, Princes Street, who had submitted a highly meritorious collection of well-preserved and neatly-mounted specimens.—The PRESIDENT then presented to the winner a cheque for £2 2s. from the donor of the herbarium prize, Mr. J. C. Pottage, 117, Princes Street, to whom a vote of thanks was awarded on the motion of the VICE-PRESIDENT, Mr. J. D. Sinclair.—A paper by Mr. E. J. PIKE was then read, entitled—

Experiences in Herbarium Collecting.

The author gave a most interesting and humorous description of

the delights of plant hunting, and many useful practical details of the way to collect, dry, and mount specimens.—Mr. D. B. KIDD communicated a

Note on Dispensing Ferrous Iodide and Sodium Arseniate.

Complaint had been made that the following mixture dispensed in different pharmacies was sometimes an opalescent mixture, sometimes quite clear, and sometimes clear but coloured brown:—

℞ Liq. Sodii Arseniat.	℥xl.
Syr. Ferri Iodidi	ʒi.

On adding the solution of sodium arseniate to freshly made syrup of ferrous iodide there is immediate precipitation of ferrous arseniate, which makes the mixture opalescent. The ingredients are, therefore, chemically incompatible. But most wholesale houses send out a liquor ferri iodidi or syrupus ferri iodidi, to which hypophosphorous acid has been added as a preservative, and when such a syrup is used in dispensing the mixture there is no precipitation, the result being a clear, colourless mixture. This result is probably due to the fact that the free hypophosphorous acid dissolves the ferrous arseniate. But a curious circumstance is that the mixture soon acquires a brown colour and indicates free iodine, and on standing a few days again becomes colourless. The coloration may be due to oxidation of ferrous iodide with formation first of oxyiodide, and subsequently of ferric oxide and free iodine. The preservative action of the hypophosphorous acid depends on a reaction between free iodine, water, and hypophosphorous acid, with production of phosphoric and hydriodic acids. The phosphoric acid then seizes the ferric oxide formed in the previous reaction with formation of ferric phosphate, which is dissolved by the hydriodic acid formed in the preceding reaction, and thus a colourless solution results. The coloration and subsequent decoloration may be due to the fact that the iodine is liberated more rapidly than it is reacted upon, and that it takes a little time to reach the point of decoloration, but further inquiry is needed to decide. When citric acid is used as the preservative the mixture is clear, and there is no coloration.—Mr. GEORGE GRAINGER then read a paper on

Pharmacy—A Retrospect,

in which he contrasted the conditions of pharmacy at the beginning of the century with those of to-day, showing what vast strides have been made within so short a period. He illustrated the contrast by a detailed reference to the knowledge of the properties and the preparations and active constituents of opium then and now, as indicating how precision, accuracy, and rationalism had taken the place of the vagueness, indefiniteness, and empiricism of the earlier period.—The last communication read was by Mr. GEORGE MACK on

Carbolic Ointment.

The new B.P. formula for this ointment is not regarded by the author as an example of good pharmacy. The glycerin readily separates, and thus the ointment, instead of acting as a local anæsthetic, as it is often intended to do, might act as a caustic. The paraffin basis should be discarded entirely as not suitable for the application of carbolic acid. The basis suggested is yellow wax and olive oil (1 in 4), which gives a softer ointment than the U.S.P. and has the advantage over the B.P. formula that all the ingredients are soluble in one another.

Discussion.

In the discussion which followed, Mr. DUNCAN said he did not quite agree as to the suitability of olive oil and yellow wax. Hydrous wool-fat or cold cream formed the best basis for carbolic ointment. Water was needed as a solvent for the acid to prevent crystallisation.—Mr. G. SINCLAIR agreed with Mr. Duncan.—Mr. HENRY also disapproved of the paraffin basis. He was disappointed to find it retained in the 1898 Pharmacopœia. The presence of water was important, and therefore he recommended hydrous wool-fat.—Mr. HILL said the ferrous iodide and sodium arseniate mixture would probably have been best dispensed by the addition of a little citric acid. A clear, colourless mixture would have been sent out possessing all the therapeutic properties of the prescription.

CHEMISTS' ASSISTANTS' ASSOCIATION.

A meeting of this Association was held at 73, Newman Street, W., on Thursday, December 1, when a large number of members witnessed a

Demonstration of Röntgen Rays

by Mr. W. COLDWELL.—A considerable number of X-ray photographs of different parts of the human body were on view; one in particular, a skiagraph of the whole human frame, being a very fine specimen.—The PRESIDENT (Mr. F. W. Gamble) introduced Mr. Coldwell as a master in the practice of his subject, as an inspection of the examples of his work exhibited that evening would demonstrate. He also incidentally mentioned that the lecturer had the honour entrusted to him of taking a photograph of the Prince of Wales's knee during his recent illness. Mr. Gamble thought those present would better appreciate the demonstration if a short description of the apparatus to be employed were given. The source of electricity was a six-celled secondary battery charged up to 14 volts. The current passed thence to a modified Ruhmkorff coil, which gave a 10-inch spark. He went on to explain that the current from the battery was of comparatively low potential, but its tension was greatly increased in the primary circuit at each break by the direct extra current. At each make and break of the primary a powerful current was induced in the secondary coil, which, in the battery used, was about 90 miles in length. The secondary induced current was used to excite the tubes. He would leave Mr. Coldwell to speak of the particular vacuum tubes he used, and would merely explain the effect of a gradually increased vacuum upon the nature of the discharge in a glass tube. At atmospheric pressure there was a disruptive discharge, owing to the resistance of the di-electric. At about 75 Mm. pressure the discharge became linear, and was bent like a piece of string by the influence of a magnetic field. At about 1 Mm. the discharge was still linear, but was attracted to the side by a magnet and struck the glass, forming a fluorescent patch. At 1/100th Mm. pressure the discharge becoming striated, and the negative rays (or radiant matter of Crookes) are emitted from the cathode. No substance has yet been found radiable to these rays, therefore they cannot be obtained outside the tube. At a higher exhaustion cathode rays are emitted. These do not pass through the glass of the tube, but can be obtained outside the tube by the insertion of an aluminium window. At a still lower pressure there are obtained Röntgen's X rays. Scientific opinions did not agree as to the nature of X rays. The fact that they could easily be changed into light rays favoured the supposition that they were of a similar nature, and it was generally supposed that they are transverse ethereal vibrations of extremely short wave-length having their place in the scale beneath the ultra-violet rays.—Mr. COLDWELL then showed the method of using the apparatus, and explained the difference between the tubes used for photographic and screen work respectively.—The room was afterwards darkened, and by means of a fluorescent screen the movements of the bones of the hand and wrist were easily discerned, also the bones of the thorax and the beating of the heart. At the close of the experiments, questions were asked by Messrs. Hymans, Pearson, and Roe, to which the lecturer replied.—On the motion of Mr. HYMANS, seconded by Mr. T. MORLEY TAYLOR, Mr. Coldwell was heartily thanked for his interesting and instructive demonstration, as were also Messrs. Allen and Hanburys, Ltd., 43, Wigmore Street, W., for their kindness in lending the apparatus and photographs.

MIDLAND PHARMACEUTICAL ASSOCIATION.

On Thursday, December 1, in the large lecture theatre of Mason's University College, Birmingham, Mr. Hall-Edwards, L.R.C.P., F.R.P.S. (Surgical Radiographer to the General Hospital), delivered a lecture on the

Practical Application of the Röntgen Rays

before the members and friends of the Midland Pharmaceutical Association.—Mr. J. POOLE, President of the Society, introduced the lecturer, who illustrated his remarks by practical demonstrations, diagrams, lantern slides, and apparatus. After a brief scientific introduction and a comparison between the earlier methods adopted and those of to-day, the lecturer claimed that not only scientifically, but from a surgical point of view, the "X rays"

rank as one of the greatest discoveries of the century. Their practical application was being daily extended, and the full scope of their usefulness could not yet be measured. He laid great stress upon the value of surgical radiography upon the field of battle, and said that to military surgeons the discovery was only second in importance to the introduction of antiseptic precautions. He declared that after a battle far more men were killed by the search for bullets with bacteria-laden probes than would die if all bullets were left undisturbed. A radiograph of a hand was taken and developed before the audience, and a large number of lantern slides illustrating the various applications to surgery, etc., were exhibited by means of the electric optical lantern.—Mr. HALL-EDWARDS showed his localising apparatus and spoke of the value of stereoscopic X-ray pictures. He made some brief remarks upon the therapeutic effects of the X-rays in some serious forms of skin disease, but he was not in a position yet to go deeply into the question, as his experiments were not yet finished.—Mr. JONES proposed and the meeting heartily adopted a vote of thanks to Mr. Hall-Edwards for his lecture.

NEWCASTLE-ON-TYNE AND DISTRICT CHEMISTS' ASSOCIATION.

A meeting of this Association was held on Wednesday evening last, when the chair was taken by the PRESIDENT, Mr. F. Schofield, and a paper was communicated by Mr. BARNARD S. PROCTOR on

The Storage of Poisons.

The paper is printed in full at page 608.—After it had been read, the PRESIDENT called upon Mr. T. Maltby Clague to open the discussion. Mr. CLAGUE expressed the belief that no amount of legislation would absolutely prevent accidents, but in a brief historical *résumé* he showed how proposed regulations had been a barrier in the past, and how their non-adoption was an obstacle to progress at the present moment.—Mr. WEDDELL emphasised the value education had been to pharmacists in preventing accidents. He strenuously opposed Government inspection as arbitrary and impracticable in regard to poison storage regulations.—Mr. WHITEHEAD deprecated inspection, and extolled personal responsibility.—Messrs. ELLIS and BUCKLEY were in favour of regulations.—The sense of the meeting was represented in the following resolution, proposed by Mr. CLAGUE, seconded by Mr. WEDDELL, and carried unanimously:—

This meeting is of opinion that, if the Council of the Pharmaceutical Society believes that the adoption of modified regulations would improve the position of chemists under the present Acts of Parliament or for future legislation, and would conduce to the greater safety of the public, the case would be met by the promulgation of Part I. of the 1871 recommendations, but Part II. is condemned as unworkable, and Mr. Proctor's scheme is recommended as worthy of careful consideration.

IRISH PHARMACISTS' ASSISTANTS' ASSOCIATION.

At Dublin, on December 2, a meeting of this Association was held at 67, Lower Mount Street, the President, Mr. HENRY HUNT, in the chair. There was a good attendance. After a few items of preliminary business, a debate was held on the question

Should the Examinations and General Management of the Pharmaceutical Society of Ireland be conducted by the State?

Mr. JONES opened the discussion in the affirmative, and Mr. O'FARRELL followed in the negative.—Mr. HOGAN argued in the affirmative, while Mr. WILLIAMS thought the whole question *ultra vires*, and that a Government monopoly would kill pharmacy with red tape.—Several other members spoke for and against the question. The insufficiency of inspectors employed by the Pharmaceutical Society was given as a reason for the dearth of prosecutions by that body. France and America were instanced as countries that looked after pharmacy much better than in England. Hours of duty, educational facilities, and salaries enjoyed by Continental chemists were commented on, and it was held without dissent that the British pharmacist was not nearly as well off as his colleague outside the United Kingdom.—The PRESIDENT summed up the arguments, and was himself

in favour of the affirmative side.—On a poll being taken it was found that the voting on the question was equal, and by the casting vote by the President it was held that the examinations and general management of the Society should be conducted by the State.—The proceedings then terminated.

SELECTED PRACTICAL FORMULÆ.

ELIXIR OF CALISAYA.

Crushed coriander, 1; crushed cardamoms, 15; cloves, 2; orange flowers, 2; powdered red sandal wood, 2; star anise fruit, 5; cinnamon, 12; orange peel, 15; calisaya bark, 36; all in coarse powder, are macerated with 400 parts diluted alcohol (60 per cent.) and 400 water for eight days. After straining, simple syrup, 400, and saccharin 0.2 are added. The mixture is then set aside for eight days to subside, when a clear and reddish-brown fluid is obtained.—*Pharm. Centr.*, xxxix., 480.

BENZOIC ACID AS A PREVENTIVE OF MOULD.

P. Rungo finds that benzoic acid, even if diluted to 1:1000, acts as a preventative of mildew in the same manner as thymol, to which it is preferable by virtue of its being non-irritant.—*Zeit. d. allg. oest. Apoth. Ver.*, lii., 35, after *Monatsh. f. Prakt. Dermat.*

SIMPLE METHOD FOR "KILLING" MERCURY.

A mixture of vaseline, 30, lanoline, 15, barium sulphate, 100, is found by B. Bourdoursques to be an excellent means of extinguishing a large quantity of mercury. A small quantity of mercury is first added to the mixture and rubbed until killed, then more of the metal is added, which quickly loses its globular condition. The barium sulphate acts mechanically in dividing the mercury, and from its complete insolubility its presence is free from objection.—*Bullet. de Pharm. du Sud Est*, iii., 437.

PHENOL PASTILLES.

Ninety-five parts of phenol are melted on the water bath and 5 parts stearin soap are added and mixed. The mass is turned out into a cold capsule, when a crystalline paste is obtained, which may be divided into pastilles. These keep well and are convenient for use, readily dissolving in water.—*Journ. de Pharm. d'Anvers*, liv., 420, after *Pharm. de Mex.*

DENTIFRICE SOAP.

Thymol, 25; extract of rhatany, 100; warm glycerin, 600; calcined magnesium, 50; borax, 400; oil of peppermint, 100; medicinal soap, *qs.* to produce 3000. Dissolve the thymol and extract of rhatany in the warm glycerin, and add the other ingredients, mixing thoroughly.—*Form. of Bull. Gen. de Ther.*

COMPOSITION OF ANTITUSSIN.

This remedy for whooping cough is said to be composed of difluordiphenyl, 5; vaseline, 10; wool-fat, 8. This ointment is vigorously rubbed into the chest, the neck, and the back, between the shoulder blades.—*Pharm. Centr.*, xxxix., 427.

PREPARATION OF KOLA FLUID EXTRACT.

Berrégau, of Hanover, uses the following process for the extraction of kola nuts:—1 Kg. of the drug is moistened with a solvent composed of a solution of sodium phosphate, 25 Gm.; glycerin, 150 Gm.; and dilute alcohol (60 per cent.), 200 Gm., and left to stand twelve hours. It is then percolated with dilute spirit, for which 10 Kg. are necessary, and evaporated to a weight of 1 Kg.—*Pharm. Zeit.*, xliii., 683.

SIMPLE FIRE EXTINGUISHERS.

These can be produced by anybody at a slight cost, says *Technische Berichte*. Dissolve 20 pounds of common salt and 10 pounds of sal ammoniac in 30 litres of water, and fill the mixture in quart bottles of thin glass. The extinguishers thus prepared are highly suitable to smother small fires. The bottles, which should be securely corked up and sealed, to prevent the contents from evaporating, are thrown into the flames of the starting fire or its immediate vicinity with enough force to cause them to break.—*Sci. Amer.*, lxxix., 246.

LETTERS TO THE EDITOR.

"PONDO" AND THE BENEVOLENT FUND ELECTION.

Sir,—If "Pondo" will give his name and address in the Correspondence columns of the Journal, and so come out from behind his mask, I am quite willing to reply to his letter. It is scarcely courteous to withhold his name when indulging in trenchant criticism at another's expense.

"Ronaldsway," Tower Road West, ROBERT HAMPSON (159/16).
St. Leonards-on-Sea,
December 6, 1898.

THE MANCHESTER COMMITTEE.

Sir,—Having been asked for some information regarding the Committee referred to in my published remarks (*vide* p. 591), it may be of interest to others to know what has been done in this connection. Briefly it is that, having become more and more convinced of the inadequacy of one ordinary business man to do justice to the Society in the capacity of local secretary in a community so extensive as this is, I suggested to our local Council that a committee should be appointed "to act with the local secretary in watching the interests of the Pharmaceutical Society." Such a committee has been formed upon this plan. Representing the whole area as a wheel, one gentleman has been appointed to the centre of the city, the hub; others in the principal thoroughfares, the spokes; and one or two on the outskirts, the rim. Thus we have in every district a "member of the Pharmaceutical Society," who will be able, without sacrifice of much time, and almost without trouble, to keep the local secretary posted up regarding changes of ownership, deaths, new-comers, matters requiring investigation, etc., in his particular locality, which might otherwise go unnoticed for some considerable time. By an amicable division of labour, too, it is hoped to make use of the present time for canvassing all the district for new members.

Manchester, December 3, 1898.

HARRY KEMP,
Local Secretary.

SUGGESTIONS FOR A MORE FORWARD POLICY.

Sir,—Judging from the character of the correspondence that has lately appeared in your columns, it would seem there is a "shaking among the dry bones." Whether they are ever to reunite and stand up as independent men must depend on their receiving the breath of life which is essential to re-animation and the resumption of flesh and blood. It is a useless and painful task recounting manifest grievances, and more to the point to work for a removal or at least a mitigation of the evils. I would propose that a conference be held, to be attended by members of the craft, men of intellect and determined honesty of purpose, whose object should be: (1) To thoroughly ventilate the subject of company trading in pharmacy in all its bearings; (2) To evoke a power of execution—such a function is supposed to exist in the Council of the Pharmaceutical Society. The Council consists of a body of men elected by members to represent the interests of all, in accordance with the foundation of the Society, viz., to advance the science of pharmacy and to protect trade interests. The question arises, how far hence they realised these two all-important propositions? And it must be confessed that they cannot give a very good account of themselves. That there are able and worthy councillors is not denied, but that a system of progress and adaptation to the requirements of to-day exists there is no evidence. One of your correspondents advocates "almost a clean sweep of the present Council," and surely those members of that body who are out of sympathy with modern trade requirements will scarcely have the face to offer themselves for re-election after such a warning. Let us then hope that next May will bring with it the promise of rejuvenescence of legitimate pharmacy.

December 1, 1898.

NIL DESPERANDUM (158/16).

THE POSITION OF PHARMACY.

Sir,—I am glad to observe the active interest that is being taken in so many parts of the country with regard to unqualified company pharmacy. There is no doubt we have arrived at an acute stage and are already confronted, as a consequence of the evils of company pharmacy, with the serious inconvenience of a labour famine, and which is certain to become more accentuated unless prompt, bold, and comprehensive action be taken. Certainly conditions will not improve until "pharmacy for the

pharmacist" is an accomplished fact. As is well known the most successful of these companies utilise legitimate pharmacy as an advertising medium in order to secure business of a lucrative character, from which in the main the shareholders derive their dividends. As an illustration of this, some months ago a prescription was presented to me to dispense containing three forms, which from start to finish occupied myself and an assistant forty-five minutes. I was informed that 1s. 6d. had been charged by a noted company for this service, which certainly could not be regarded as other than reasonably assessed at 3s. There is no doubt we have a strong case, as it was never intended that a statutory calling should be at the mercy of the capitalist in this manner. With regard to the line of action to be adopted, I am of Mr. Gill's opinion, as expressed at Nottingham a few weeks ago, to the effect that the Council should forthwith formulate a plan and send a draft of the salient points for each local association to discuss and vote upon, and where there is no local association the local secretary should be requested to call together the chemists in his district to express their opinion as to the course future legislation should take, and forward the result to headquarters. If this course is adopted I think there is no doubt but that 1899 will witness a considerable number of those who have not hitherto felt that between themselves and the special and educational work of the Society there has been anything in common brought into line. In connection with this question of increased membership, I am glad to note that each local secretary is expected to make a special canvass of all chemists not connected with the Society residing in his district. If well worked, this should achieve most excellent results, although to my mind the main factor towards securing the united front so much discussed and desired is the formulation of a plan by the Council, as suggested above, by as early a date as possible.

Ashby-de-la-Zouch, November 30, 1898.

G. W. BULLEN.

THE PROPOSED POISON REGULATIONS.

Sir,—I should like to express my pleasure at the expressions of opinion respecting the need for regulating the storage of poisons. Let chemists set their own house in order, or else some one else will do it for them. They will thus gain the favour of the Privy Council, and make the way easier for future reforms by leaving nothing at which the enemy can point. May I suggest, whilst writing, that coming events seem to be casting their shadows before. In your issue of 26th ult. I notice two passages bearing upon the title "Royal" for the Pharmaceutical Society. One, in the (very natural) mistake of a doctor, and the other is Mr. Jones's speech at a meeting of the North Staffordshire Association. It seems to me that the Pharmaceutical Society has now arrived at that stage of development at which it might very suitably have this title bestowed upon it, and it is quite as natural and fitting that it should have it as some other societies—the Royal Photographic Society, for instance. Could not our worthy President, who has so devotedly set his shoulder to the wheel and given us such a tremendous lift ahead in the recent Act, give us the benefit of his influence in high places in this direction? It may seem apparently a small matter, but it must be remembered that as a man is taken at his own valuation, the same rule applies to societies, and the higher standing a society can obtain the more it is respected.

Southport, December 3, 1898

GLYCYRRHIZA (158/19).

MEMBERS, NON-MEMBERS, AND THE PHARMACEUTICAL COUNCIL.

Sir,—The child-like faith the Pharmaceutical Council seems to have in the efficacy of the new Bye-laws admitting chemists and druggists to membership of the Society is, to say the least, somewhat amusing. "A circular is in course of being issued to local secretaries throughout the country to be brought to the notice of chemists and druggists not connected with the Society." This and the phrase, "The greater the increase (of membership) during the next few weeks" make it appear that the Council anticipates a great increase of members at the beginning of the new year. May these anticipations be realised. But it is indeed very doubtful. Chemists and druggists are no better and no worse than other men. Those who use the difference in the title of membership as an excuse for not joining the Society will not be at a loss to find some other excuse. Here and there a young gentleman just commencing business may join for the advantage of adopting the abbreviations "M.P.S.," so as to show the public that he is as great, at the least, as some boisterous Ph.C., who may be in business near him. But that is nearly all. This would

not be so serious a matter were it not for some important statements made in the Journal last week—statements demanding the immediate attention of members of the Society. In reply to a correspondent you say “that support (meaning support of the Society) must be tendered in advance, not after the event to procure which support is required.” In your leader you say:—“If the Pharmaceutical Society is to undertake the task of endeavouring to obtain such amendment of the Act its membership must first be augmented so as to comprise at least the majority of those who desire that reform.”

These statements are clear and definite. There is to be no attempt to alter the law in relation to company pharmacy, until the majority of chemists and druggists become members of the Society. That being so, it behoves the members of the Society to consider the advisability of retaining their certificates of membership. On one side we have the Pharmaceutical Council saying, “we will do nothing for you until you send us your guineas.” Truly a dignified attitude! On the other side we have the non-members saying, “we will not send you our guineas until you do something for us.” Truly, a magnanimous attitude! Between the two stand the members who send up their guineas yearly. Truly, a most enviable position! After these pronouncements of years the atmosphere becomes somewhat clear. Shall we have it cleared thoroughly so that we can see which way to travel? I beg, through you, to ask those members of the Society who agree that this attitude of the Council is wrong, to send up their names for publication as a protest against that attitude. Or if any should think that attitude the right one, to do the same as a protest against my interference, we should quickly get at the opinion of the Society as a body—most desirable from a business point of view. If a majority go against me, I will put up both hands and cry “peccavi.” But, personally, I should like something more tangible for my subscription than this austere policy. Company pharmacy growing on us like an incubus, and the Council saying it will do nothing to relieve us from the feights (*sic*), company pharmacy seizing us like an octopus, and the victims will not lend their individual aid to the only body that can deliver them from its tentacles. It is to be hoped fresh decisions will be quickly arrived at. But if the Council thinks that by a mixture of promises and threats it will draw or force the majority of chemists to become members, it is doomed to disappointment. If we have to wait for any improvement in our legal status until we get a majority of chemists into the Society, we shall have to wait some little time yet.

You say “under existing conditions there is no reason why the Society should attempt to limit the sale of drugs to duly qualified persons for the sake of getting a few registered chemists to join the Society.” Perhaps not. But has the Society no duty to those who are already members? You say “the Society has two special duties, and two only—one to protect the public in the matter of the sale of scheduled poisons, and the other to protect the interests of its members.” I beg to suggest that the limiting of the sale of drugs to qualified persons is to my interest as a member of the Society, and I hope the other members will support me in calling on the Council to perform its duty to the best of its ability. You continue: “It is under no obligation whatever in regard to registered chemists outside its ranks.” I beg to challenge that statement. If the Society were a mere Government institution appointed to examine candidates and to prosecute for the illegal sale of poisons, it would be under no obligation to chemists at all. But it cannot be a mere Government institution, for it retains the fees of candidates, and to tell a successful candidate that it has no more concern with him, that he must go forth in the world and battle for himself, and that any body of men whatsoever—any Tom, Dick, and Harry and their pals—can set up in opposition to him without having spent any money or mental anxiety on examinations, and with impunity, is to insult him; and to tell him it will look after his interests if he will only subscribe and get the majority of his brother chemists to do the same is puerile. The duty of the Society is to protect every successful candidate against quacks, usurers, and against every inequality in the law, and to its uttermost farthing, if need be. Its duty is to bring inequalities before the law-makers, who owe a duty to the Society, and to work until it gets the inequality removed; and if the Society will issue petitions to every town Parliament will not be able to say that the trade is not united, for every chemist in the country, almost without exception, would append his name to do away with this inequality. That the Society can do a great deal with the few members it has is evident by the fact that it has recently

got an alteration in the Pharmacy Act, and that without waiting for the great majority to become members or associates. And while that was being passed that it allowed one of the greatest opportunities it ever had of benefiting pharmacists, and, in my opinion, for a mere “will o’ the wisp,” is what passes one’s comprehension. The utility of that amendment must, in the opinion of the Council, have been mighty for good. Let us hope it will not lead to disappointment.

Bury, Lancs., December 5, 1898.

T. HULME.

* * Apparently our correspondent fails to distinguish between the powers of the Legislature and those of the Council of the Pharmaceutical Society. It should not be necessary to explain that the Council is utterly unable to promise anything to registered chemists in the direction of amending the law—guineas or no guineas. Apart from that, it is a simple and logical conclusion that the power of the Council to influence legislators must be strictly proportionate to the extent that the Society represents registered chemists as a body, and to which they enable the Council to act on their behalf.—[Ed. P. J.]

RETAIL CHEMISTS AND THE P.A.T.A.

Sir,—Mr. Bailey’s letter on the above subject, in your issue of the 3rd inst., is so uncompromising as to call forth some remarks. In my correspondence with Mr. Beecham I find him a broad-minded gentleman, who agrees with the aims of the P.A.T.A., but disagrees with its methods and management. Mr. Bailey’s letter loses some effect when it is taken into consideration that the aims of the P.A.T.A. and the efforts of Mr. Beecham are towards the same end; they only differ in degree. The methods of the P.A.T.A., or of any association connected with pharmacy for that matter, are, to all appearances, far from perfect. The P.A.T.A. is an association which is endeavouring, according to its lights, to ameliorate the condition of the chemist whose lines are cast in mixed places. There is no other purely trade organisation. If this one is so injurious to some, it is time matters were mended. But it has certainly never injured me, and I should not think of refusing my support because I differed with it on certain points. I must also admit that the opinions of many of the “insignificant minority” are as good and as worthy of respect as my own or any other man’s. The P.A.T.A. has already proved beneficial. Advances in cost prices have taken place in other lines besides those on the P.A.T.A. list, and I am informed by many practical and unprejudiced business men that they look upon such advances as of some advantage to ordinary chemists. A few fixed minimum retail prices are at least something towards modifying the many counter-irritants which render the average chemist as touchy as the fretful porcupine. The standardisation of galenicals is of professional importance, but the standardisation of profits is intimately associated with the subject of serviettes. There prevails an air of animosity to things in general. Even our local associations find objectors, who refuse their allegiance because there are men and things they do not like. The Pharmaceutical Society, asking for a representative membership instead of an “insignificant minority,” is looked upon in many quarters as the origin of all evil, and curses, not loud, but deep, are showered upon it. Services rendered directly or indirectly for the well-being of the trade are marred by the narrow views of the chemist. If everything does not dovetail with the idiosyncrasies of his temperament and the conglomeration of trifles called business, he “won’t play.” Want of unanimity on any subject is the vulnerable point at which those who disparage us successfully strike. I admire Mr. Bailey’s candid criticism, it is what is required, particularly from inside, and I have replied in all friendliness because I fail to see what good his iconoclasm would achieve. At the present moment, however, charity and tolerance should form a fraternal bond, tending to make the daily business battle subservient to the higher aspirations towards ensuring the proper recognition of our honourable calling by all classes of the community.

Batley, December 5, 1898.

R. BROADHEAD.

Sir,—In reply to Mr. Herbert H. Bailey’s letter *re* above, in your last issue, kindly allow me a little space in order that I may point out where several of his statements are not quite correct. In speaking of the recent “exposures” by Mr. Beecham’s representatives, I suppose he refers to the fact that certain retailers have been enabled to buy protected goods and sell them below the P.A.T.A. list. Mr. Bailey must be aware that these certain retailers have been put to sore straits to obtain these goods, which they are selling, in many cases, below cost price. Though this may prove that the P.A.T.A. have not been able to stop supplies in every case, it does not prove the P.A.T.A. to

be a failure. The whole circumstances rather point to the fact that the opponents of the P.A.T.A., recognising the danger of its operations to their methods, are fighting it, and getting protected articles at all cost, in order to try and prove to the ordinary retailer that the P.A.T.A. is futile, and to persuade them to leave its ranks. Does Mr. Bailey really think that if the P.A.T.A. were of no effect the leading "cutters" would take the trouble they are doing to try and squash it? Would they not rather leave it severely alone? Mr. Bailey states: "The P.A.T.A. are an insignificant minority of the chemists of the country." My experience amounts to this, viz., with very few exceptions, the leading chemists in most districts have identified themselves with it. They may be a minority, but, I think, a significant one. I believe, sir, that the true reason why the wholesale price of certain patents has been advanced is because the manufacturers have wisely determined to take the profits the retailers have for some time abandoned. The advent of the P.A.T.A. has not affected the matter at all, but I fear we must thank our friends the "cutters" for this. The fact that the public has cheerfully submitted to this advance in price proves the arguments of certain manufacturers—"that the public would not submit to an advance in the price of their goods"—to be scarcely correct.

Grassendale, Liverpool, December 6, 1898. T. S. WOKES.

LOYALTY TO THE CRAFT.

Sir,—The correspondence between Mr. Young and myself has taken a direct and private course, but I should like through your columns to say, in justice to him, that he has accepted my challenge and has fully and completely answered it.

London, December 5, 1898. C. P. (158/35).

MELLIN'S EMULSION OF COD-LIVER OIL.

Sir,—We wrote to Messrs. Mellin's Emulsion Co., Ltd., asking for an explanation of their liberality to retailers other than chemists, as mentioned by your correspondent "Devon" in last week's Journal, and enclose their reply, which you are at liberty to publish.

Reading, December 6, 1898. J. CROSS AND CO.

[ENCLOSURE.]

Messrs. John Cross and Co., Reading.

Dear Sirs,—In reply to yours of the 2nd instant, I am instructed to inform you that there have been a few exceptional cases in which our travellers have offered to allow the cost of Patent Medicine Licence to grocers in such cases as where our medical friends have required supplies for their patients, and also where a demand from the general public has existed, and chemists have refused to stock our preparation, notwithstanding the fact that they obtain from us every consideration. We, therefore, have had in such cases to obtain someone to hold stocks for us as against a demand. The case mentioned in the letter, however, has never come before us, and we are astonished at any trader being so palpably dishonourable as to take such a despicable advantage. Our emulsion is protected, and shows a very handsome profit to the retailer with little or no trouble for handling it, and we are open to meet chemists on business lines at any time, and to promptly answer all inquiries from this address as received.

For Mellin's Emulsion Co., Ltd.,

London, December 5, 1898. J. OAKES, Secretary.

Sir,—The communication appearing in your current issue, signed "Devon," is curiously interesting. Perhaps "some of the local associations" might most effectively "combine against such a practice" as that in which the grocer is alleged to have indulged by disclosing the whole of the facts to the local Inland Revenue Supervisor. No doubt the grocer overlooked the fact that in disposing of the parcel of stamped goods he was incurring a penalty of £20, for selling goods liable to Stamp Duty without having a licence (42 Geo. III., c. 56, s. 9). It would seem, also, that the allowance of 5s. was accepted for the specific purpose of paying for a medicine licence, but this is rather a question for the parties by whom the allowance was made. "Devon" might even do the work single-handed, and possibly recover his "reasonable costs and charges" in "making the discovery" (43 Geo. III., c. 73).

December 2, 1898. CYCLOPS (159/1).

Sir,—I was utterly surprised and disgusted on reading the letter in your last issue signed "Devon," and await with curiosity Messrs. Mellin's reply to the same, when possibly they will explain their ideas of trade morality. The usual custom with their repre-

sentative is to get chemists in districts to stock their emulsion, with the promise that he will introduce it to the neighbouring medical men, at the same time mentioning the chemists that have supplies when required. It is evident from your correspondent's letter that three chemists within 200 yards had stocked their goods on those terms. What will chemists throughout the country think of Messrs. Mellin by their faithless conduct in planting a subsidised opponent in their midst?

December 3, 1898.

HEBE (158/31).

ARROW POISONS.

Sir,—I am especially delighted by Professor Stockman's lecture on "Arrow Poisons, etc.," and I feel as if I should like to hear more of the subject. In Robertson's 'History of America,' the author makes mention of certain tribes of American Indians employing curare, while others employ an equally deadly poison, which he calls *Manchinelle*. I have wondered if this latter arrow poison is derived from the hura, or sand box-tree, nat. ord. Euphorbiaceæ, the various species of which are found in Central and South America and the West Indies. All the species contain an acrid juice, which is irritant to the skin and to the alimentary and urinary tracts, but I have been unable to find out if this juice is nowadays employed as an arrow poison.

Leeds, December 6, 1898. GORDON SHARP, M.D. (159/10).

THE USE OF NETTLES AS FOOD.

Sir,—In reference to your note in the Journal (*ante*, p. 546) concerning *Urtica dioica*, it does not seem to be generally known that nettles were commonly used as food in the Highlands of Scotland, and are still occasionally eaten. In the spring, when the young shoots are about two or three inches high, they are collected, and after being cut or chopped up are made into a moderately thick soup. Dose, one or two platefuls per diem. The odour and taste of the soup are characteristic and not unpleasant. Many people consider it a great delicacy. I have not heard of the dry plant being used here, and do not know whether it is *Urtica dioica* or *U. urens* that is used. Both species are common.

Inverness, November 29, 1898.

D. GAIR.

IODINE IN THYROID GLANDS.

Sir,—I am glad to have the opportunity of replying to Mr. Stanford's criticism on my note on "Iodine in Thyroid Glands," as his experience in this direction is, to use his own words, "somewhat exceptional, having been continuously engaged in the pursuit and determination of these minute traces of iodine for about forty years." I am disposed to think, however, that he has not given sufficient trial to the process which I put forward for the separation of the halogens (*P. J.* [4], v., 562), and applied to this subject (*P. J.* [4], vii., 482), or he would not say that the presence of carbolic acid was unnecessary and the whole process roundabout, cumbrous, and ill-adapted for the determination of small traces of iodine, as I am aware that the process has been successfully used in London laboratories. The use of the phenol is so obvious that I did not explain in my process the reason for its presence. It is there to meet the objection as to the bromine combining with the iodine; the excess of bromine combining with the phenol to form phenol tribromide. As to the possible presence of traces of iodine in bromine water a long series of blank experiments has failed to discover any. Then as to the several other objections, as they all deal with the process after the conversion of the iodine into an inorganic salt, they can be easily refuted by simply determining, by the phenol process, the iodine in a sample of pure ammonium iodide. One advantage that this process appears to possess over Stanford's is that the iodide can be estimated in the presence of bromide, the results yielded by his (Stanford's) process under those conditions being low, since nitro-sulphuric acid made by acting on starch with nitric acid and passing the resulting gas through sulphuric acid, appears to set free bromine, as well as iodine, which necessarily combine, resulting in a too low iodine figure. Since my previous paper on this subject I have repeated my experiments, and see no reason to alter my statements as to the proportion of iodine proteids extractable from the glands either by water or the B.P. menstruum, neither do I find any defect in my process for determining iodine content. In these confirmatory experiments two quantities of 100 grammes of the fresh gland were exhausted with water, the percentage of iodine in one quantity being determined by Stanford's process; in the other portion by my own.

	FROM 100 GRAMMES.		Iodine in exhausted glands.
	Iodine in cold water extr.		
Phenol process.....	0.032 Gm.	.....	0.0013 Gm.
Stanford's process ..	0.0295 „	.....	0.0014 „

In my hands, therefore, there appears very little difference in the results obtained by the two processes. Another exhaustion by B.P. menstruum showed that not more than 1/20th of the total iodine remained in the exhausted glands, these results agreeing with the statement of R. Tambach (*Journ. Chem. Soc.*, October, 1898, p. 543), who says that the iodine proteids of the thyroid gland are almost completely extractable by water. In referring to my paper on this subject, it is unfortunate that Mr. Stanford should incorrectly quote my words as he does in the following instances:—

EXCERPTS FROM STANFORD'S PAPER.

Line 7: He takes the average usual estimated proportion of 0.3 per cent.

Line 9: He then finds in one small experiment.

Lines 11 and 17: Of only twenty-four glands weighing 104 grammes, or 1605 grains . . . for these glands may be quite abnormal, weighing only 15.43 grains each.

Line 43: In delicate experiments . . . I never burn into ash (the inference being that this was advised in my process).

In conclusion, I should like to emphasise the reason of my inquiry into the subject, which was done with a view to determining or eliciting any information as to whether the therapeutic value was in proportion to the amount of iodine present.

48 and 50, Southwark Street, London,
December 6, 1898.

R. S. SWINTON.

THE FEDERATION AND ITS WORK.

Sir,—The Federation of Local Pharmaceutical Associations is justifying its existence. The circular letter it recently issued shows that it has its finger on the pharmaceutical pulse, and knows when a little stimulant is needed. The hour for dealing with company pharmacy is fast approaching, thanks to the energy of the Federation and the sensible leading articles which have recently appeared in the *Pharmaceutical Journal*. Several local associations have also assisted the movement, but there is still a large amount of work to be done before the craft is fully organised. Helpful influences are at work outside the pale of pharmacy, for throughout the country there is a general feeling that limited liability companies should be made more amenable to law. The tide is, therefore, rising to the flood; let us prepare to take advantage of it, and be led on to fortune. It has been repeatedly pointed out that the first condition of success is combination, that fact cannot be too strongly or too often emphasised; every chemist should be a member of the Pharmaceutical Society. The next essential is a constituency which practically understands the question, this can be secured by an exposition of the Federation suggestions by those who have carefully studied them at meetings of local associations; then we need determination to succeed. When those conditions are fulfilled I do not think the Pharmaceutical Society will be slow to move in the matter and do what is needful, although one cannot help wishing it had taken the initiative.

207, Radford Road, Nottingham.
December 7, 1898.

WILLIAM GILL.

ANSWERS TO QUERIES.

MATERIA MEDICA.—The date is not yet announced by the publishers—Messrs. J. and A. Churchill. [*Reply to F. J. J.*—20/16.]

THYROID GLANDS.—We understand that fresh glands can be obtained from Mr. T. Williams, 2, Trafalgar Street, Liverpool. [*Reply to G. W. and C.*—20/5.]

MIRROR MAKING.—The article referred to does not appear to have been published in the *Journal*. [*Reply to G. R. T.*—20/19.]

OPTICAL BUSINESS.—The 'Optician's Handbook' is officially recommended, but no one book will serve your purpose. See reply to D. M. [*Reply to ORTOL.*—20/18.]

BOTANICAL.—It is the fruit of the strawberry tree, *Arbutus unedo* (Ericaceæ). [*Reply to W. K.*—20/22.]

TO REMOVE MARKING INK.—First go over the mark with a little dilute iodine solution, then apply freely a saturated hot solution of sodium hyposulphite. [*Reply to HAT.*—20/13.]

INDIGESTION POWDERS.—American scale pepsin, 5 grains; powdered ginger, 5 grains. Mix. For acid dyspepsia a simple mixture of sodium bicarbonate and ginger is often given. This should be flavoured with a trace of spearmint or peppermint.— [*Reply to W. W.*—19/16.]

POISON BOOK.—You are not legally bound to show your poison book to anyone, though you might be summoned to produce it in a court of law. Under the circumstances you were fully justified in not allowing it to be inspected on the occasion referred to. [*Reply to AESTAS.*—20/23.]

NON-SEPARATING EMBROCATION.—Two eggs; oil of turpentine, 9 fl. ozs.; acetic acid, 5 fl. ozs.; water, 7 fl. ozs. Mix the eggs, both yolks and whites, with the turpentine, gradually rub in the water, and, lastly, very gradually add the acetic acid. [*Reply to E. W. W.*—19/31.]

BETA-NAPHTHOL PILLS.—Beta-naphthol makes a very good mass with glycerin of tragacanth. Very little of this excipient is required if a little liquid glucose or syrup of glucose be also used. Keratin-coated pills usually receive a coating of cacao butter if they are not made with an oily excipient. We have not much experience of naphthol pills, as we have more often seen this substance administered in powders or cachets. [*Reply to EXON.*—20/15.]

TINCTURE OF NUX VOMICA.—In the proportion in which tincture of nux vomica is prescribed in mixtures only a faint turbidity results. If water be added gradually to the tincture, so that the latter constitutes a considerable proportion of the mixture, then a more distinct turbidity may be noticed, but we have not observed anything in the nature of a separable precipitate under any conditions. [*Reply to A. E. M.*—20/10.]

URINE ANALYSIS.—The appearance you mention may be due to indol or skatole in the urine. Occurrence of these bodies in the urine is indicative of various pathological conditions, which are accompanied or caused by decomposition of proteids in the intestine. Try separating the albumin by boiling the faintly acidulated urine and testing the filtrate. The urine should be tested when quite fresh, as putrefaction after it is collected may, under some conditions, give rise to decomposition products giving colour reactions. You can easily determine the presence or absence of the constituents of bile by other tests. Refer to Allen's 'Urine Analysis' if possible. [*Reply to STUDENT.*—20/12.]

SODIUM BICARBONATE AND CARBOLIC ACID.—1. No; because phenol, although forming a phenate with the alkaline hydroxides, does not decompose the alkali bicarbonates, or carbonates (into which the bicarbonates are converted by boiling their aqueous solution). See the articles on Acidum Carbolicum in the Students' Page for September 17 last, p. 334. 2. No; you should, however, remember that phenol readily volatilises when its aqueous solution is boiled. [*Reply to G. B.*—20/3.]

OPTICAL EXAMINATION.—There are two optical associations that grant diplomas—namely, the British Optical Association and the Worshipful Company of Spectacle Makers. The former consists of a body of retail opticians, which has done much good work, and a committee of that body constitutes the examining board. The Secretary is Mr. J. H. Sutcliffe, of Blackpool, Lancashire. The other examining body is a guild of the city of London, its optical committee consists of some of the leading wholesale and retail opticians, and its examiners are Lindsay Johnson, M.A., M.D., F.R.C.S.; Professor Silvanus Thompson, F.R.S.; and Mr. George Paxton. The S.M.C. diploma would appear to be the one that should be held by chemists who wish to deal in optical goods. As regards the books needed for reading up and particulars as to the examinations, syllabus, etc., apply to Colonel T. Davies Sewell, Guildhall, London; or to Mr. Lionel Laurance, 1, Vernon Place, Bloomsbury Square, W.C., either of whom will give you all the particulars you require. [*Reply to D. M.*—20/8.]

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Dr. J. Shields has been experimenting with Palladium an electrical method, with a view to determining the relations existing between palladium and Hydrogen and hydrogen. Since the discovery by Graham, in 1856, of the remarkable property of absorbing

hydrogen possessed by palladium, many researches have been undertaken with the object of throwing light upon the relations existing between the metal and the gas, but the chief result has been that there are nearly as many different views as there have been experimenters. From the theoretical discussion, there would at first sight appear to be no difficulty in distinguishing experimentally between the alloy or solid solution hypothesis and the view that a definite compound, a hydride, is formed. The pressure-concentration curve, in particular, would be expected to decide at once between these two views. But the application of this method is rendered difficult, if not useless, by the fact that the shape of the curve varies greatly with temperature. At 100° C., for instance, the horizontal portion required by the hypothesis of Pd₂H being present is well marked (Troost and Hautefeuille), but at 200° C. no trace of this is present. Dr. Shields (*Proc. Roy. Soc. Edin.*, vol. xxii., 169) has examined the electro-motive force of the concentration cell, palladium-hydrogen (weak) / dilute sulphuric acid / palladium-hydrogen (strong), where the concentrations of the hydrogen were weak and strong at the two electrodes. The electro-motive force of the cell was found to be zero, or nearly so. This is opposed to the solid solution hypothesis, and agrees better with the view that a definite chemical compound is formed.—*Nature*, lix., 107.

R. T. Baker and H. G. Smith endorse Stringybark Trees Baron von Mueller's classification of the and their trees of the genus *Eucalyptus*, to which Essential Oils. the name "Stringybark" is applied in New South Wales, and they find that an oil exists, having a specific gravity less than 0.910, containing over 50 per cent. of eucalyptol, and answering all the tests of the British Pharmacopœia of 1898, except that dealing with specific gravity. It is thus seen that the specific gravity test for eucalyptus oil, as given in the B.P., if enforced, might be the means of excluding some excellent oils. The authors also find that the phosphoric acid test is not a satisfactory qualitative one for eucalyptol in some crude eucalyptus oils, and that eudesmol, the stearopten of eucalyptus oil, exists in large quantities in the oil of *E. macrorhyncha* and can be readily purified.—*Proc. Roy. Soc. N. S. Wales*.

Frank Edel, as the result of an extended Compressed series of experiments in the manufacture of Tablets. compressed tablets, believes that careful tests of those preparations will show that in some cases they are much more insoluble than well-made pills, and have no advantage over the latter in any particular. One prominent work on pharmacy says that tablets should be compressed with the addition of as little excipient as possible. That, in the writer's opinion, is far from proper, for most of the adhesives used in the preparation of tablets are readily soluble in the stomach, and thus such addition can only contribute to add to their solubility. Especially is this so in the preparation of tablets, such as salol, for instance, and some time ago the writer suggested that it would be

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well to incorporate into the body of the tablet a small portion of sodium bicarbonate and tartaric acid. Such an admixture would result, in the presence of moisture, in the rapid disintegration of the tablet, and could in no way be objectionable, except that the tablet would not keep in the open air, but would have to be carefully protected from moisture. The addition, while objectionable from the standpoint of the permanency of the tablet, would add greatly to its solubility. Experiments along this line have demonstrated to him that a very small amount of alkali and acid will bring about the rapid disintegration of the tablet. And he thinks that, in the great majority of combinations, its use cannot be objected to from any standpoint.—*Western Druggist*, xx., 491.

Hermann Barth deals with the micro-chemical Micro-Chemical recognition of alkaloids in commercial drugs. Recognition He finds alkaloids in different parts of plants, of Alkaloids. as, for example, in the pericarp of *Conium maculatum*; in the seed-coats in *Peganum harmala* and *Colchicum autumnale*; in the endosperm of *Areca catechu*; in both endosperm and embryo of *Aconitum napellus*; and in the embryo only of *Physostigma venenosum*. He concludes that the functions of alkaloids must be as various as their distribution; thus, when they occur in the periphery of plant organs, it is reasonable to suppose that they then act as protective substances, to prevent such parts being eaten by animals. According to Heckel, those occurring in the endosperm and embryo serve as reserve foods. It appears, in accordance with the common belief, that alkaloids may always be regarded as excretions. Reactions are described in the paper for the recognition of certain alkaloids.—*Botanisches Centralblatt*, through *Bot. Gazette*, xxvi., 365.

K. Elbs and A. Hertz give further particulars of the electrolytic method of preparing Iodoform by iodoform, which was given in outline in the Electrolysis. *Pharmaceutical Journal*, lx., p. 586. This substance is produced when the alkaline or alkaline-earthly iodides are subjected to electrolysis in presence of alcohol, aldehyde, or acetone. By the former method the electrolyte should be traversed by a stream of carbon dioxide gas during the operation to saturate the alkali set free by the electrolysis of the iodide. The authors show that the current of carbon dioxide gas is advantageously replaced by the simple addition of an alkaline carbonate to the electrolyte. The following solution answers best:—

Potassium Carbonate	5 Gm.
Potassium Iodide	10 Gm.
Alcohol	20 C.c.
Water	100 C.c.

Every hour the iodoform is removed and the strength of the solution in the several ingredients made up to standard. From many experiments they conclude (1) that, *ceteris paribus*, the proportion of hydriodic acid formed increases as the temperature rises above 60 to 70° C.; (2) that the yield of iodoform diminishes if the density of the current exceeds 1 ampère per square decimetre; (3) that increase of carbonate in the electrolyte slightly diminishes the yield of iodoform and largely increases the proportion of hydriodic acid; (4) that replacement of alcohol by acetone gives far less satisfactory results.—*Zeit. für Electro-Chemie*, through *Chem. News*, lxxviii., 257.

After an exhaustive research on the quality of Cade Oil. of juniper tar oil (cade oil), P. Adam finds that the commercial article is so variable in composition, and of such doubtful purity that he recommends that its use in medicine should be discontinued.—*Pharm. Zeit.*, xliii., 659.

DEEP-SEA DEPOSITS.*

BY W. MURTON HOLMES.

The history of deep-sea exploration is quite of recent origin. Previously to the year 1864 it was the general opinion among men of science that life did not and could not exist below a certain depth of the sea. There were, according to Edward Forbes, fixed zones of depth: (1) The Littoral zone, between low and high water marks; (2) the Laminarian zone, from low water to a depth of fifteen fathoms; (3) the Coralline zone, from the fifteen fathom line to a depth of fifty fathoms; and (4) the zone of deep-sea corals, extending from the edge of the Coralline zone to an unknown lower limit. "In this region," he says, "as we descend deeper and deeper, its inhabitants become more and more modified and fewer and fewer, indicating our approach towards an abyss where life is either extinguished or exhibits but a few sparks to mark its lingering existence."

About 1864, G. O. Sars, one of the Acting Commissioners of Fisheries for Norway, while dredging in water about 700 feet deep for the purpose of determining the condition of the sea-bed, obtained several specimens of a strange crinoid, or lily star, which at once struck him as resembling a certain stage of development of a crinoid with which he was familiar. Continuing his dredging operations at depths of from 700 to 800 feet he found abundance of animal life.

His father, Professor Michael Sars, announced the discovery to Professor Wyville Thomson, then working on the crinoids, and invited him to Christiania to see the specimens, and on talking the matter over together they came to the conclusion that the new lily star was closely allied to a genus well known in the fossil state. This was a startling discovery, it seemed now almost certain that there had been found, not only a living representative of a long-lost group, but a form that might be regarded as having lived on from the great chalk epoch.

In 1868 the late Dr. Carpenter, then one of the vice-presidents of the Royal Society, while discussing with Wyville Thomson the structure and development of lily stars, was urged by him to use his influence at headquarters to induce the Admiralty to furnish a vessel properly fitted out with dredging gear and other scientific apparatus to further examine the sea-bottom. The Admiralty very liberally fitted out the surveying ship "Lightning" and it started on a cruise in the North Atlantic Ocean, in August, 1868. The results were fairly satisfactory. It was shown beyond question that animal life was varied and abundant at depths down to between 600 and 700 fathoms; and it was further shown that many of the deep-sea forms of life were closely related to fossils of the chalk period. In 1869 the "Porcupine" was assigned by the Admiralty for surveys off the west coast of Ireland and in the Bay of Biscay. The track of the "Lightning" was also carefully worked over and previous observations checked. In the following year the "Porcupine" was again placed at the disposal of the Royal Society, and operations were carried on between Falmouth and the Mediterranean.

On the return of the "Porcupine" from her last cruise, so much interest was felt in the bearings of the new discoveries upon important biological, geological, and physical problems, that the Government was again urged by the Royal Society to dispatch an expedition to investigate each of the great oceans, and to take an outline survey of that new field of research, the bottom of the sea. The result was that, towards the close of 1872, H.M.S. "Challenger" started upon her voyage round the world, a voyage that occupied about three years and a half, and which

is certainly one of the most memorable during modern times. Between 1877 and 1880 the United States survey steamer "Blake" made three cruises in the Gulf of Mexico, in the Caribbean sea, and along the Atlantic coast of the United States. The steamer was fitted up with all the latest improvements in apparatus, and the naturalist in charge was the celebrated Alexander Agassiz, while the officer in charge of the steamer was Lieut.-Commander Sigsbee, the same, I believe, who was in command of the ill-fated "Maine" when she was blown up at Havana.

The scientific results of this survey were very important, and a valuable report was published.

Our knowledge of deep-sea forms may be said to have commenced when the results of the "Challenger" expedition were first published. The publication of these reports was not completed until 1895. They fill fifty large volumes, beautifully illustrated, but proportionately costly. It is gratifying to know that one of the best, if not the best, that on foraminifera, was the work of a member of our Society, the late Henry Bowman Brady, F.R.S.

It was my good fortune some years ago to have a series of soundings lent to me for examination. They were taken by H.M.S. "Egeria," and the locality in each case was carefully noted. They range from depths of 1242 to 4428 fathoms (a little over five miles), the latter one of the deepest spots known. It is situated in the South Pacific Ocean in lat. 24° 24' S., long. 175° 10' W. Two or three slightly deeper depressions have been noted, but their area in all cases is comparatively small. I have also been fortunate enough to obtain specimens of several of the "Challenger" dredgings, and I propose this evening to exhibit some slides prepared from these soundings, which will convey some idea of the microscopic life of the sea-bottom. The slides now shown represent *Rhizocrinus lofotensis* (28 species of living crinoids now known).

FORAMINIFERA.

Foraminifera belong to the lowest class of animal life, the Protozoa. They are further distinguished as being rhizopods, or root-footed animals, from the root-like appearance of the strands of protoplasm, by which they are enabled to adhere to surrounding objects or to move from place to place. If you imagine a small particle of structureless, jelly-like protoplasm, which is capable of emitting long thread-like processes, and if you also imagine the main portion to be enveloped in a calcareous shell, you will then have a very good general idea of what a foraminifer is. The term "foraminifera" is applied on account of the numerous perforations in the shell with which many of the species are provided. When the animal wants to feed, or to move to another place, it protrudes its delicate filaments or pseudopodia either through the mouth of the shell or through the perforations in its walls, or by both sets of apertures combined. There is a constant streaming movement of protoplasm along the filaments, which coalesce here and there, and in this manner the particles of food obtained from the surrounding water are conveyed to the central mass of protoplasm, and there digested. The majority of species live at the bottom of the sea; others are pelagic and occur in abundance at the surface. Some of the free-swimming forms are sunk in a mass of bubbly protoplasm, which serves as a float.

The most abundant genus is Globigerina, and there are several species or varieties. It occurs in immense numbers, forming what is known as Globigerina ooze, mostly at depths of from 600 to 2500 fathoms, in the Atlantic, Western Indian Ocean, and Pacific, the total area covered by its remains being estimated by Murray and Renard at 49,520,000 of square miles. The species are not considered to live at the sea-bottom, as their occurrence coincided with the area of warm surface water, no ooze being found where the surface water is too cold.

* Read at an evening meeting of the Pharmaceutical Society, on Tuesday, December 13, 1898.

RADIOLARIA.

The next group of animals are the radiolaria. These also belong to the rhizopods, but are distinguished from the foraminifera by a siliceous or a horny, instead of a calcareous skeleton, and by the presence of a membranous central capsule surrounding a nucleus. This capsule is considered to correspond to the calcareous shell of foraminifera. They are commonly floating organisms, and are often present in enormous numbers in all seas, the greatest variety of species, however, being found in the warm waters of the tropics. Many other forms are "abyssal," and are confined to great depths of the sea, while others again are "zonarial," and are restricted to particular layers between the surface and the bottom. Over large areas of the deep sea, principally at depths of from two thousand to over four thousand fathoms, the bottom is found to be covered with extensive deposits of "radiolarian ooze," estimated to cover 2,290,400 square miles. Haeckel has described about 4000 species, and there are probably many more still undescribed.

PTEROPODS.

Another deposit forming an ooze, though to a more limited extent, 400,000 square miles, is very largely made up of pteropod and other small shells, and is known as "pteropod" ooze. It occurs in the tropics round oceanic islands, and is especially abundant between Cuba and Florida Keys.

The pteropods or "winged snails" are pelagic molluscs, found swimming near the surface of the sea, the living forms being all of small size. They have no distinct head, and the mouth is placed in the fore-part of the foot, which is rudimentary. The lateral parts of the foot are, however, developed into a pair of wing-like fins (hence the name), by means of which the animal swims actively. The shell is generally calcareous and very delicate in texture, frequently taking the form of a slender hollow cone. Pteropods form the principal food of the Greenland whale. Pteropod ooze is not found below 1500 fathoms, the carbonic acid in the water dissolving the delicate shells. For the same reason globigerina ooze disappears below 2500 fathoms, the shell being somewhat thicker.

SPONGES.

The group to which I shall next call attention is that of the sponges. About 2000 species of these are known and 300 are found round the British coast. They may be either soft, stony, leathery, or horny, and vary in weight from 1 grain to over 100 pounds.

The simplest form of sponge consists of a thin-walled sac with the walls perforated by pores and the central cavity lined with flagellated cells. The constant lashing of the flagellated cells gives rise to a strong current of water which is drawn through the pores into the central cavity and passes out by the mouth of the sac.

If now we picture to ourselves a great thickening of the sac-wall with the layer of flagellated cells very much extended and folded up so as to form a series of canals leading from the external pores to the central cavity, we shall get an idea as to the manner in which the more complicated forms are built up.

In most cases some support for the jelly-like mass of cells is required, and accordingly we find either a network of horny fibres, or a skeleton composed of siliceous or calcareous spicules forming a kind of trellis-work. The common bath and Turkey sponges are examples of horny skeletons. The horny and calcareous groups live mostly in comparatively shallow water and their skeletons do not form any noteworthy deposit. It is not so, however, with the siliceous sponges. These live in depths down to 2500 or 3000 fathoms, and their skeletons not being easily acted upon by sea-water form extensive deposits. Such a deposit occurs at a depth of 3000 fathoms in the Indian Ocean off the south-west coast of Australia, and includes a great number of species.

Siliceous sponges are divided into four orders: (1) Monaxonida, has one-rayed spicules; (2) Tetractinellida, has spicules of four-rays; (3) Lithistida, are massive and stony sponges, with interlocking spicules; (4) Hexactinellida, sponges with six-rayed spicules. The slides shown here include—*Pheronema carpenteri*, from 530 to 1600 fathoms, Atlantic; *Rossella velata*, west of Gibraltar, 651 fathoms; *Semperella schultzei*, dermal framework, Cebu, Philippine Is., 140 fathoms; *Dactylocalyx pumiceus*, W. Indies.

DIATOMS.

Diatoms are one-celled plants inhabiting both the sea and fresh water. The cell-wall is hardened by the deposition of silica, so as to give rise to a glassy case, known as a "frustule," composed of two parts which fit into one another like the lid on to a pill-box. The cells may be either separate or connected into filaments, either free or attached to some other body. The separate valves are of various forms, circular, oblong, elliptical, linear, saddle-shaped, boat-shaped, undulate, sigmoid, etc., and their surfaces exhibit more or less delicate sculpturings and markings in the form of bands, lines either parallel or radiate or crossing each other, or they present a cellular appearance like honeycomb. The accumulation of these flinty envelopes gives rise to very extensive deposits, more especially in the Arctic and Antarctic regions, where they are less mixed with foraminifera and other organisms (total area estimated at 10,880,000 sq. miles). The fresh-water species give rise to the numerous varieties of "kieselguhr." The slides now shown include—*Heliopecta*; *Arachnoidiscus ehrenbergii*, *in situ*; *Pinnularia*.—Sounding "Egeria," 2479 fathoms, S.W. of Australia.

OTHER DEPOSITS.

In nearly all deep-sea deposits, with the exception of those in polar and sub-polar regions, numerous extremely minute bodies, known as coccoliths and rhabdoliths, are to be met with. Coccoliths are oval calcareous discs, having a thick, strongly-refracting rim and centre, and are the disintegrated remains of a spherical body known as a coccosphere. Rhabdoliths consist of minute calcareous rods, having a disc at one end, and are the disintegrated remains of a body called a rhabdosphere.

Coccospheres and rhabdospheres are now regarded as pelagic algae. Rhabdospheres are developed in equatorial and tropical regions, and are rarely met with where the temperature of the surface water falls below 65° F. Coccospheres, while abundant in the tropics, are found further north and south than rhabdospheres, and are present where the temperature of the surface water is as low as 45° F. (Stellate bodies in deep-sea deposits probably allied to coccoliths.)

From a depth of 2000 fathoms downwards there is a very widespread deposit of red and grey clays, the area of which is estimated at 51,500,000 square miles. These consist of silicate of alumina, with the oxides of iron and manganese. They result from the decomposition of pumice and volcanic dust, either from terrestrial or submarine volcanoes.

The extreme slowness of deposition is shown by the fact that the "Challenger" frequently procured in a single haul hundreds of sharks' teeth, some of them of gigantic size, and occasionally embedded in manganese; dozens of ear bones and other bones of whales, large numbers of manganese nodules, zeolitic minerals which have been formed and crystallised round abysmal organisms, at about the temperature of 32°, and magnetic spherules, which are believed to be the dust of meteorites, which, in the course of long ages, have fallen upon the sea. It is not possible to conceive that sharks and whales were ever so numerous at one time that their remains should form a continuous stratum. Many generations must therefore be represented.

In high latitudes a large quantity of *débris* from the land must be deposited in the sea by the melting of icebergs. A short time ago I had a small quantity of a dredging from the North Atlantic given to me. It was obtained at a depth of 2300 fathoms, but the particular locality was not noted on the label. It contained a few foraminifera, the remainder was made up of mud and rounded quartz grains of various sizes and a few angular fragments of rock. It is not likely that there could have been sufficient friction at such a depth as to round the angles of quartz, and as the depth indicated a distance from land, I came to the conclusion that the rounding was the result of ice action, and that the particles had then been carried to sea on floating ice.

Hitherto my remarks have dealt with deposits in course of formation. I will now direct your attention to certain deposits raised above the sea-level, and by comparing these with recent formations, we shall be led irresistibly to the conclusion that they also have been formed in deep water.

CHALK.

The most important of these, especially to a Kentish man, is chalk. White chalk is a soft variety of limestone largely made up of foraminifera and fragments of shells. By careful washing and decantation the foraminifera may easily be washed out and recognised, but a more satisfactory way is to wash the powdery substance from the inside of a hollow nodule of flint. This is, to all intents and purposes, a portion of the mud of the cretaceous ocean hermetically sealed up in an almost unaltered condition. In this powder will be found sponge spicules, foraminifera, the shells of minute crustaceans, and portions of echinoderms and shells. The finer portions will be found to contain numerous coccoliths.

Globigerina ooze has been called "modern" chalk, but it differs from true chalk in some respects, and there has been a great deal of controversy on the subject. An analysis of Sussex chalk shows that it contains about 98.4 per cent. of calcium carbonate and a small quantity of alumina. The Atlantic chalk-mud, on the other hand, does not contain more than 60 per cent. of calcium carbonate, and, in addition, from 20 to 30 per cent. of silica, with varying proportions of alumina, magnesia, and oxide of iron. This difference may to a great extent be accounted for by the fact that the siliceous organisms, such as diatoms, radiolaria, and sponges, have been dissolved and re-deposited in nodular masses as flint. The silica is in a hydrated condition and comparatively easily acted upon by sea-water, more especially as the bottom water is more alkaline than that near the surface. The iron is also found segregated as iron pyrites.

The Greensand, again, which is classed as a member of the cretaceous formation, is largely made up of sponge spicules in a fragmentary or otherwise altered condition, together with foraminifera, and casts of the same in glauconite, a hydrous green silicate of iron and potash generally formed in contact with decomposing organisms in comparatively shallow depths. I have also detected rhabdoliths in the upper greensand of Betchworth, Surrey.

The analyses of sea-water take no account of silica in solution. It is probable that there is a trifling quantity, but the principal source from whence diatoms and other siliceous bodies obtain their supplies is the finely divided clay held in suspension in all seas.

Most of the important sedimentary rocks will in like manner furnish evidence of marine origin.

RADIOLARIAN EARTHS.

The most famous deposit of radiolaria, or polycystina, is in the Island of Barbados. It has long been known to microscopists, with whom it has always been a favourite source from whence these objects could be obtained. This Barbado "earth" is a friable, earthy, or chalky marl which rises to heights

of over 1000 feet above sea-level, and is more or less extensively composed of radiolaria with a variable proportion of foraminifera. According to Haeckel, the number of species is not less than 400, and is probably more than 500. Many of the species are still found in the Pacific Ocean. Coccoliths are also found of unusually large size, associated with stellate bodies, probably of similar origin. Other deposits are found in Cuba, Sicily, Greece, and Northern Africa. In the Nicobar Islands the radiolarian clay reaches elevations of about 2000 feet above sea-level.

A deposit exhibited from Moron, in the South of Spain, is very rich in sponge-remains, diatoms, radiolaria, and foraminifera.

Siliceous sponges are largely represented in past time, and are of high antiquity, being known to occur in deposits as ancient as the Cambrian, and are abundantly found in the chalk. A deposit, in places 40 to 60 feet thick, which contains a large number of detached sponge spicules, of which 110 species have been definitely determined, occurs near Oamaru, in New Zealand. As in other deposits it is largely mingled with diatoms, radiolaria, and foraminifera. In fact, it has all the characters of a deep sea ooze very similar to one already noticed off the south-west of Australia at a depth of 3000 fathoms. In the primary and secondary rocks sponge spicules have lost their hydrous condition and have become converted into chalcedony, a crystalline form of silica.

A very remarkable bed of diatom-earth from 30 to 40 feet thick and some miles in extent occurs at Richmond, in Virginia.

Time will not permit me to add more. I fear that I have already trespassed too long upon your patience, but from the evidence adduced I think we can come to no other conclusion than that there are deep-sea deposits among the marine sediments that have been raised above the sea.

I must express my sincere thanks to Mr. E. W. Lucas and Mr. Baldock for so kindly preparing the lantern slides which have been used on this occasion, and to Professor Greenish for operating the lantern.

THE PHARMACY ACT OF 1868, AND ITS LITERAL INTERPRETATION.*

BY J. RYMER YOUNG.

Though the intentions of the promoters of Bills brought before Parliament for consideration are not infrequently lost sight of to a great extent, in the interpretation of the Acts into which those Bills have developed, it may not be unprofitable if, before proceeding to speak of the Pharmacy Act of 1868 as it is and may be interpreted to-day, a brief space is devoted to a survey of the intentions of those whose efforts resulted in the addition of that measure to the British Statute book. The parties concerned in the matter were four: the Pharmaceutical Society, representing the only registered chemists at that time; the United Society of Chemists and Druggists—of which I was then a member—representing the as yet legally undefined body of chemists and druggists other than pharmaceutical chemists; the General Medical Council, which desired to see the practice of pharmacy regulated in some way; and the Government of that day, which was anxious to have the sale of poisons regulated.

The Pharmaceutical Society was first in the field with a Bill which provided that it should be unlawful for any unregistered person in Great Britain to call himself a pharmaceutical chemist or a chemist and druggist, or to carry on the business of a chemist and druggist in the keeping of open shop for the compounding of the prescriptions of duly qualified medical practitioners. The United Society of Chemists and Druggists also produced a Bill,

* Read before the Manchester Pharmaceutical Association, on Wednesday, December 14, 1898.

which provided, in addition, that only registered chemists and medical men should supply certain dangerous drugs, that certain regulations should be observed in the sale of active poisons, and that all registered chemists should be exempt from serving on juries.

The General Medical Council was in sympathy with the Bill promoted by the Pharmaceutical Society—which, as I have stated, provided for the protection of titles and the restriction of dispensing generally to chemists—and represented to the Government the necessity of regulating by Statute the practice of pharmacy by chemists and druggists throughout the kingdom; but the Government insisted upon some restriction of the sale of poisons, and after the two measures had been read a second time, they were both referred to a Select Committee of the House of Commons. That Committee reported in favour of legislating on the lines suggested by the Pharmaceutical Society and with the Pharmacy Act of 1852 as a basis, but was averse to restricting the dispensing of medicines to registered persons, and in the end its deliberations resulted in nothing beyond a suggestion that another Bill should be brought in by the Government.

A conference next took place between representatives of the two Societies, many interviews followed, and ultimately it was agreed to unite forces, as there appeared to be no chance of carrying a Pharmacy Bill through Parliament, otherwise—an object-lesson on the necessity of unity which might well be kept in mind at the present juncture. The net result of the agreement was a Bill which, after being modified in various ways in its passage through Parliament, became the Pharmacy Act of 1868. That Act entirely failed to touch the chief objects aimed at by the Pharmaceutical Society and the Medical Council, though it met most of the views of the chemists and druggists of that day and also satisfied the Government with regard to the regulation of the sale of poisons. Bearing in mind, therefore, how imperfectly the Act represented, and has continued to represent, the views of the Pharmaceutical Society, and how completely it embodied those of the chemists and druggists of 1868—who were undoubtedly responsible for its acknowledged defects—let us proceed to consider what its provisions are understood, or may be supposed, to mean. For we must not lose sight of the fact that, until any section of an Act of Parliament has been interpreted by the highest court in the realm, the exact force and meaning of it must needs remain more or less a doubtful quantity.

The Intentions of the 1868 Act.

In the first place, it is essential to note that the Act was passed by the Legislature exclusively in the public interest, and not in any degree to enable chemists and druggists to monopolise any branch of trade. The preamble to the Act, which is most important as indicating the reason for restrictive legislation and the manner of securing the object aimed at, states definitely that it is expedient “for the safety of the public” that persons keeping open shop for the retailing, dispensing, or compounding of poisons, and persons known as chemists and druggists, should possess a competent, practical knowledge of their business, be duly examined as to their practical knowledge, and also be duly registered. That is to say, the public safety requires the proprietors of all pharmacies to be duly registered. Not only so, but all persons who should become proprietors after the passing of the Act must be examined prior to registration. The sole object of these restrictions, however, was the public safety. The Legislature did not in 1868, and does not now, care one iota about the interests, vested or otherwise, of chemists and druggists; there is not a word in the Act indicating any anxiety in that direction, and whatever efforts may be made in the future to secure further legislative powers in connection with the practice of pharmacy, it

will, in my opinion, be exceedingly unwise to attempt to secure any privileges that are not absolutely compatible with, and likely to promote, “the safety of the public,” as that is all the Legislature can be expected to consider. The protection of trade interests devolves upon ourselves; that is a matter which only very indirectly concerns the public, and it cannot satisfactorily be legislated for.

But so far as insisting upon the due qualification of those who deal in poisons is concerned, the question involved is not one of trade interests. The Legislature has declared proprietary qualification to be expedient for the safety of the public, and in the public interest that qualification ought to have been maintained. By what, however, can only be regarded as a legal quibble, a joint-stock company, including several unqualified persons, was in 1880 held not to be a “person” within the meaning of the first fifteen sections of the Act, so far as regards the sale of poisons and keeping open shop for such sale. Though by common law the company was undoubtedly a legal or artificial person, yet inasmuch as it could not be duly examined as to its practical knowledge of the business of a chemist and druggist, it was held by the House of Lords to be outside the operation of the major portion of the Act. That is to say, because corporations are not specifically mentioned in the Act, it was held that they are outside of the law, and it was even suggested that there is nothing to prevent them making use of the titles supposed to be restricted by the Pharmacy Acts of 1852 and 1868 to persons duly registered under those Acts. But, without dwelling further on the chief omission of the 1868 Act, let us now proceed to consider its various sections in detail.

Section 1.—Offences under the Act.

Section 1 of the Act restricts to certain persons the selling of poisons; the keeping open shop for retailing, dispensing, or compounding poisons; and the assumption or use of the title “chemist and druggist” and kindred titles. Those persons must be registered pharmaceutical chemists or chemists and druggists, and must also conform to such regulations as to the keeping, dispensing, and selling of poisons as may from time to time be prescribed by the Pharmaceutical Society, with the consent of the Privy Council. Here, then, are defined the offences under the Act—the selling of poisons, keeping open shop for such sale or for dispensing or compounding poisons, and the use of certain titles by other persons than registered chemists, whilst even registered chemists may not perform any of the specified acts unless they conform to certain regulations. Those regulations, unfortunately, are as yet hypothetical and exist only as recommendations. If they had reality and were properly enforced, they might constitute a powerful weapon in the hands of the Pharmaceutical Society, by enabling it to proceed in many cases of “covering,” such as are illustrated in the matter of the practice of pharmacy by unqualified corporate bodies which, as I have already stated, have, unfortunately, been held not to be “persons” within the meaning of the Act. A breach of the contemplated regulations would be an offence under the Act, and the Privy Council could, as provided in Section 26, authorise the removal of the offender’s name from the Register of Chemists and Druggists. This is overlooked by those who sigh for similar disciplinary measures to those exercised by the General Medical Council. The Pharmaceutical Society could thus, if it wished, punish the black sheep of the profession.

PROPOSED POISON REGULATIONS.

I shall refer to this matter further in dealing with Section 15, but must point out here that the prescribing of the poison regulations contemplated by Section 1 must be the act of the Pharmaceutical Society as a whole, not of its

Council (which after all, can only reflect the will of the body corporate), and up to the present the members of the Society—purblind and fatuous, to their own discredit and hurt—have not seen fit to do what is requisite to carry out the manifest intentions of the concluding words of the Section. It is worthy of note that the mere fact of providing for the making and enforcing regulations as to the keeping, etc., of poisons, seems to afford proof that the keeper or proprietor of the shop is the person the Legislature intended should be registered, as it could hardly have been contemplated that the qualified assistant of an unqualified person should be proceeded against for a breach of those regulations? A further point is that, according to the wording of this section, the regulations are not to touch "compounding." This is significant, as a recognition that the skilled portion of the calling of pharmacy must be left to the discretion of the competent, *i.e.*, registered man, without conditions. The "keeping," "dispensing," and "selling" of poisons were intended to be the subject of regulations, but the actual "compounding" of the ingredients was apparently expected to be done by a duly registered "pharmacist," the public safety depending upon his skill rather than on regulations. The section undoubtedly draws a distinction between "dispensing" and "compounding," and Section 15, as I shall presently show, emphasises that distinction. It is a question whether Section 1 could not be construed as making it illegal for a person to "compound" a poison unless he is a registered person, and the "compounding" of all official medicines is by strong implication confined to registered men. A clause to convert this strong implication into a clearly defined restriction might probably be accepted by the Legislature.

Sections 2-6.—Poisons; Registration; Examiners.

Section 2 specifies the articles which are to be deemed poisons within the meaning of the Act, and provides that other articles may be added to the list from time to time by a resolution of the Council of the Pharmaceutical Society, if approved by the Privy Council. That provision has been acted upon on several occasions, but it is to be regretted that the Privy Council has so far refused to approve of the addition of carbolic acid and other dangerous substances to the list of poisons. So far as can be ascertained, there is good reason to believe that this refusal is due in great measure to the omission of the Pharmaceutical Society to prescribe the poison regulations already referred to. That omission I trust to see remedied ere long, and we may then hope to secure the removal of the Privy Council's block. This section, I may remark, helps to define the word "article," which is somewhat vague in Section 17.

Section 3 provides that all persons who were, before the passing of the Act, in business as chemists and druggists, or registered as assistants under the Pharmacy Act of 1852, shall be entitled to registration as chemists and druggists. That provision, of course, has been fully carried into effect, with results that can hardly be deemed generally satisfactory, for those unexamined registered chemists have always been more or less of a stumbling block in the path of progress. The word "compounding" is again used in this section in the sense in which the word "dispensing" is now usually applied, whilst "dispensing" is not mentioned. Section 4 stipulates that assistants other than those registered under the previous Act may, under certain conditions, be permitted to enter for a modified examination, and Section 5 exempts certain persons from paying any fee for registration.

Section 6 confirms the provisions of the Charter, with regard to the appointment of examiners. Those individuals need not be pharmaceutical chemists or chemists and druggists, but must be "competent persons" appointed by the Council of the Pharmaceutical Society, and approved by the Privy Council. They

may not be appointed for more than five years, and an officer appointed by the Privy Council is entitled to be present during the progress of any examination conducted by them. It is clear, therefore, that the examinations are directly controlled by the Privy Council, which acts as a check upon the Council of the Society and its nominees, alike in the interests of the public and of candidates presenting themselves for examination. This point cannot be made too clear—that the Society and its Council are very far from exercising anything like absolute power in the matter of the examinations it conducts.

Sections 7-14.—Payment of Fees; Keeping the Register.

Section 7 provides for the payment of examination and registration fees; those fees are now combined in the sum payable by a candidate on presenting himself for the qualifying examination, but registration could be made the subject of a separate fee. Sections 8 to 14 deal with the appointment of a Registrar and the keeping of the Register of Chemists and Druggists. It is the duty of the Registrar to keep a "correct" Register of all persons entitled to registration under the Act, and to that end he is empowered to erase the name of any person from the Register, if he receives no answer to two registered letters, sent at an interval of six months. Experience proves that, with every care on the part of the Registrar, it is not possible to keep the Register absolutely correct, but in most, if not all, cases of error, it will be found that carelessness on the part of registered persons or their representatives is at the root of the matter. The printed Register is sufficient evidence in a court of law that a person named therein is duly registered under the Act, and absence of a name therefrom is evidence, unless the contrary be proved, that a person is not so registered. You will see, therefore, how essential it is that everyone concerned should take whatever steps may be necessary, not only to ensure that his own name and address appear correctly, but that the names and addresses of others are given with equal accuracy. Registered assistants moving from one situation to another are peculiarly apt to overlook the necessity of promptly notifying their changes of address, and at times, after failing to receive and answer letters posted to them by the Registrar, they may experience considerable difficulty and expense (a fee of one guinea being payable) in securing re-registration. But the fault is usually entirely their own, and should not be unfairly attributed to the Registrar in abusive letters communicated to trade papers. The Register, it may be stated, is kept by the Registrar under orders of the Council, in accordance with Section 9, and if those who have secured qualification put a proper value on that qualification, the Register might be more accurate and the solidarity of pharmacists more assured.

Section 15.—Offences and Penalties.

We now come to Section 15, by far the most important in the Act from the pharmacist's point of view, for it is the chief penal section, and under it action can only be taken by the Registrar, acting in the name and under authority of the Council of the Pharmaceutical Society. How it was that some twenty years elapsed before the Executive of the Society fully realised and utilised the great power it possesses in this enactment, is one of those unaccountable things which, as Lord Dundreary would have said, "no fellow can understand." The acts which Section 1 declares to be illegal except when performed under certain conditions are here recapitulated as offences punishable by a fixed penalty. We may take it that there are seven distinct offences specified in this Section (1) the illegal sale of poison; (2) keeping open shop for such sale; (3) keeping open shop illegally for dispensing poison; (4) keeping open shop illegally for compounding poison; (5) illegally taking, using, or

exhibiting the name or title of chemist and druggist, etc.; (6) failing to conform with any regulation made in pursuance of the Act, with regard to the keeping or selling of poisons; (7) compounding any medicines of the British Pharmacopœia except according to the formularies of that work.

Now, as regards selling, it has been definitely decided that the person who actually conducts the sale of poison is the seller of the article and therefore liable under the Act, whether he be the proprietor of the shop or merely an assistant or apprentice, but the Courts have never yet held that the actual person handing over the poison is the unique seller. In the Wheeldon case, the defendant was one of the persons engaged in the sale, and as he was unqualified he was hit. Both agent and principal in an illegal transaction may be made liable. The agent would perhaps have ground for action against the principal for any damage he might incur in carrying out instructions, and registered men, knowing this, should—if even for no higher motive than self-preservation—give the most careful consideration to the question of employing unregistered assistants. It is more important, however, to notice that it is the act of handing over poison to the customer, and the personal superintendence of that act, that the law takes especial cognisance of, and not the question of who benefits by any profit on the transaction. Hence the reason why the House of Lords held that there could be no risk to the public in the case of pharmacies carried on by joint-stock companies, so long as the actual sale of poison is effected by a registered person. That argument, unfortunately, was supplied ready-made to the judges by an exemption in Section 16, as will presently be seen.

DISPENSING AND COMPOUNDING.

The next point to be noted is that there is nothing illegal in an unregistered person dispensing or compounding poison unless, as already suggested, Section 1 be held to restrict compounding to registered persons, and in any case there is no penalty provided. Whilst, therefore, it is an undoubted offence for an unregistered person to keep open shop for dispensing or compounding poison, dispensers and compounders appear to incur no risk if they are not registered as chemists, though the persons who subsequently effect the sale of poison so dispensed or compounded must be registered. Here we have remarkable confirmation of the fact that it is not the practice of pharmacy which is restricted and regulated, but only the sale of poisons. No unregistered person may sell poison, nor keep open shop for such sale or for dispensing or compounding poison, but anyone apparently may, with impunity, perform the physical act of dispensing or compounding poison. A porter, coachman, or errand boy may mix the lethal draught, but a duly registered person alone is permitted to hand it over to the hapless patient or his representative.

How "dispensing" and "compounding" differ, so far as the Act is concerned, and to what extent, is not at all clear. It is possible that the words were meant as alternatives, both referring to a similar action. But the introduction of a comma after the word "dispensing" is quite sufficient in an Act of Parliament to make the two words mean totally different things. The "compounding of poisons," beyond a doubt, covers the making up of medicines containing poisons, in accordance with the prescriptions of medical men or of private recipes—and, I venture to think, even of preparations containing poison, made in accordance with the chemist's own formulæ—provided the medicine is labelled with the name and address of the seller, and the ingredients are entered in the prescription book. But the meaning of the word "dispensing," if it implies something different from "compounding," is by no means so evident. The fact that the words are separately mentioned would, I think, seem necessarily

to imply that they are not synonymous. "Compounding" would appear naturally to refer to the actual making up of the medicine; "dispensing" to its distribution or dealing out, and as it appears to me, though both acts may be performed by the same person, that does not follow of necessity. This point, I think, is worthy of further consideration. The importance of having the term "compounding" strictly defined is evident, when we consider that it is a distinct offence under the Act to "compound any medicines of the British Pharmacopœia, except according to the formularies of the said Pharmacopœia." Not to sell, mark you, but to compound. If the word "compounding" were legally interpreted to cover the breaking of bulk involved in conveying a medicine from a stock bottle to a smaller one, and then handing the latter to a customer, the Pharmaceutical Society might do much to supplement the working of the Sale of Food and Drugs Acts by putting in force the portion of Section 15 referred to. And even if that did not apply to corporate bodies, it would apply to their assistants or managers. It may be, however, that Section 15, so far as the latter portion of it goes, is as applicable to companies or artificial persons as to natural persons. The House of Lords decision did not apply to the regulations as to "keeping, etc., poisons" or compounding Pharmacopœia medicines. This may yet prove a very valuable portion of the Section, but so far it has been neglected, though it seems to offer a chance of saving the situation by giving the Society a salutary control in the case of businesses conducted by "companies."

If the "covering" chemist and druggist should offend against the Regulations off would come his name from the Register, and the impersonal entity or artificial person would be coverless. On the other hand, if the "cover" did not offend, the "covered" might be hit. The question of examination and registration does not come in at all in the latter part of Section 15, and this may be a case where a corporation is a "person" within the meaning of the Act. The difficulty, however, if compounding invariably implies the actual preparation of the medicine, is to prove the act of compounding, and that difficulty renders it almost hopeless for the Society to take any steps in the matter, as unregistered sellers of Pharmacopœia preparations much more frequently purchase them ready-made from wholesale houses than attempt to prepare them on their own premises. Nevertheless, the point is decidedly worth looking into. I may point out that with reference to the word "compounding," the preamble and Section 1 speak of "retailing, dispensing or compounding" of poisons; Section 3 refers to keeping open shop for "the compounding of the prescriptions" of medical practitioners; Section 4 speaks of persons engaged in the "dispensing and compounding of prescriptions"; Section 15 says "retailing, dispensing, or compounding"; Schedule (C) refers to keeping open shop for "the compounding of the prescriptions" of duly qualified medical practitioners; Schedule (E) and Schedule (A) of the 1869 Act both speak of having been employed "in dispensing and compounding prescriptions" as an assistant to a pharmaceutical chemist or chemist and druggist. What is the inference to be drawn from these varied uses of the words? The puzzle is not an easy one to solve, and a judicial ruling on the point would be advantageous.

THE MISUSE OF CHEMISTS' TITLES.

The question of the misuse of titles protected under the Act is in a somewhat chaotic condition, but I am inclined to disagree with the contention that the decision in the case of the London and Provincial Supply Association absolutely covers this point. The "House of Lords" decision was of a purely negative character; it simply decided that corporations cannot be regarded as "persons" within the meaning of the Act, inasmuch as they cannot be examined; and, therefore, that they cannot be pre-

vented from carrying on business as chemists and druggists. The decision turned entirely on the question of selling poisons and keeping open shop for such sale, and it was held that, in any case, the public must be protected as regards the sale of poisons, by a registered chemist conducting and managing the sales. But if corporate bodies are entirely outside the scope of the first fifteen sections of the Act, what protection does the public possess with regard to the misuse of chemists' titles? That point was not directly raised in the case of the London and Provincial Supply Association, and it has never been raised since. Now if a corporation is not a person, and cannot be examined, I am disposed to think that the words—"any person . . . who shall take, use, or exhibit the name or title of chemist and druggist . . . not being a duly registered pharmaceutical chemist or chemist and druggist, etc., shall for every such offence be liable to pay a penalty"—should be interpreted by the Courts as meaning that none but a registered chemist shall be free to use such titles. The view taken by the House of Lords was that, inasmuch as a joint-stock company cannot undergo examination, it is outside the law as regards the sale of poisons. But that argument cuts both ways, and I think we may fairly contend that as examination is a necessary preliminary of registration, a corporate body cannot be registered and, therefore, cannot legally employ any title the use of which the Legislature intended to restrict to duly registered persons. I certainly think the presumption that such would be the interpretation of the Courts is sufficiently well-based to justify an attempt being made to test this important point. We should not lose sight of the fact that the judges who delivered the House of Lords decision, in the case of the London and Provincial Supply Association, expressed the opinion that the word "person" in the Act might be construed to include a body corporate, if the object of the Act could be shown to require that the word should have the more extended sense. In regard to the matter of titles, it seems to me that the more extended sense is certainly required, and we ought, if necessary, to have a House of Lords decision on the point, in addition to having other problems solved. Year after year the Act is being shown to be more far-reaching than was originally imagined, and there is no reason to suppose that we have yet proved the utmost it is capable of.

HOW FAR REGULATIONS WOULD APPLY.

The last subject for consideration in connection with Section 15 is that dealing with regulations as to the keeping or selling of poisons, already referred to in dealing with Section 1, though in that case the word "dispensing" is also introduced. If regulations existed, no penalty could be recovered for ignoring those relating to dispensing, since no penalty is specified for that offence in Section 15. But no regulations of any kind have yet been made obligatory, though draft regulations have existed for many years in the form of recommendations. So far, however, the members of the Pharmaceutical Society have not seen fit to make them compulsory. If they would do so, and the Privy Council approved, a powerful weapon for good would, as I have already suggested, be placed in the hands of the Society. For even if those regulations should not apply to every place where poisons are offered for sale in open shop, but only to the establishments of registered chemists, it is extremely desirable that we should be able to show very clean hands in everything connected with the storage, dispensing and sale of poisons. If corporate bodies are entirely outside the provisions of Sections 1 and 15 of the Act, the making and enforcing of regulations would not directly affect them. At the same time, it is not quite clear that such regulations would not affect corporate bodies, if only to the extent that their

directors and managers might be liable for any breach of the regulations, as the decision in the Wheeldon case—with regard to the construction to be placed on the word "sell"—would probably be held to apply.

Section 16.—Exemptions under the Act.

In Section 16, with which must be read Section 1 of the 1869 amending Act, we find enumerated the various exemptions from the provisions of the previous fifteen sections. The classes exempted are: (1) Apothecaries and other legally qualified medical practitioners who pass an examination in pharmacy. (2) Veterinary surgeons dispensing medicines for animals under their care; (3) makers of or dealers in patent medicines; (4) wholesale dealers; and (5) the executors, administrators, or trustees of the estates of deceased chemists. With regard to the first and second classes, no reasonable objection can be taken to their exemption; besides, it would be absolutely useless if we did object. But the "business of a legally qualified apothecary," I may suggest, does not involve the keeping of open shop, or it would surely be subject to regulations as to the keeping, etc., of poisons. It is not an apothecary's "business" to keep a chemist's shop. It may be observed, by the way, that dentists, as such, are not exempted from the provisions of the fifteen sections, and I quite fail to see any reason why they should be. The third class, fortunately, has been narrowed considerably of late years. For, whereas for a prolonged period, it was considered that the term "patent medicines" covered all proprietary remedies sold under the Government stamp, that bubble was at last pricked, and the term is now restricted to such medicaments as are actually sold under the authority of letters patent in force—a very limited class indeed. As a result, the sale of practically all proprietary medicines containing scheduled poisons is restricted to registered chemists, and various attempts that have been made to convert such articles into veritable "patent medicines" have been defeated by the prompt action of the Council of the Pharmaceutical Society, in asking the Court of Chancery to prevent the attempted evasion of the Pharmacy Act by the would-be patentees. That remedy or check, as I need hardly say, is expensive, but so far it has invariably proved extremely effective. So far as the third class of exemptions is concerned, therefore, registered chemists have now little cause to grumble. It is worthy of note, by the way, that the term "dealers" has not yet been legally defined. Might it not have a restrictive meaning, intended to protect manufacturers and wholesale distributors only?

"Wholesale dealers" are exempt, in the words of Section 16, when they supply poisons "in the ordinary course of wholesale dealing." Now the ordinary course of wholesale dealing is the supply of goods by a wholesale dealer to a retail dealer. That is more fully and clearly expressed in the next section of the Act, where exemption from certain conditions is granted to "sales by wholesale to retail dealers in the ordinary course of wholesale dealing." The exact position appears to me to be this—if a wholesale dealer supplies a scheduled poison to a consumer, he is not in any degree exempted from the requirements of the Act. On the other hand, it is, I think, distinctly illegal for a retail dealer to attempt to avoid the restrictions imposed by the Act, in cases where he supplies consumers with what he chooses to regard—for his own or his customer's convenience—as wholesale quantities of scheduled poisons. If the poison be supplied to a consumer, the transaction cannot be a wholesale one, and if, in the interests of the public, the letter of the law is strictly adhered to in this connection, the registered chemist is not likely to be a sufferer.

THE SO-CALLED "WIDOW'S" CLAUSE.

The same cannot be said, unfortunately, with regard to the exemption of executors, administrators, or trustees, under Section 16, for that weakest of all weak spots in the Act has been at the bottom of all our troubles. The fact that unqualified persons—acting as executors, administrators, or trustees—are permitted by the law to carry on the business of pharmacy without special restrictions, so long as a duly qualified assistant is employed to conduct the business, provided the judges in the case of the London and Provincial Supply Association with such a good reason for deciding in favour of the legality of unqualified company pharmacy as would probably—nay, almost certainly—not otherwise have been found. For the supposed interests of a few widows and heirs of deceased chemists, who might not unreasonably have been left to make a living in some sphere for which they were better fitted, the whole craft has had to suffer in sackcloth and ashes for nearly twenty years.

I may note here that this exception in Section 16 has been grossly abused; steps ought to be taken to vindicate the law where trusts have ended without the conditions under which business is carried on being altered. How long is an executor an executor? Death, completion of trust, and other circumstances terminate his or her duty, and the exemption of the Section then no longer applies. But there are cases in which no proceedings have yet been taken, although the trusts appear to have been completed, and the present proprietors of the businesses are unregistered persons. Take the case of a man whose father was a registered person, with several branch businesses. After his death, his widow carries on business under Section 16, and opens other branches—a distinct infringement, it seems to me. In the event of her death, can any reasonable man contend that her trustee—an unqualified person—is entitled to the exemption of Section 16? He would not be the trustee of a registered man, but the trustee of the deceased wife of a registered man. At the same time, he is not a registered chemist, and unless his position can be shown to be illegal he may in turn bequeath the trusteeship to another unqualified person. Every unbiased individual must agree that, whilst this Section affords loopholes enough in its legitimate sense, it is shamefully abused by those who could not legally claim its protection.

Section 17.—Regulations for the Sale of Poisons.

So much for the exemptions under the Act. Coming to Section 17, we find that it treats exclusively of the regulations to be observed in selling poisons. Those regulations, it should be needless to explain, are not identical with the regulations indicated in Sections 1 and 15, which were meant to deal with the keeping and dispensing as well as the sale of poisons. It is not generally recognised that the Society could, if it thought fit, supplement the provisions of this Section by putting into force Section 1. In Section 17 we have the minimum requirements for safety in selling, and the Legislature was confiding enough to leave the other regulations to the experts, *i.e.*, the registered persons who have so far declined to adopt those other regulations. To summarise the regulations in Section 17 briefly, the bottle, etc., containing any scheduled poison must be labelled with the name of the article, the word "poison," and the name and address of the seller. The name of the article sold is not necessarily, it seems to me, the name of the poison present in that article, but where the poisonous ingredient is present in large proportion, I should say the name of the poison ought to be stated on the label, if only to enable anyone, in case of an accidental overdose being taken, to know what emetic or antidote to administer or other treatment to adopt. The more virulent poisons must, of course, have their sale recorded in a book kept for that purpose. The

seller, for the purpose of this Section, is the person on whose behalf any sale is made, though in Section 15 of the Act the seller is the person who actually conducts the sale, *i.e.*, performs the physical act involved in a sale. This is an important distinction which should not be overlooked. The definition of the word "introduced," the exact meaning of the phrase "known to the seller," and an infinite variety of other problems crop up here, and there are, as might be expected in the case of any Act passed in a free country like this, certain exemptions from these poison regulations.

EXEMPTIONS UNDER SECTION 17.

Thus, wholesale dealers need only label packages containing poison with the name of the article and the word "poison," and that procedure need not be varied whether the articles be included in Part 1 or Part 2 of the Poison Schedule. Apothecaries and other qualified medical practitioners are not exempted from the provisions of this Section if they "sell" poisons to the public. They are only exempted as regards poisons contained in medicines supplied by them to their patients, to the same extent as registered chemists, who are not required to do more than label medicine dispensed by them and containing poison with the name and address of the seller, so long as they copy the prescription or formula in a book kept for the purpose, and also enter the name of the person to whom the medicine is sold or delivered. It has also been suggested that the last-mentioned exemption enables a registered chemist to supply any medicine dispensed by him and containing a scheduled poison—whether made up from a prescription or not—without labelling it "Poison." That is to say, by entering the requisite particulars in his prescription book, a registered chemist may supply any medicine dispensed by him and containing a scheduled poison or poisons, without being required to treat it as a poison sold under the ordinary conditions of sale. As regards corporate bodies, it has repeatedly been held that they are liable to penalties for any infraction of Section 17, and the Interpretation Act of 1891 puts that matter on a definite basis. The reason they are liable under Section 17, though they are not liable under Section 15, is that the penalties in the former case must be recovered in a court of summary jurisdiction, and not in a county court. Inasmuch as the Interpretation Act applies to Scotland, where all cases under the Pharmacy Acts must be tried in courts of summary jurisdiction, it would appear as if we could proceed under both Sections there. As it happens, however, the whole of the 1868 Act is practically a dead letter in Scotland. The decision in the Leith Depôt Case—according to which the individual members of a corporate body cannot be sued in Scotland for trading as chemists and druggists—appears to have been too much taken for granted. We ought to shake off the local paralysis induced by that decision and bring a test case under Section 15 against a Scottish limited company, arguing that the Interpretation Act renders a corporation a person within the meaning of the Section. In Scotland, by the way, an ordinary firm is held to be a corporation, though in England a decision to the contrary effect was given last year in the case of the Pharmaceutical Society *v.* Potter.

WANTED—A PROSECUTOR.

But to return to Section 17, in connection with the liability of corporate bodies under this Section, the interesting question arises, How can a joint-stock company of unqualified persons sell poisons in Part 1 of the Schedule? It has been clearly laid down that for the purpose of Section 17 the person (including a company in this case) on whose behalf any sale of poison is made by any apprentice or servant shall be deemed to be the seller. The

apprentice or servant is not employed by the manager, but by the company, and the poisons in Part 1 of the Schedule may not be sold unless the purchaser is known to, or is introduced by, some person known to the seller. How can the purchaser be known to the company which has an impersonal existence? That is another problem requiring solution. The great drawback of Section 17 is that no authorised prosecutor is named. Any one may prosecute, but the Pharmaceutical Society thinks it is not its special business. The police authorities say they are not the administrators of this Act, and so offenders go scot-free and the public suffers. It is open to question whether we can justifiably talk about "public safety" in approaching Parliament, whilst leaving practically inoperative the chief protective clause in the Act. In Scotland the embodiment of wisdom which sits under the Sheriff's hat says the Society cannot proceed under Section 17. The Procurator-Fiscal says it can, and that he will not. Hence in both parts of the island there is stagnation, confusion, and aggravation.

Sections 18-21.—Membership of the Society.

The remaining sections of the Act may be very briefly dealt with, the more especially as Sections 18, 19, 20, and 21 are now repealed. Sections 18 and 19 had the effect of rendering every registered chemist and druggist, who was in business as such at the time of the passing of the Act, eligible to be elected a member of the Pharmaceutical Society, and also to be elected a member of the Council of the Society. The number who have taken advantage of those provisions has been extremely small, comparatively speaking, though at the present time there is a very large number of unexamined men who secured registration as chemists and druggists by virtue of having been in business on their own account prior to August 1, 1868, but who have never taken any steps to become connected with the Society, or to help in forwarding its aims. The more shame to them, say I, that they should be so lacking in public spirit as to take no care for the future of their craft, and so wanting in self-respect as to stoop to share benefits which they have never moved a finger to help to attain. Those men are a disgrace to pharmacy, a standing reproach to those of us who would boast of the position of our craft, and they have ever been a drag upon the wheels of progress. The weakest link is always the measure of the strength of a chain, and the unexamined men on the Register, or those of them who have persistently refrained from assisting in the good work of the body to which they owe their registration—free of all trouble or cost—certainly constitute that link in our case.

Section 20—which rendered every chemist and druggist registered after the passing of the Act, in virtue of having passed an examination, eligible for election as an associate of the Society—has now, I am glad to say, been repealed. The amending Act passed this year provides that such persons shall be eligible for election as "members," with the same rights and privileges as other members. In this way one of the original ideas of the founders of the Society has been realised—every person possessing the statutory qualification being now eligible for election as a member of the Society. The effects of this modification of the regulations should be far-reaching, as it enables the whole trade to work together on a common footing for the general good, in a way that has never before been possible. I hope that, before long, the membership of the Society may be at least doubled by this statesmanlike change in the law; if every existing member will do his best to bring only one more into the fold, that result will not be difficult of attainment. Another section which has been modified by the new Act is Section 21; that deals with the manner of voting for the election of officers,

and provision has now been made for votes to be sent by post later than has been customary.

Sections 22-28.—Benevolence; Purging the Register.

Section 22 provides that the Council of the Society shall have the sole control and management of all the Society's property. It also authorises the existence of our Benevolent Fund and enables the Council to extend the benefits of that noble Fund to all registered chemists (and their widows and orphans), whether they are or have been connected with the Society and subscribers to the Fund or not. It is not pleasant to think of the mean spirit displayed by registered men who decline to support the Society and its Benevolent Fund, and yet are eligible to enjoy, and frequently come to need, the benefits of that Fund. Fortunately, those who have subscribed to the Society at any time, and have later fallen upon evil days, do not suffer by the generous provision which enables the Council to afford assistance to outsiders, and it is a remarkable fact that chemists who have supported the Society and its Benevolent Fund rarely require charitable assistance.

Section 23, which forbade the registration of medical men as chemists and druggists, was repealed by the Act of 1869. Even now, however, persons registered under the Medical Act cannot be registered as pharmaceutical chemists. Section 24 has also been repealed; it provided that an early Act for preventing the adulteration of articles of food and drink should extend to all articles usually taken or sold as medicines, but the Sale of Food and Drugs Act, 1875, removed the necessity for the existence of that section. Section 25 practically places the Society under the control of the Privy Council, the body which is really responsible for many of the Society's alleged shortcomings. Section 26 vests in the Privy Council the power of directing the names of registered persons who have been convicted of any offence against the Act to be erased from the Register. If the poison regulations contemplated by Sections 1 and 15 were in force, that power of purging the Register would virtually be vested in the Council of the Pharmaceutical Society, as it would only be necessary to report breaches of the regulations to the Privy Council to ensure the carrying out of disciplinary measures such as we now frequently feel the need of. Section 27 provides that the Act shall not extend to Ireland; so much the worse, in my opinion, for the chemists of the Emerald Isle, though they are better off than we are in some respects. Finally, Section 28 fixes the short title of the Act, that of the Pharmacy Act, 1868.

Brief Summary of the Act.

Now, to summarise the twenty-eight sections of the Act, we find that though it was avowedly passed—as witness the words of the preamble—to secure that "persons keeping open shop for the retailing, dispensing, or compounding of poisons, and persons known as chemists and druggists, should possess a competent practical knowledge of their business," and to that end should be duly examined and registered, yet by subtle judicial distinctions it has been held to secure nothing of the sort. Any seven persons—grocers, drapers, butchers, or scavengers—can register themselves as a joint-stock company to carry on the business of a chemist and druggist, and the law is powerless to prevent them. Such mongrel and nondescript companies usurp our titles, share our sadly limited privileges, and are enabled to do all that a registered chemist can do, without the worry and expense of practical training, study, and examination. The only condition is that they must have a registered chemist in charge of the business and, by the disastrous and suicidal conduct of men in our own ranks, they have no difficulty in complying with that condition. The original purpose of the Act, then—as vouched by its preamble—has not been ful-

filled, and all that the absurdly insufficient measure does is to protect the public with regard to the sale of a few poisons. Registered chemists, wisely or foolishly, have fitted themselves to deal with those poisons by the roundabout way of study and examination, in preference to adopting the obviously more easy plan of combining in groups of seven, and getting registered as limited liability companies. It is true that scheduled poisons can only be legally sold to the public by persons registered under the Act, but since the dispensing and compounding of the poisons may be done by errand boys, porters, or any other class of incompetent persons a corporate body may choose to employ, the handing over to customers of such dispensed and compounded poisons by a person duly qualified under the Pharmacy Act, 1868, seems wonderfully akin to the operation of locking the stable door after the horse has been stolen.

Remedy for Shortcomings.

The obviously best remedy for the existing state of affairs is for Parliament to declare that the word "person," wherever used in the Pharmacy Acts, shall include any corporate body, and that unqualified persons acting as executors, etc., of deceased chemists shall only be entitled to carry on the business of a chemist and druggist for a limited period. That period might be extended at the discretion of the Council of the Pharmaceutical Society, but in any case this weak spot in our armour ought to be removed. With regard to the alleged prescriptive rights of companies now carrying on the business of chemists and druggists, such "rights" are mere evasions of the Statute. As to the fact that corporations cannot undergo examination, that has no bearing whatever upon the question. The relevant fact is that the practice of pharmacy and the use of all titles implying the carrying on of the business of a chemist and druggist should, in the public interest, be restricted to duly qualified individuals. It may be that the spirit of the times will prove too strong for us and prevent us attaining the position that, as duly qualified pharmacists, we aspire to. At the same time, it is doubtful if anything less is really worth fighting for, and if only the majority of registered chemists now outside the Society will join the ranks of those who, for more than half a century, have kept the lamp of progress in pharmacy steadfastly burning, the fight I hope to see will be a good one, and need not necessarily be unsuccessful. That fight, whilst partaking to a great extent of the nature of a struggle for existence, will also, in even greater measure, be for the public benefit. Let us then proceed to educate the public with regard to the interests involved, and at the same time consolidate our forces. If the outsiders will come in and join us, we shall surely make a brave fight, and may see a successful end to all our enterprises; if, however, the minority are left to bear the brunt of attack unassisted—and if, in any case, luck should go against us, so that each of us shall be compelled to exclaim, with Falstaff: "Company, villainous company, hath been the spoil of me"—we shall at least have preserved our self-respect. We shall also know that we have done our best, though vainly, to provide a remedy for the mistakes committed by our leaders some eighteen years ago, when they omitted to follow up the decision of the House of Lords in the case of the London and Provincial Supply Association, by striving to carry an amending Bill through Parliament at all costs. The sinews of war were doubtless lacking then; they are none too plentiful now, but it is the moral support and sympathy of the whole trade, rather than guineas that the Society needs and has a right to expect. Nevertheless, law is an expensive luxury, and I take it that in a matter of such vital importance to our craft no registered man ought to hesitate to bear his fair share of the costs of the undertaking. That can most satisfactorily be done by

becoming a member of the Pharmaceutical Society. In any case, the registered chemists of this country are now faced with the necessity of either fighting anew for what Parliament undoubtedly intended to give them in 1868, or succumbing in a seemingly vain struggle with a few unscrupulous capitalists who have ingeniously contrived to frustrate what the sanction of Queen, Lords and Commons seemed to have assured. In my opinion (and it must be distinctly understood that, on this occasion, I speak for myself only), those two courses, and those simply, are open to us, and it is for you, the registered chemists and druggists of Manchester and district, in conjunction with your fellows throughout Great Britain, to decide which course shall be pursued.

THE OFFICIAL TESTS FOR GURJUN BALSAM IN COPAIBA.

BY H. J. HENDERSON, PH.C.

The tests for gurjun balsam in copaiba are described with some minuteness in the British Pharmacopœia. The points to which I wish to call attention are small ones, yet they are of importance in the practical application of the test, which is my excuse for bringing them under notice. It is stated that when two drops of copaiba are added to twenty parts, presumably drops, of carbon bisulphide, a transient violet colour should not be produced, showing absence of gurjun balsam. It is to the word transient that I wish to call attention first. I cannot find it stated anywhere other than in the B.P. that gurjun balsam gives a transient violet when subjected to this test. Flückiger and Hanbury, in the 'Pharmacographia,' state that the colour is an intense purplish-red, becoming violet after a few minutes. The U.S.P. simply says that a violet colour is produced, and refrains from qualifying it in any way. J. C. Umney, in the *Pharmaceutical Journal* [3], xxii., p. 450, stated that a sample of gurjun balsam examined by him gave a decided and permanent violet. The following few experiments which I performed tend to show that the Pharmacopœia is wrong in describing the colour as transient. I obtained a sample of *D. turbinatus*, and mixed one part with seven parts of copaiba; I did this because it occurred to me that the presence of copaiba might have some influence on the colour. I carefully followed the directions given in the B.P., and after a minute or two a fine violet was obtained, which remained permanent for an hour, which I consider long enough for practical purposes. The 'Pharmacographia' states that the test easily detects the presence of an eighth part of wood oil in copaiba, which was my reason for mixing in the above proportions. On applying the second test several times to the mixture, no purple colour was obtained, but on increasing the proportion of gurjun balsam from one-eighth to a fourth part, a distinct purple colour was obtained after standing for an hour. The colour does not appear at once, therefore, I think the monograph would have been improved if it had stated the limit of time required to produce the effect. The sample of gurjun balsam was supplied to me by the courtesy of Professor Greenish.

EUCAINE- β IN STOMATOLOGY.—Legroind advocates the use of a 2 per cent. solution of eucaine- β for extractions, since the anæsthesia produced by a solution of that strength is complete, and the operation may be performed immediately after the injection has been made. In over sixty cases, embracing patients of all ages, of both sexes, no unpleasant after-effects were observed in any instance, the doses ranging from $\frac{1}{2}$ to 4 C.c. of the 2 per cent. solution. The extreme pallor of the face observed sometimes after the use of holocaine and other analgesics was not observed with eucaine- β .—*Les Nouv. Rem.*, xiv., 337.

COMPANY PHARMACY: ITS CAUSE AND CURE.*

BY GEORGE SQUIRE.

In dealing with a subject of such great importance as the one I have chosen as the subject of my paper, I am perfectly aware of the responsibility I have taken upon myself, and also of the many shortcomings that may be manifested in my remarks, owing to the fact that I cannot bring to bear upon the subject the knowledge that comes from experience to anything like the same extent as men who were in business long years before I was connected with pharmacy, and who have watched the growth of company pharmacy from its infancy. However, I hold certain views upon the subject and those I shall endeavour to place before you briefly; if they do not exactly coincide with the opinions held by others the opportunity offered for discussion will be all the greater.

COMPANY TRADING AND REGISTERED CHEMISTS.

During the past decade the rage for company trading has increased to such an enormous extent, and with it the attendant evils—bogus companies, and one-man companies—have multiplied so fast, that the matter is now becoming a source of great anxiety, and must soon, of necessity, be further regulated by special legislation in order to prevent the frauds that are being practised on the public daily. One would have thought that pharmacy in its quiet sphere, and with its sometimes limited turnover, would have been left severely alone by that artificial person—the joint-stock company, but no, the greed for gold has been too great for the company promoter, and pharmacy must needs take its chance with the rest.

As a consequence we, as registered chemists, have been unfairly handicapped in the struggle for existence during the last eighteen years. But the prospect of pharmacy has brightened considerably during the past twelve months, the chemists of the country having awakened from their dormant state and proved themselves a body to be reckoned with, as evidenced by the enthusiasm they displayed in promoting the passing of the Pharmacy Acts Amendment Bill and their successful opposition to the Poisonous Substances Bill. That is as it should be, and one can only regret that the same enthusiasm was not shown by the craft years ago, for then company pharmacy would have been nipped in the bud and never have assumed the gigantic proportions it has attained to now.

To-day, however, a fresh opportunity presents itself for retrieving our position. The new Bye-laws drafted in accordance with the Pharmacy Acts Amendment Act have now been confirmed and approved by the Privy Council, and there is no longer any obstacle in the way of all registered chemists becoming members of the Pharmaceutical Society, and thereby giving it their sympathy and active support in the endeavour to improve the lot of registered chemists in the future, as well as helping to present an unbroken front to all the enemies of our craft. The Pharmaceutical Society is the only legally recognised organised body in pharmacy, and it is through the instrumentality of that Society alone we can hope to obtain any amelioration of the company pharmacy grievance, which so urgently calls for early and serious attention.

COMPANIES VERSUS INDIVIDUALS.

Business to-day is very different from what it was when the Pharmacy Act was passed in 1868, and had those who were responsible for the framing of that Act foreseen the possible existence of company pharmacy they would have taken good care that the measure was so worded as to have prevented any evasion of its provisions by means of legal and judicial quibbling. But though such a thing was never dreamt of then, what have we to-day?

There are drug stores all around us, no matter where we go, and they are mostly owned by limited companies, the directors of the majority of which have never seen a pill machine, handled a test-tube, or heard of *materia medica*. But their previous business and lack of pharmaceutical knowledge is not taken into consideration by the law, be they undertakers, cabinet-makers, printers, newsvendors, or anything else whatever. Only let seven men register themselves as a limited liability company, and they can blossom out at once as chemists and druggists, and keep open shop for the dispensing and retailing of poisons, the only legal requirement being that some duly qualified person must sell his services and act as cover so that the seven unqualified persons may carry on their illegitimate business.

On the other hand, let an individual who is not registered under the Pharmacy Acts open shop and style himself a chemist and druggist, and the Pharmaceutical Society at once interferes. Now, I cannot for the life of me see why the Pharmaceutical Society should be legally within its rights in preventing an unregistered person, even though he has served an apprenticeship to the business, opening a shop and styling himself a chemist and druggist, if it be not equally possible to prevent seven unqualified persons doing the same thing. Common-sense demands that identical treatment should be meted out to individuals and to collections of individuals in this matter, and that view, in my opinion, ought to be maintained by us at all costs and to the bitter end. When we have spent time, labour, and money in obtaining a qualification which the State has made compulsory in the interest and for the safety of the public, it is only reasonable to expect the State to protect us against unqualified persons combining to form limited liability companies and engaging in the business for which the State insists that a qualification is absolutely necessary in the case of an individual, and also to prevent those companies usurping the titles associated with that qualification.

COMPANY PHARMACY A PARASITIC GROWTH.

But unfortunately, as we all know and greatly regret, that protection does not exist, and since that fatal decision of the House of Lords in the case of the London and Provincial Supply Association, company pharmacy has increased without check. That is not to the credit of pharmacy in the public eye, nor is it for the public good. Company pharmacy is a parasitic growth on the outcome of the labours of the Pharmaceutical Society, and registered chemists as a body should do all in their power to remedy the evil. Fair and square competition no chemist can object to, but trading on the qualifications of other people is not honourable, and all upright men must set their faces dead against such dishonourable trading. The business methods of company pharmacy are in many ways questionable, and in the matter of advertising nothing is too mean or too low for companies of unqualified persons to stoop to in order to gain their ends. According to their advertisements, the respectable chemists of this country are anything but gentlemen, and have carried on a system of fleecing the public for years, but companies as the pioneers of cheap and nasty physic have come to the rescue, and they pose before a much too easily gulled public as philanthropists.

That such is not the case is seen by the number of proprietary articles that are advertised by companies under the names of fictitious doctors and nurses, the 3s. 6d. sizes for 10½d., and so forth. The real position is also manifested by the numerous and common devices used to foist those quack nostrums upon the public. On purchasing one of the articles the purchaser probably receives a coupon which, on being filled in with the correct winners of cricket or football matches, entitles the owner to a prize of

* Read before the Sheffield Pharmaceutical and Chemical Society, on Wednesday, December 14, 1898.

variable amount. Or, for a change, one may be asked to guess how many of some imaginary physician's pills are contained in a certain exhibited bottle, and the fortunate or unfortunate person who is nearest the mark is rewarded for his trouble. At those so-called pharmacies (the most beautifully fitted in the country, we are informed in advertisements) one can purchase almost anything—a tin of salmon or a pot of jam, a lead pencil or a sweeping-brush, a sheet of note-paper or an oil painting and frame (if you do not care to purchase the latter you are entitled to view it free of charge), and an extra special 5s. diary may be offered for 6d. to clear. The windows of these nondescript establishments are covered with huge bills advertising foreign quack medicines, with which the public may kill or cure themselves without the aid of a medical man. And yet, I regret to say, there are medical men who deliberately send their patients to such paltry shows for their stocks of medicine.

TRAITORS TO THE CRAFT.

Such is the style of business conducted by limited companies which profess to carry on business as chemists and druggists, and those registered chemists who, by their Judas like treachery in selling their services to unqualified persons, are responsible for its existence, have degraded pharmacy, as carried on in joint-stock drug stores, to the lowest depths of mere commercialism. To have a physician's prescription dispensed in the same establishment as you would have a picture framed, or to receive a coupon for a guessing competition should hardly tend to inspire the public with confidence, and does the fact that limited companies generally employ a registered chemist and druggist, who is a salaried assistant, constitute a sufficient public safeguard? I say decidedly not, and as any matter involving fresh legislation will have to be considered from the standpoint of the public welfare, I think the points I have adduced are very important.

But these companies are not only unfit to carry on the business of chemists and druggists, they have been built up by the aid of qualified members of our own craft, without whose help company pharmacy could not exist; that is greatly to be regretted, for it is only by a unanimous combination of the chemists of this country that we can hope for any redress. How are we to set about it? Numerous suggestions have been made, many of which it is unfortunately impossible to act upon, for in dealing with a subject of such great importance we must go to work in a deliberate manner, and with due consideration for surrounding influences.

SUGGESTIONS FOR IMPROVEMENT.

My first suggestion is that all registered chemists should show their loyalty to the Pharmaceutical Society and appreciation of its work by at once joining that body if they are not already members. Such loyalty has been lacking in many quarters for a great number of years and, as a consequence, the Society has never during that time been in a position to approach Parliament with a view to any important legislation. The Society, as we all know, is now more thoroughly democratic than ever and if it is to do as effective work as we could wish, a great increase of new members is required. Since Minor and Major men will now share the same advantages they can work together for their common good. One often hears hard sayings against the Society, but as a rule it is from men who hold themselves aloof, and think they can obtain all the necessary reforms by grumbling. Those men are ignorant of the internal workings of the Society and how for years its Council has cheerfully plodded away against great odds, never flinching from its duty to the craft, and even conferring benefit on those men who have not only never lifted a finger to help, but have very often done the opposite. Will anyone deny that pharmacy

to-day is in a much better position, in spite of limited companies, than it was before the Pharmacy Act was passed? That has not been brought about by the grumbling members of the craft, but through the influence of the Pharmaceutical Society. If, as I maintain, pharmacy has progressed under such unfavourable circumstances for many years, what may we not hope for if the great majority of chemists become members of the Society, and thereby show their loyalty to their profession?

My second suggestion is that we should individually endeavour to educate the public as to our position and help people to comprehend the difference between company pharmacy and that practised in our own establishments. It is astonishing how little the public really knows regarding our training and position, but when an explanation is given to them it is appreciated and satisfactory results follow. The British public believes in fair-play, and when it knows all about a chemist's training, etc., there will be disinclination to support those who hold a false position in the matter. I am sure a great deal can be done by appeals to the public through the House of Commons and in every other possible way. In this and my former suggestion is embodied all our hope for future improvement, and, presuming those suggestions are acted upon by the majority, what can be effected? I venture to say much that will be for our future benefit, though not all we should like. The House of Commons is most particular in its regard for existing rights, and the fact that limited companies have so long had everything their own way will make the present position very difficult to alter; but "Nothing venture, nothing won," and if we are not successful in our first attempt, we shall at least be educating the public as to what ought to be, and so doing much good.

THE NECESSITY OF UNANIMITY.

A Bill making it illegal for all companies of unqualified persons to carry on the practice of pharmacy would be a very drastic measure; one that we should all heartily support, one also that would meet with tremendous opposition. I should strongly advocate such a measure if we could secure complete unanimity. The medical and dental professions are now being attacked by limited companies, which have been registered in order to evade the provisions of the Medical and Dental Acts, and at a meeting of the General Medical Council a few days ago a great deal was said about the evasion of those Acts by limited companies, and it was agreed to promote a Bill and to send a petition to the Lord Chancellor praying that something may be done to stop it. Medical men and dentists, in fact, are in the same position as pharmacists, and I think this is a splendid opportunity to go hand in hand with them. Let the Pharmaceutical Society and the General Medical Council decide to work together for the benefit of the three professions. A Bill backed up by chemists, medical men, and dentists would beyond question receive every attention.

If the Council of the Pharmaceutical Society were granted the same privilege as the General Medical Council—the power to strike off the Register any man guilty of unprofessional conduct, such as acting as "cover" to unqualified persons, something might be done to mitigate the company pharmacy evil, but it would not do away with it altogether. Any Bill drafted should certainly contain a clause restricting the compounding and dispensing of medicines and the sale of pharmaceutical preparations to persons who have obtained the necessary qualification, and make it impossible for a number of persons to band themselves together to defeat that object and carry on the practice of pharmacy. That is the law on the Continent and, as the leading country in the world, it is a pity we are far behind others in pharmacy law.

Reform is urgently needed and there is plenty of scope for a

measure which will be beneficial to the public and tend to the advancement of pharmacy. Never was there a more opportune time to advocate what we desire. Many members of both Houses of Parliament sympathise with us, medical men are also with us, and the public will equally be with us as soon as they see justice is on our side. Let the chemists of the country awake and unite as one man, rallying round the Pharmaceutical Society. Those who have not yet supported that body should begin to do so at once, and I am sure, with such a man as our worthy President—Mr. Walter Hills—at the wheel, we shall be guided on to victory. Parliament will surely grant us some amelioration of existing conditions, if not all we ask; and as a consequence the position of pharmacy in the future will be greatly improved, whilst possibly company pharmacy will be shown to have had its day.

PHARMACEUTICAL SOCIETY.

EVENING MEETING IN LONDON.

The second evening meeting of the Pharmaceutical Society of Great Britain was held on Tuesday, December 13.—Mr. WALTER HILLS, President, took the chair at 8 o'clock, and at once called upon Mr. W. MURTON HOLMES to give his lecture on

Deep-Sea Deposits.

—The lecture, which is reported in full at page 636, was illustrated by lantern slides, of which the following is a complete list:—

1. *Rhizocrinus lofotensis*.
2. Foraminifer with pseudopodia extended.
3. Deep-sea Foraminifera (outlines).
4. *Polystomella* (balsam).
5. *Globigerina*, North Atlantic (transparent).
6. *Miliolina reticulata*, Bird Island, Great Barrier Reef.
7. *Lagena*, Samarang, Java.
8. *Nodosaria subterrenata operversa*, off Ki Is, 129 fathoms.
9. *Globigerina inflata*, 1800 fathoms.
10. *Orbulina universa*, off Culebra Island.
11. *Sphaeroidina dehiscens*, "Challenger," 7° 45' N., 144° 20' E., 1850 fathoms, near Caroline Islands.
12. *Pulvinulina menardii*, 7° 45' N., 144° 20' E., 1850 fathoms, near Caroline Islands, N. Atlantic.
- 12A. *Pulvinulina pauperata*, 56° 11' N., 37° 41' W., 1450 fathoms, near Caroline Islands, N. Atlantic.
13. Radiolaria. From drawings after Haeckel.
14. " " "
15. " " "
16. " " "
17. " " "
18. " " "Challenger," 7° 25' S., 152° 15' W., 2750 fathoms, S. Pacific.
19. " " Antarctic, 1950 fathoms.
20. *Pheronema carpenteri*, Atlantic, 530 to 1600 fathoms.
21. *Rossella velata*, West of Gibraltar, 651 fathoms.
22. *Semperella schultzei*, Dermal framework, Phillipine Islands.
23. *Dactylocalyx pumiceus*, West Indies.
24. *Arachnoidiscus*, *in situ*, Mauritius.
- 24A. " " 200 drs.
25. *Arachnoidiscus*, highly magnified.
26. *Heliopecta*.
27. *Pinnularia*.
28. Sounding "Egeria" 36° 08' S., 117° 10' E., 2479 fathoms S.W. of Australia.
29. Deep-sea deposits, "Challenger."
30. *Globigerina cretacea*, Croydon.
31. Foraminifera from cavity of flint, West Wickham.
32. Radiolarian Earth, Port Jeremie, Hayti.
33. " " Moron, Spain.
34. " " "
35. Sponge Spicules, Oamaru, New Zealand.

The PRESIDENT said the thanks of the audience were eminently due to Mr. Holmes for the very interesting lecture he had given. He hardly knew which to admire most, the slides which represented Mr. Holmes' drawings, or those taken direct from nature. He should like to call attention to the fact that Mr. Holmes was a hard-working pharmacist, who devoted his leisure to the microscope and to working out such problems as those with which he had been dealing. That fact might encourage some of the students present to think that some day they also, after their day's work at pharmacy, might find delight in such studies, and that they might even make a name for themselves, like Mr. Henry B. Brady, of whom all pharmacists were proud. He was also glad to know that Mr. Holmes was recognised as a microscopist, and that his work was highly appreciated. He would conclude by proposing a cordial vote of thanks to him.

The vote of thanks was carried unanimously, and briefly acknowledged by Mr. HOLMES.

BENEVOLENT FUND GENERAL MEETING.

ELECTION OF ANNUITANTS.

A General Meeting of the Members of the Pharmaceutical Society and of Subscribers and Donors to the Benevolent Fund was held at the house of the Society, 17, Bloomsbury Square, on Tuesday, December 13, for the election of four annuitants.

Scrutineers were appointed by the meeting, and Mr. E. N. BUTT having been elected as Chairman, proceeded to examine the voting papers.

The General Meeting then adjourned until after the scrutiny had been completed.

At the adjourned meeting, Mr. WALTER HILLS, President, in the chair, the scrutineers presented the following report:—

Scrutineers' Report.

We the undersigned scrutineers appointed at the Thirty-fourth Election of Annuitants on the Benevolent Fund of the Pharmaceutical Society of Great Britain, do hereby certify that we have examined the voting papers committed to us, and report the following results:—

Young, James J.	5495.
Bowman, Jane.	3841.
Biggs, Walter.	3728.
Field, William C.	3528.
Bosley, Emily Jane.	2974.
Stangroom, Frederick.	2314.

3945 voting papers* were received, of which number 76 were informal (53 unsigned, representing 180 votes, and 23 incorrectly filled up, representing 69 votes).

EDWARD N. BUTT, Chairman.

LEO ATKINSON.	FRANK A. ROGERS.	A. J. BULLEN COOPER.
G. S. TAYLOR.	HENRY BATE.	C. EDWIN GARMAN.
W. PRIOR ROBINSON.	W. FRED GULLIVER.	JOHN HOLDING.
D. R. JACKS.	S. A. STURTON.	JOHN T. W. WALLIS.
THOS. HY. POWELL.	RICHARD THOMAS.	A. G. WORSLEY.
W. ARKINSTALL.	J. H. SHACKLOCK.	JOHN F. HARRINGTON.
A. J. PHILLIPS.	F. BASCOMBE.	T. TICKLE.

The PRESIDENT then declared the following duly elected annuitants:—

Young, James J.	Biggs, Walter.
Bowman, Jane.	Field, William C.

In proposing a vote of thanks to the scrutineers for their services, the PRESIDENT pointed out that although this year more voting papers were sent out than on the occasion of the last election, a smaller number had been returned, and of those a larger proportion were unsigned.—The vote of thanks was seconded and carried unanimously, and was acknowledged by Mr. E. N. Butt.

DONATIONS TO THE LIBRARY AND MUSEUM.

At a meeting of the Library, Museum, School and House Committee, on Wednesday, December 14, the Librarian and Curator presented the following reports of donations:—

To the Library (London).

Smithsonian Institution, Washington:—Miscellaneous Contributions, Nos. 1125-6.

Messrs. C. J. Hewlett and Son, London:—Notes on the New B.P., 1898, 3rd ed.

British Pharmaceutical Conference:—Year-Book of Pharmacy, 1898; 2 copies.

Mr. W. J. Clarke, South Lambeth:—Journal of Applied Microscopy, Nos. 1-8.

University College, London:—Calendar, 1898.

Mr. R. Hampson, St. Leonards:—Old English Medical MS., with transcript.

Mr. E. Duprey, Jersey:—Essai de bibliographie jersiaise, 1898.

To the Museum (London).

Mr. M. Bateman, Watford:—Living specimen of the Loofah Plant in fruit.

Messrs. Schimmel and Co., Leipsic.—Specimen of Phellandrene.

Mr. W. R. Carles, Tunbridge:—Specimen of a Chinese medicine called Chilian, employed as a vulnerary.

Dr. E. B. Ormerod, Queensland:—Specimens of the root of a Cyperus used in medicine by the natives.

Messrs. Hearon, Squire, and Francis, London:—Specimen of Persian opium in the form of an elongated cone.

Mr. C. E. Sage, London:—Specimens of crystallised Ferrous Ammonio-Sulphate and of Chloride of Sodium.

The African Lakes Corporation, Limited:—Three specimens of pods of *Strophanthus Kombe*.

To the Herbarium.

Mr. E. Lort-Phillips, London:—Specimens of *Adenium Somalense*, a plant used in the preparation of arrow poison.

*6445 voting papers were issued.

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LONDON: SATURDAY, DECEMBER 17, 1898.

COMPANIES AND THE PHARMACY ACT, 1868.

THE common-sense consistency of the view, put forward in a previous Journal, that a combination of unqualified persons keeping open shop as, and assuming the title of, chemists and druggists, infringes the provisions of the Pharmacy Act, 1868, will be sufficiently self-evident to most persons—except lawyers—if fully conversant with the circumstances to which it relates. But that view will be disputed by some, either on account of interests in an opposite direction or other reasons. Chief among those other reasons are imperfect appreciation of the objects that the Pharmacy Act was intended to effect, and perverse disregard of the means by which its administration could have been made more effective in realising those objects. Both have had considerable influence in practically stultifying the Act and furnishing opportunity for its infringement. Some further consideration of the decisions in regard to corporate bodies and of the arguments in favour of the contention that they are not amenable to the provisions of the Act, will, therefore, be useful at the present time. The argument put forward in support of that position by the counsel for the London and Provincial Association in the appeal case, heard by Lord Chief Justice COCKBURN and Mr. Justice MELLOR, was that the *prima-facie* inference to be drawn from the terms of every provision of the Act, is that the word "person" does not apply to, and was not intended to apply to a corporate body. In proof of that he referred to the absence of any mention of corporate bodies in the provision of Section 5, that persons in business as chemists and druggists at the passing of the Act should be registered. He argued that while individuals, registered on the ground of having been in business, would, in the nature of things, die out and thus the possibly incomplete protection of the public would be terminable, companies, registered in virtue of similar vested interest, would have continued for all time, without being liable to the penalties of the Act, however much they might be incompetent to carry on the business, and since that obviously could never have been intended, the inference was to be drawn that the Act was not intended to apply to companies.

That seemingly plausible argument might have been cogent if supported by fact. But it is utterly fallacious; any hypothetical weight it has, rests on the erroneous assumption that such corporate bodies were then in existence. Moreover, if they had been, they would have continued exempt whether the Act applied to companies or not.

The unquestionable fact that every provision of the Pharmacy Act points to the conclusion that "person" is to be understood to mean an individual in the ordinary sense, might perhaps have furnished more reasonable indication of not being meant to apply to a corporate body, if the provisions of the Pharmacy Act had been conditionally permissive, viz., that a person, registered as the Act requires, may keep open shop, etc. But since its provisions are prohibitory they amount to no less than a general prohibition extending to all who are not qualified. The specified qualification being impossible for a corporate body, the object of the Act should therefore be understood as excluding combinations of unqualified persons. Though companies are outside the Act in regard to qualification, they are capable of infringing the Act and ought, at least, to be liable to its penalties, otherwise it might equally be contended that individuals, incapable of qualifying, should be entitled to do, with impunity, what the Act prohibits. The question, therefore, is not so much whether the word "person" should be taken as including a corporate body or not; but whether, having regard to the subject matter and context, corporate bodies should not be understood as absolutely shut out because incapable of qualification. That such was held to be the case in regard to the Pharmacy Act of 1852, by the counsel for the London and Provincial Association, is a notable indication of the inconsistency of his argument. He admitted that no corporate body could assume, or pretend, to be a pharmaceutical chemist, because the Act of 1852 is clearly limited to persons in the ordinary sense. But it is equally inconsistent with the provisions of the Pharmacy Act, 1868, for a company to assume the title of chemist and druggist and keep open shop in that capacity. Nothing in the Act is repugnant to the construction that the term person has the widest significance in regard to infringement; there is really nothing in it which, in that sense, requires the application of the word person to be limited to individuals. As Lord Chief Justice COCKBURN pointed out in his judgment, the fact, so strenuously insisted on by Mr. WILLS, that in all sections of the Act the word "person" is applicable only to individual persons—though tending to show that the adoption of the business of chemists and druggists by companies was not contemplated when the Act was passed—does not by any means show that companies should not be held within the penal sections. On the contrary he held that—the prohibition being general and the mischief clearly within the Statute—companies should not be allowed to break the law under the belief that they are beyond its reach. That common-sense view of the matter induced the Lord Chief Justice to decide that a breach of the law had been committed by the London and Provincial Association, that, as a corporate body, it had incurred liability to penalty by disobedience to a statutory prohibition. Mr. Justice MELLOR concurred with that view after considerable hesitation, on the ground that the great object of the Legislature was to prevent the sale of poisons or dangerous drugs by persons not qualified by skill or experience to deal in such commodities. In that sense he held that the intention as well as the scope of Sections 1

and 15 were for the future absolutely to exclude all persons other than those capable of being registered under the Act. On that ground Mr. Justice MELLOR decided that, in the absence of anything repugnant to such a construction, the interpretation of "person" as including a corporate body, was justified, that an offence had been committed and that the defendant company was liable to penalty under the 15th Section of the Act.

On the subsequent hearing of the appeal against the decision of the LORD CHIEF JUSTICE and Mr. Justice MELLOR, the duplicate signification of the words "sell" and "seller" came under consideration, and much discussion arose upon the notion originated by Mr. GEORGE LAKE RUSSELL—that the object of the Act would be secured where a sale is effected by the hand of a qualified person, although the owner of the shop were a limited company which could not be qualified. Mr. WILLS admitted having great difficulty in adopting that view; but it found favour with Lord Justice BRAMWELL, who held that the mischief to be prevented could be dealt with by prosecution of individual offenders acting as servants of a company. Lord Justice BAGGALLAY took the same view and could not gather from the general scope and purport of the Act any necessity, in the interest of the public, to interpret "person" as including corporation. Lord Justice THESIGER was undecided on that point; but taking into consideration that the motive of the Act was regard for public safety, he was disposed to think corporations should be made subject to the same conditions and restrictions as individuals. He held that a conditionally prohibited act being intended to be entirely prohibited, except under the particular conditions, it consequently cannot be done by a company, even though the conditions are, in their nature, such as cannot be complied with by a company. He also held that the penalty by which prohibition is to be enforced by civil suit is as applicable to a corporation as to individuals, though by no means satisfied that the members would not be individually liable in place of the corporate entity. But the clear intention that the word "person" was in all instances to apply to individuals, and the absence of express reference to companies in the Act, induced him to agree with the other two judges. By that decision, afterwards confirmed by the House of Lords, the necessity of qualification, as the Act provides, in order to carry on the business of chemist and druggist, and to use that title, was practically negated. As a consequence, combinations of unqualified persons have carried on the business as being outside the scope of the Act. So far as the terms of the Act specify they are not under the necessity of employing qualified persons as their assistants. If that position is maintainable it really amounts to a virtual repeal of the Act, for it means that a person desiring to carry on the business is under no necessity to qualify if, with the nominal assistance of six other persons, he forms a limited liability company. A further consequence of that decision and of the imported doctrine that, in regard to public safety, only the mechanical seller need be qualified, is that the function of the Pharmaceutical Society in conducting examinations may be reduced to providing qualified persons to act as assistants to combinations of unqualified persons. Such an absurd result of legislation "expedient for the safety of the public" cannot be spoken of in complimentary terms; but the questions may well be asked—Can that possibly have been the intention of the Legislature? Can it even be the intended outcome of a rational construction of the Act itself?

ANNOTATIONS.

LITERAL INTERPRETATION OF THE PHARMACY ACT, 1868, is not the easiest thing in the world to arrive at, as Mr. J. Rymer Young doubtless realises more than anyone else at the present moment. The attempt he has made, however, to show how certain portions of the Act have been judicially interpreted and how the remainder may be interpreted, should be productive of useful results, even if the only effect is to induce registered chemists in general, and members of the Society in particular, to study the provisions of the Act. They will then realise more fully than at present how the intentions of the Act have been entirely frustrated, except with regard to the imposition of certain checks upon the sale of a limited number of poisons. At the same time they may arrive at the conclusion that, insufficient and ineffective as the provisions of the Act have been made to appear, there are opportunities afforded by the measure which have not yet been clearly recognised. What those are a careful perusal of Mr. Young's paper will reveal, and it is unnecessary to repeat them here.

THE OBVIOUSLY BEST REMEDY for the existing state of affairs is, as Mr. Young points out, for Parliament to make the word "person," wherever used in the Pharmacy Acts, include any corporate body, but whether that remedy can be applied remains to be seen. For the present, the possibility of an attempt being made to secure the application of such a remedy is not assured, and nothing short of the support of a very large majority of registered chemists is likely to be held to justify the attempt. Resolutions in favour of the total suppression of unqualified company pharmacy afford interesting reading, and a fair number of such resolutions will doubtless come before the Council of the Pharmaceutical Society at its next meeting. But what action will follow must depend in very great measure upon the number of names submitted for election to membership of the Society at that and subsequent meetings. No good purpose can be served by masking that fact, for vastly increased support—both moral and financial—is essential if the Society is to take action on the bold lines proposed in different parts of the country, and the sooner that support is definitely tendered the sooner will it be possible to organise a satisfactory plan of campaign.

THE OBJECTIONS TO COMPANY PHARMACY, it may be well to state here, must be based on something stronger than the self-interest of registered chemists, if they are to attract and secure the attention of legislators. At the present time the two things which are legally restricted in connection with pharmaceutical practice are the use of certain titles and the sale of poisons. Owing to the accident that corporate bodies were not mentioned in the Pharmacy Acts, those restrictions have been considerably relaxed, for a corporate body can freely sell poisons by the hand of a duly qualified agent, and it is even assumed that such a body is quite at liberty to use any of the titles supposed to be restricted to the use of registered persons. Now, if the Legislature is to be asked to remedy this state of affairs, good reasons must be advanced in favour of the imposition of restrictions that do not exist at present, so far as corporate bodies are concerned. And as it may shortly be necessary for every chemist in business to communicate with his parliamentary representative in the matter, it will be as well for him to consider in advance what are good reasons and what are not.

THE CHIEF ARGUMENT that found favour with the judges who finally decided against the Pharmaceutical Society in the case of

the London and Provincial Supply Association, was that it seemed quite immaterial whether the individuals constituting a corporation were duly qualified or not, so long as the paid servant of the corporation who performed the physical act of sale was a registered person. In other words, the idea conveyed by the judicial decision was that, so far as the public safety is concerned, it is not of the least importance to whom the capital invested in the business belongs, or who benefits by the profits from the business, so long as the would-be purchaser of poison is able to deal directly with a registered chemist. Whether that registered chemist was the proprietor or part-proprietor of the business did not, in the judges' opinion, concern the public in the least degree. The logical conclusion we are driven to in considering this decision is that the State is only concerned about the qualification of assistants in pharmacies, and cares nothing whatever about that of the proprietors.

THE FALLACY underlying the argument of the judges—whose decision was fraught with such momentous consequences to registered chemists in business on their own account—is this very assumption that the qualification of the proprietor is of no moment. For it must of necessity rest with the proprietor of a business to decide to what extent the assistants employed in that business shall exercise discretion in the sale of certain articles. In the case of a joint-stock company, the only reason for the existence of which is to make money for its shareholders, it is extremely doubtful if any check is imposed upon the enterprise of assistants except that of keeping within the strict letter of the law. It is not for the soulless, artificial person, created by Act of Parliament, to put any hindrance in the way of its assistants selling scheduled poisons as freely as asked for, so long as they do all that is requisite in the way of labelling, and registration if necessary. The assistant's business is to turn over the stock as rapidly as possible, and to help the directors of the company to declare a good dividend. If a purchaser asks for a suspicious quantity of poison, it is not to the assistant's interest to object to supply it.

THE REGISTERED PROPRIETOR, however, looks at such matters in a totally different light. He recognises that he exists for something more than making money, inasmuch as he owes a duty to the public. His position as a professional man will not allow him to regard the sale of poisons simply as a means of profit, and his assistants are instructed not to supply poisons of any kind unless they are quite sure that everything is straightforward in the transaction. The amount of profit on the poison sold is not for one moment allowed to enter into consideration, and it is safe to say that every registered chemist in business on his own account in Great Britain can recall scores, if not hundreds, of cases in which he has deliberately refused to supply poisons over the counter. Some go so far as to decline absolutely to sell any quantity of such poisons as strychnine, aconitine, cantharides, and even morphine or opium, unless prescribed by a medical practitioner. And whether such extreme caution is called for or not, there is not the least doubt that a duly qualified proprietor of a pharmacy is a surer safeguard for the public than any number of qualified assistants in a drug-store carried on by a company of unqualified persons.

MEETINGS OF PHARMACEUTICAL ASSOCIATIONS have been held in most parts of the country this week, and, by an unfortunate chance, half a dozen of the more important ones were held on Wednesday evening, the worst possible time from a press point of

view. For, as a result, it has been necessary to have the Journal reports of some of those meetings transmitted by telegraph, and they are necessarily much more scanty and incomplete than would have been the case if they could have been sent through the post in the ordinary way. The fact of reports arriving just before going to press also tends to brevity in the printed accounts of what has taken place, and members of Associations who object to curtailed reports should note that the curtailment is probably due to the fact that they choose the worst possible night in the week for their meetings. It is convenient, by the way, to have the opinions of Associations so widely separated geographically as are several of those reported this week, presented simultaneously for consideration by readers of the Journal, and though some of the reports are brief, yet they contain what is most essential, *i.e.*, the resolutions agreed upon at the meetings. So far, pharmaceutical opinion throughout the country appears to be fairly unanimous, and if the opinions expressed are confirmed by the attitude adopted during the next few weeks by chemists and druggists generally towards the Pharmaceutical Society, something approaching what is so widely asked for may be secured, if not all.

THE WESTERN CHEMISTS' ASSOCIATION OF LONDON is announced to deal with the Federation programme on Wednesday next, December 21, after the delivery of an inaugural address by the new President, Mr. J. F. Harrington, who has recently been elected a member of the Council of the Pharmaceutical Society. Reference to the Federation programme leads us to direct attention to the force that useful organisation has become in pharmaceutical circles. Many registered chemists hardly comprehend yet what the Federation is, but few who take the least interest in affairs can now be ignorant of its programme for the year. To explain once more what the Federation is, we may state that it is not an association, but simply a bond of union between pharmaceutical associations in different parts of the country. Between forty and fifty such associations are now federated and so brought into constant touch with each other. The President of the Federation is Mr. W. L. Currie, of Glasgow, and the Hon. Secretary, Mr. R. C. Cowley, of Liverpool. The position occupied by the latter gentleman is that of a living clearing house, for he receives communications from any association, and communicates it to all the rest. What useful work it is in his power to accomplish is shown by the results of the numerous meetings now being held all over the country and dealing with the same important subjects at or about the same time.

A SPECIAL GENERAL MEETING of the members of the Pharmaceutical Society will be held at 17, Bloomsbury Square, London, W.C., on Wednesday, January 11, 1899, at 3 p.m. precisely, for the purpose of considering and, if thought fit, of adopting regulations for the keeping, dispensing, and selling of poisons in conformity with the provisions of the Pharmacy Act, 1868. Notices of motion for this meeting have been intimated by Mr. R. A. Robinson, the first being as follows: "That the Pharmaceutical Society of Great Britain resolves to adopt regulations for the keeping, selling, and dispensing of poisons in accordance with the provisions set forth in Section 1 of the Pharmacy Act, 1868," A second notice of motion by Mr. Robinson is to the effect that the recommendations for the keeping, dispensing, and selling of poisons, adopted at a general meeting of the Pharmaceutical Society on May 17, 1871, shall be adopted by the Society as regulations in accordance with the provisions set forth in Section 1 of the Pharmacy Act, 1868.

THE THREE RECOMMENDATIONS referred to are given in full in the official notice calling the special general meeting, and printed in our advertisement pages this week. Although Mr. Robinson's notice of motion proposes that the recommendations shall be adopted in their entirety, it will not be incumbent upon the meeting to accept that motion without amendment. In fact, it is extremely improbable that it will be so accepted, the opinion being pretty general that the recommendations are more or less obsolete. At the same time they will serve as a basis for discussion, and no difficulty can arise through the members of the Society assembling without having something definite to deal with. It is hardly necessary to say that, between now and the time of the meeting, the pages of the Journal will be open to receive suggestions for poison regulations, and as any regulations actually adopted will, if approved by the Privy Council, virtually become part of the Pharmacy Act, 1868, it should be apparent that the matter is one for the most serious consideration.

IN MR. RYMER YOUNG'S REMARKS on this subject, the curious fact is pointed out that, according to the wording of Section 15 of the 1868 Act, no penalty can be imposed for breach of any regulations that may be adopted with regard to the "dispensing" of poisons. Regulations dealing with the sale of poisons already exist, of course, in Section 17, but it may be found desirable to amplify them. It is, however, with regard to the keeping of poisons that regulations are more especially required, and that is the point on which the Privy Council is understood to be most strongly insistent. As we have on many occasions remarked in these columns, most registered chemists in business on their own account already adopt satisfactory regulations for the keeping of poisons in their pharmacies, and the only result of the formal adoption of regulations by the Pharmaceutical Society will be to make the procedure uniform in pharmacies throughout Great Britain.

THE SECRETARY OF THE PHARMACEUTICAL SOCIETY desires us to announce that, owing to pressure of official detail work involved in carrying into operation the provisions of the Pharmacy Acts Amendment Act, 1898, he regrets to find himself unable to reply very promptly to the numerous communications he is now receiving. He, therefore, begs his correspondents to excuse the unavoidable delay. All correspondence will be dealt with as quickly as possible under the circumstances.

THE CHEMISTS' BALL, as everyone connected with pharmacy ought to know, is to be held, for the thirty-third occasion, at the Portman Rooms, London, on Wednesday, January 18. The Hon. Secretary to the Ball Committee, Mr. W. Warren, is anxious to have a record list of stewards on this occasion, and desires that the date of the ball should be carefully noted in everybody's diary. The duty of a steward, it may be pointed out, is to dispose of tickets, but he is not obliged to make himself responsible for a greater amount than thirty shillings—the cost of two tickets, one each for a lady and a gentleman respectively. The Hon. Secretary, who may be communicated with, by intending stewards, at 24, Russell Street, Covent Garden, W.C., asks us to direct special attention to the fact that this will be the last Chemists' Ball "in the eighteen hundreds." Doubtless that will be considered an amply sufficient reason for the purchase of extra tickets by all our readers who are interested in the matter. The fact does not appear to be too relevant, but it is probably relevant enough.

THE NEW UNIVERSITY OF LONDON will require a suitable place of lodgment, and it is interesting to note that a resolution has

been adopted by the Council of University College, London, in which it is stated that the Council is prepared to summon a general meeting of the members of the College, and to propose to them that such steps should be taken as may be necessary for placing the site, land, buildings, and endowments of the College at the complete disposal of the reconstituted University. In making this offer the Council does not desire to throw any obstacle in the way of any other institutions in London, which may be disposed to place their resources at the disposal of the Governing Body of the University, but it will be necessary, in accordance with the precedent afforded by the Universities Act (Oxford and Cambridge), to protect the interests of the existing teachers and executive staff of the College. The existing teachers are, however, to have no claim as such to any rank in the re-constituted University, or to any vested interest, other than that they now have in the College. It is interesting to recall the fact that University College was originally founded as the University of London, with the object of providing a complete university education in London of the highest type.

THE OLD UNIVERSITY OF LONDON has under consideration a proposal to transfer its headquarters from Burlington House to the Imperial Institute. It would thereby gain laboratory accommodation for the practical parts of its examinations, and would also naturally become the nucleus of the new teaching university. In the opinion of the *Standard* the proposal is, on the whole, advantageous to the existing university, the more especially as it would provide a practical use for the stately fabric of the Imperial Institute, which for various reasons has not fulfilled the hopes entertained when it was founded. For the present, it appears, the new university is to be lodged in certain spare apartments at the Imperial Institute. With regard to any more permanent arrangements, the *Standard* suggests that a building constructed for one purpose cannot successfully be utilised for another unless considerable expense is incurred. In addition, it is urged, as a not inconsiderable drawback to the plan now brought forward, that what is intended to be a teaching university for the whole of London would be established in a position convenient only for the West-end, and equally inaccessible to students from the northern, southern, and eastern districts of the Metropolis. To carry out the purpose for which the new university is destined it seems to require something which may be described as a central situation, and that is offered by University College.

AT THE ROYAL INSTITUTION the following lectures will be delivered before Easter:—Sir Robert Ball, six lectures (adapted to young people) on "Astronomy"; Professor E. Ray Lankester, ten lectures on "The Morphology of the Mollusca"; Mr. A. Henry Savage Landor, three lectures on "Tibet and the Tibetans"; Dr. Allan Macfadyen, four lectures on "Toxins and Antitoxins"; Mr. William Poel, three lectures on "English Playhouses in the 15th, 16th, and 17th Centuries"; Sir Alexander Mackenzie, three lectures on "Liszt, Tschaikowsky, Brahms" (with musical illustrations); the Right Hon. Lord Rayleigh, seven lectures on "The Mechanical Properties of Bodies." The Friday evening meetings will begin on January 20, when a discourse will be delivered by Professor Dewar on "Liquid Hydrogen." Succeeding discourses will probably be given by the Right Hon. Sir Mountstuart E. Grant Duff, Mr. Victor Horsley, Professor H. S. Hele-Shaw, Mr. Richard R. Holmes, Sir Frederick Pollock, Bart., Professor H. L. Callendar, the Right Hon. Lord Rayleigh, and other gentlemen. The year 1899 is the centenary year of the Royal Institution, and arrangements are being made with a view to its celebration in a fitting manner. Details will be announced at a later period.

LIVERPOOL CHEMISTS' ASSOCIATION.

The usual monthly meeting was held on Thursday evening, the 8th inst., at the Royal Institution, the PRESIDENT, Mr. Bain, in the chair. Two new members, Messrs. C. W. Dalrymple and J. F. Woods, were elected, and several miscellaneous communications were brought forward.

Paraffin Bases; Robin's Syrup; Opium Assays.

Mr. PROSPER H. MARSDEN gave his experience with the various paraffin bases sold as paraffinum molle, B.P., saying that not one of the samples he had examined had a melting point within the limits of the B.P. 1898, viz., "96° to 102° F. or even somewhat higher," his experiments showing as a mean of four estimations for each sample 106°, 107°, and 108°. It was advised that Mr. Marsden pursue his investigations further and report at a latter meeting.

The PRESIDENT wished to know what should be the colour of syrup of the glycerophosphates according to Robin's formula. He believed it should be about the tint of Parrish's syrup, but he had had it of all colours, from brown and caramel-like to almost purple.

Dr. SYMES said that it was red in colour; at any rate, that made by a London firm of foreign chemists was, and he might say that the published formula known as Robin's gave a very different preparation, and one which did not remain clear.

Mr. H. WYATT, jun., had had a communication from a former member of the Liverpool Pharmaceutical Students' Society, Mr. C. Ludlow Taylor, who, whilst in Rome, wrote respecting this syrup, that what he dispensed frequently (made by a firm in Florence) was a bright red coloured syrup of light specific gravity, evidently containing, in addition to the active ingredients, chloroform as a preservative. A friend of Mr. Wyatt's recently made some of the syrup from Robin's formula and was surprised that the product turned out of a distinct violet colour. On inquiry it was found that the cherry syrup used contained salicylic acid as a preservative, and this naturally reacted with the iron salt present to form the deep-coloured salicylate. A syrup could be flavoured without the cherries by using vanilla, and almond essences with enough tincture of orris, or a flavouring of the culinary essence of maraschino might be tried instead.

Mr. COWLEY said he employed for the separation of the ethereal layer in opium assays an ordinary male syringe with an indiarubber band covering the cotton packing so as to fit the bore accurately, and yet prevent small crystals of morphine becoming attached to the cotton.

Mr. HORNBLLOWER found the same purpose was answered by a pipette with an indiarubber teat, which had the additional advantage of only requiring the use of one hand for its manipulation. Pouring off the ether, even when a larger amount than that ordered in the B.P. was used, was not a good method.

Mr. A. C. ABRAHAM had been in the habit of using ether freely, but if it were true that morphine was dissolved by it to any appreciable extent, as Mr. Cowley seemed to imply, it raised a rather serious point. He knew that "ether purus" might contain alcohol, and it was possibly the presence of this that accounted for the seeming solubility of morphine in ether.

Mr. COWLEY said, in reply, that the ether did dissolve a certain amount of morphine, therefore more ether than ordered in the B.P. should be used. Mr. Abraham had overlooked the point that ether was used, not only to keep narcotine, etc., in solution, but also to assist in the crystallisation of the morphine.

The PRESIDENT then called on Dr. Symes to open a discussion upon the resolutions passed by the Federation of Local Pharmaceutical Associations at the Belfast meeting in August last.

The Federation Proposals.

Dr. Symes commenced by referring to the usefulness and activity of the Federation of Local Pharmaceutical Associations, and expressed the hope that Associations throughout the country would readily respond to the invitation to discuss those proposals. He agreed with the suggestion that persons trading under ancient titles or any other name than their own should also use their own names in conjunction therewith. Local Associations should certainly use their best efforts to induce registered chemists to become members of the Pharmaceutical Society. It had long been his cherished hope that the time would arrive when every registered chemist would be a member of the Society. With regard to poison regulations, he felt assured that it would be

beneficial to the whole craft if such regulations were adopted. It is generally admitted that the regulation which requires that when a poison is sold it shall be labelled poison is a just one, and inflicts no hardship on the person who sells; no more can it be a hardship to demand that the same poison, if a liquid, should be sold in a poison bottle, and not in a teacup. As to the keeping of poisons, most chemists do, and all ought to take some precautions for keeping them in some way separate or distinguishable from harmless substances. There can be no hardship in compelling a few careless men to act more carefully, and do what the great bulk of chemists are doing voluntarily for the public safety. The last suggestion in the Federation circular was that during the ensuing winter session each association should consider the whole question of company trading, as it affects the legitimate interests of registered chemists and the protection of the public safety aimed at in the Pharmacy Acts, and that an effort should be made to formulate some definite line of policy on which all registered chemists could agree to act. It must be pointed out that there are large companies, such as the Army and Navy Stores, where only members are supplied; stores where the general public are supplied; companies formed by *bond-fide* chemists and druggists for carrying on a legitimate trade; and a large number of companies formed by unqualified persons to enable them to evade the Pharmacy Act. The Council of the Pharmaceutical Society had sent to the Lord Chancellor a letter in relation to companies, with a view of enlisting his sympathy and action on behalf of pharmacy, as the Medical Council has also done on behalf of medicine and dentistry. All that is asked for may not be obtained, but some good will probably result if chemists can get the ear of the Government. If, however, they hoped to do that they must first place themselves in accord with its wishes by adopting "regulations" such as had already been referred to. In conclusion Dr. Symes moved—

- (a) That any person or persons carrying on the business of pharmacy under other names than their own should use their own names or name in addition to that under which they trade.
- (b) That this Association will use its best efforts to induce registered persons to become members of the Pharmaceutical Society.
- (c) That the "recommendations" issued by the Council of the Pharmaceutical Society for the keeping, selling, and dispensing of poisons or some modification thereof, should become "Regulations" under the Pharmacy Act, 1868.

The PRESIDENT, in seconding the proposed resolutions, said that it was to the interest of old-established firms that the individuals actively engaged in conducting their business should be known to their customers. That being so, no one in such a business could reasonably complain of resolution (a). He predicted a large accession to the number of members of the Pharmaceutical Society now that the old ridiculous regulations as to membership had been done away with. The storage of poisons was a question which could only be solved by some definite regulations on the subject, regulations which would simply be reducing to order the many systems which chemists had for their own protection already adopted. In attempting to get through anything in the nature of effectual legislation with the object of limiting the operations of illegitimate or company trading he was afraid they had a hard nut to crack, and so long as such companies availed themselves of the services of fully qualified managers he was of the opinion that no Government could be persuaded to pass a Bill of the kind required by the trade. Such a Bill was almost indispensable to the well-being of the chemist's and druggist's business, yet he was forced to say their chances of getting their desire were small indeed. He had pleasure in proposing a vote of thanks to Dr. Symes for the able manner in which he had put the various points before them.

Mr. COWLEY, in a forcible speech, said the present state of affairs was due undoubtedly to the weak-kneed policy of the Pharmaceutical Society in days gone by, when it was afraid of attacking its enemies for fear of implicating its friends. The Wheeldon case, however, forced its attention to notice the corruption existing within its own body, since which time a happier and more manly policy had been adopted. Now the Society was about to make good the trust placed in it by the Privy Council thirty years ago by taking up, in a thorough manner he hoped, the question of the storage of poisons—a matter it had hitherto shamefully neglected. Mr. Cowley then went on to elaborate the views put forward by him in his recent address to the Liverpool Pharmaceutical Students' Society, already fully reported in the *Pharmaceutical Journal*.

Messrs. STOCKDALE and HOCKEN supported the expressions of opinion given vent to by the previous speaker, and Mr. Hocken, as an old member of the Society, said that his experience of the good

done by the Act of 1868 was not of a very encouraging nature; still, it appeared that the Society had now realised to the full its duty, and he believed with the support it should now receive from the bulk of the trade it would obtain that power it had so far lacked and be in a position to do something for the amelioration of the plight into which pharmacy had fallen.

The SECRETARY here read a letter from Mr. John Smith, the Society's local secretary, regretting his inability to attend the meeting, and saying that in case a Bill were presented to Parliament he personally would be in favour of an attempt to entirely remodel the laws governing the practice of pharmacy. He would let the so-called "Widow's Clause" go, and would approve of the regulation of the storage of poisons. Such a Bill should make it illegal for other than properly registered persons to keep open shop for retailing poisons or to exhibit such misleading descriptions over their shops as "drug store."

Dr. SYMES, in his reply, defended the Pharmaceutical Society from the charge of apathy, saying that none who had had the same amount of insight into the work done by the Society since 1868 as he had could in common fairness charge it with want of either energy or the desire to pass Bills of a protective nature. Such Bills had been drafted without cessation, and had mostly met the same fate. The only way to get anything done of real use to pharmacists was to set themselves right with the Privy Council in the first place by assuming their just responsibility, and then they might succeed in their modest demand to have the sole right to sell poisons and the sole right to dispense medicines.—The motion proposed by Dr. Symes was then put to the meeting, and carried unanimously.

A Note on Distilled Extract of Witch Hazel

was then contributed by Mr. HAROLD WYATT, jun.—In working recently with a variety of aldehyde reagents he had been much struck with the delicacy of that of Schiff—a solution of magenta decolorised with a sulphurous acid—which gives a violet red with even the minutest traces of aldehyde. The odour of the distilled extract of witch hazel somewhat recalls that of a weak solution of formalin, and as the extract is made from the fresh plant the presence therein of formaldehyde is at any rate probable, if one is to believe the theories of botanical physiologists. With this in view the extract was treated with Schiff's reagent, with the immediate production of a coloration. At first sight this might have been taken as fairly conclusive evidence of the presence of formaldehyde, but further examination showed that the extract was similar to that of the Pharmacopœia, being prepared with alcohol; to traces of aldehyde in which the coloration was undoubtedly due, for the application of all the known tests for formaldehyde itself failed to give the slightest indication of its presence. This confirms the result arrived at by Mr. Alexander Gunn in a similar investigation some time ago published in one of the trade papers.

Mr. Theo. H. Wardleworth then read—

A Note on Thyroglandin, its Uses and the Manufacturing Facilities Liverpool Possesses for its Production in Large Quantities.

The author said that in view of the important position preparations of the thyroid gland were assuming, and the success which attended their administration in cases of obesity, myxœdema, and kindred diseases, it was very important that the very best preparation should be employed. He, therefore, ventured to bring under their notice an article which was just appearing on the market, and which was free from many objections connected with the dried gland, namely, thyroglandin (Stanford). This preparation was really a standardised product of the thyroid gland prepared under conditions which preserved in the best possible manner all the active ingredients of the sheep glands. While the elements of the article were constant and reliable, it had the virtue of being five times the strength of the raw gland, and in use had effected results of the most satisfactory character where the simple gland had failed. In virtue of its method of manufacture it was free from the tendency to decomposition exhibited by other products of a like nature. It possessed the further merit of being made in Liverpool, where the best facilities in the country existed for securing a good supply of the fresh glands, as more sheep were killed in Liverpool in a week than in all the country beside in the same time. At present it was prepared and dispensed in the form of a powder, but the manufacturers were arranging to put it up in the form of granules for convenience of dispensing.—During the discussion following the reading of this paper Mr. PROSPER H.

MARSDEN mentioned a case they had had at the Royal Infirmary which had been relieved in a remarkable manner by the use of the ordinary thyroid powder. It was a case of sporadic cretinism, in which the continued use of thyroid caused such an alteration in the form and texture in the bone of the hand that radiograms taken before and after the treatment showed the change in an exceedingly clear and marked manner.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.

The first meeting of the above Association was held on Friday, December 9, Mr. F. A. UPSHER SMITH in the chair.—The attendance augured well for the success of the Association this year, as there were forty-one members present.—Mr. H. PAYNE, in the temporary absence of the Secretary, brought forward a proposal that the time of meeting be altered from 5.30 to 5 o'clock.—After the minutes of the previous meeting had been read and confirmed, the real business of the evening began, when Mr. P. B. GRAY opened a discussion on the proposed division of the Minor by proposing:—

That in the opinion of the School of Pharmacy Students' Association the Minor should be divided into two parts, consisting respectively of a theoretical and a practical part, the theoretical to be taken after three years' apprenticeship, the candidate to be not under 20 years of age; the practical to be taken after a lapse of one year.

Mr. Gray supported his proposition in a very able speech, in which he pointed out the benefits which would result from such a division. He argued that it would result in a class of men coming forward who would look on their apprenticeship as a time for preparing for the first examination, which would supersede that class of men who now postpone all their studies till they go to college. His plan for dividing it was as follows:—The first portion should consist of an examination in theoretical chemistry, botany, and physics, the second part in practical chemistry, dispensing, practical pharmacy, and practical materia medica, and he pointed out how utterly impossible it was to study materia medica until a student had some knowledge of botanical terms. He thought that the large percentage of failures at the last Minor examination showed clearly there was something wrong with the present system. Mr. E. W. EWELL seconded the resolution.

Mr. H. PAYNE proposed as an amendment:—

That this meeting of the School of Pharmacy Students' Association views with regret the desire in some quarters for the division of the Minor examination, and, considering the present state of that examination, it deems such a division is entirely undesirable and unnecessary, and is inimical to the welfare of pharmacy.

He went on to say that while the examination is sufficiently severe to safeguard the public, it is not above the power of men of average ability, and considering the increased facilities nowadays afforded by science classes all over the country, the examination is no harder to candidates to-day than it was to the men of thirty years ago. And if the examination were divided, the difficulty of passing it might be decreased, and we should have men entering the ranks of pharmacy of inferior mental ability, which would be extremely undesirable. Mr. Payne thought that while pharmacy is allied to trade as it now is, a higher qualifying examination would be quite unnecessary, and that the only people who supported division were a few incompetent would-be pharmacists. A further argument was that division increased expense without giving corresponding advantages.—Mr. J. EVANS seconded the amendment, and, in a few well-chosen remarks, supported the views of Mr. Payne, pointing out that theory and practice cannot be divided; they must go hand in hand, it being quite impossible to study scientific theory without the help of experiment, whilst to study practice without theory would lead to some surprises.—Mr. CHAPMAN spoke in favour of the amendment. He considered that the present state of trade did not render it practicable to increase the expense of passing the qualifying examination, considering the salaries earned by qualified men are only about £50 or £60. He thought the deplorable number of failures in the Minor was due to the low standard of men who entered the drug trade, as evidenced by the fact that out of 1414 candidates who entered for the Preliminary in the year ending April, 1898, 737 failed, and out of the 737, 311 failed in every subject.—Mr. DURBIN was in favour of the amendment, and attributed the large percentage of failures at the last Minor to the students hurrying to get through before they were examined on the new B.P.—Messrs. Perrédès, Garsed, Spurway, Wallis, Baker, and Padwick

expressed themselves in favour of division, and Messrs. Battle and Finnemore spoke in favour of Mr. Payne's amendment.—The CHAIRMAN, in an impartial speech, then summed up, and pointed out that the present Minor examination was not calculated to turn out all-round, capable pharmacists, considering that a thorough knowledge of the B.P. cannot be attained until the student has passed through a course of organic chemistry and advanced *materia medica* as required for the Major examination. Voting took place with this result: For the resolution 16, for the amendment 11.—The meeting then adjourned.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.

A meeting of this Association was held on December 7, at the Exchange Rooms, Birmingham, the President, Mr. J. SELBY, occupying the chair.

Mr. JOHN BARCLAY, B.Sc., read some further notes on

The Standardisation of Strophanthus Preparations,

in the course of which he gave a *résumé* of the method for assaying strophanthus advocated by him in 1896, an account of which is given in the *Pharmaceutical Journal* of November 25, 1896. He alluded to the alteration in strength of the 1898 tincture and pointed out that the preliminary treatment of the seeds with ether before extraction with alcohol had been done away with in the case of the tincture, but retained as part of the process for making the new extract. From experiments which he had made he found that a tincture prepared by the new process contained more strophanthin than when made by the old, and his experiments led him to the conclusion that a percentage of 0.3 per cent. of strophanthin in the new tincture would be the most useful standard to adopt. Mr. Barclay then proceeded to discuss the new extract of strophanthus, the utility of which, he said, had already been questioned by many commentators on the new Pharmacopœia. Since, however, the extract was an official preparation, and a somewhat potent one, it seemed desirable that it should be made to contain a definite percentage of active principle, and following the lines of the method suggested by the author for standardising the tincture, the following process was recommended for the extract: Dissolve 5 grammes of the extract in water, filter, shake the filtrate with two successive 5 C.c. of chloroform; the chloroformic washings agitated with a little pure water are rejected, and the mixed aqueous washings acidified with 1 C.c. sulphuric acid (50 per cent.), and heated on water bath for one hour. After cooling, the liquid is transferred to a separator and extracted with three washings of chloroform, chloroform is washed with water (to free from acid), distilled, and the residual strophanthidin dried at 150° F. The amount of strophanthidin yielded multiplied by 20 and divided by 0.365 gives the proportion of strophanthin present in 100 grammes of the extract. With regard to the strength to be chosen for the standard, 4 per cent. was suggested as a reasonable figure, that percentage being on all fours with that chosen for the 1885 tincture made like the new extract from seeds previously treated with ether. Five samples of seeds treated according to the official method gave extracts containing respectively 2.02, 2.55, 3.28, 3.22, and 4.33 per cent. of strophanthin. The variation indicated is probably largely due to the varying temperature used in preparing the extracts. In the case of the first two sample, steam heat was employed, while in that of the other three a water bath was used. The seeds from which the fourth sample was prepared yielded, on assay, 8.02 per cent. of strophanthin, and should therefore give an extract containing 4.01 per cent. instead of 3.22 per cent., as found, proof being thus afforded that the application of heat to the limited extent ordered by the Pharmacopœia results in the destruction of some of the active principle.—Mr. BARCLAY, having expressed his thanks to Mr. E. W. Mann for assistance in preparing the foregoing paper, then proceeded to suggest the desirability of having exact standards for the tinctures of the British Pharmacopœia. It was urged to be essential for the sake both of the pharmacist and of the public that guidance as to the requirements of the Pharmacopœia should be as definite as possible, and that the margin of variation in the strength of tinctures, due to variability in the drugs used, should be reduced to a minimum. The following list—the result of numerous experiments conducted by the author—was submitted:—

Proposed Standards for Official Tinctures.

Tincture.	S. G. at 15.5° C.	Percentage.
Aconiti	0.890	0.02 ether-soluble alkaloids
Aloes	0.970	7.0 total solids†
Arnicae	0.894	0.60 total solids
A. fetidae	0.914	10.0 resin
Aurantii	0.885	2.0 total solids
*Bella tonnae	0.914	0.05 total alkaloids
Benzoini Comp.	0.900	2.5 benzoic and cinnamic acids
Buchu	0.934	4.0 total solids
Calumbae	0.920	0.8 total solids
*Camphorae Comp.	0.920	0.05 anhydrous morphine
Cannabis Indic.	0.846	4.00 total solids
Cantharidis	0.838	0.25 total solids
Capsici	0.896	1.50 total solids
Cardamomi Comp.	0.948	6.50 total solids
Cascarillae	0.900	1.60 resin
Catechu	0.977	14.50 total solids
Chiratae	0.920	0.80 total solids
*Chloroformi et Morph.	1.012	
Cimicifugae	0.924	2.00 total solids
*Cinchonae	0.918	1.00 alkaloids
*Cinchonae Comp.	0.918	0.10 alkaloids
Cinnamomi	0.904	2.40 total solids
Cocci	0.955	2.50 total solids
Colchici	0.953	0.075 colchicine
Conii	0.896	0.09 total alkaloids
Croci	0.927	3.00 total solids
Cubebae	0.840	2.00 oleo-resin
Digitalis	0.932	3.60 total solids
Ergotae Ammon.	0.934	4.00 total solids
Ferri Perchloridi	1.086	
Gelsemii	0.925	0.025 gel emine
Gentianae Comp.	0.966	5.00 total solids
Guaiaci Ammon.	0.900	15.0 resins
Hamamelidis	0.952	2.0 total solids
Hydrastis	0.925	2.5 total solids
Hyoscyami	0.953	0.008 alkaloids
*Iodi	0.878	2.5 iodine
Jaborandi	0.953	0.048 p locarpine
*Jalape	0.906	1.50 resin
Kino.	0.995	5.00 kino tannic acid
Krameriae	0.938	5.00 total solids
Lavandulae Comp.	0.836	0.60 total solids
Limonis	0.888	2.00 total solids
Lobeliae Aetherea	0.816	0.07 lobeline
Lupuli	0.938	4.00 total solids
Myrrhae	0.854	5.60 resins
*Nucis Vomicae	0.912	0.25 strychnine
*Opii	0.958	0.75 anhydrous morphine
*Opii Ammoniat	0.895	0.113 anhydrous morphine
*Poleophylli	0.850	3.65 resin
Pruni Virgin.	0.934	3.00 total solids
Pyrethri	0.900	1.60 total solids
Quassiae	0.946	0.016 quassin
Quillaiae	0.919	1.25 total solids
*Quinine	0.894	2.00 quinine hydrochlor.
*Quinine Ammoniat.	0.925	2.00 quinine hydrochlor.
Rhei Comp.	0.970	4.50 total solids
Scillae	0.960	10.00 total solids
Senegae	0.938	4.80 total solids
Sennae	0.988	10.00 total solids
Serpentariae	0.896	2.00 total solids
Stramonii	0.962	0.04 total alkaloids
Strophanthi	0.892	0.30 strophanthin
Sumbul	0.898	2.50 total solids
Tolutana	0.860	2.0 benzoic and cinnamic acids
Valerianae Ammoniat.	0.942	3.00 total solids
Zingiberis	0.835	0.40 total solids

* Officially standardised.

† Total solids in all cases to be dried at 100° C.

DOVER CHEMISTS' ASSOCIATION.

The annual meeting of this Association was held on Thursday, December 8, Mr. H. PEAKE, J.P., C.C., in the chair.—The usual routine business having been transacted, Mr. Peake was unanimously re-elected Chairman for the ensuing year, with the best thanks of the members for past services. Mr. Ewell was also re-elected Secretary and Treasurer.

Mr. BOTTLE having put before the meeting the proposed action of the Pharmaceutical Council with regard to the poison regulations and the letter to the Lord Chancellor, Mr. W. J. BARNES said that he would propose a resolution, and in doing so he wished to point out that, before asking the support of the Government in favour of

AN ACT TO AMEND THE PHARMACY ACT OF 1868,

in accordance with the intention of the Legislature when that Act was passed, it was very necessary that chemists should first

put their own house in order. When the Society approaches the Privy Council, it is at once met with a reminder that no poison regulations have been framed, as was originally intended, and there is no doubt that the Society has been in bad odour with the Privy Council in consequence. Just now seems a very good opportunity of putting things on a better footing, and he earnestly hoped that the whole body of chemists would unite in agreeing to these regulations, and he would urge on every member of the trade the importance of joining the Society. Unless the Society can say that it represents the great majority of the chemists, its influence and power is very much weakened. One other thing he would like to mention, and that was the desirability of abolishing the so-called "Widow's Clause." Were this done, he felt sure it would help considerably to further the efforts to stop company trading. There were probably very few widows carrying on business, and there was no doubt it would be better in almost every case for the widow to dispose of the business on the death of her husband.

Mr. J. F. BROWN said the proposal of the Deputy-Mayor had his cordial sympathy, but he could not conceal from himself the belief that before reaching the position they aspired to they had a long hill to get up. He might claim for chemists that they were more highly educated than the average tradesman; they had often been the pioneers of scientific progress, and certainly in present company he could maintain that they undertook their full share of civic duty. Yet what position did they occupy in public opinion? Chemists were the Ishmaelites of the shopkeeping community—poached upon by nearly every other member. Often they were deprived of their scanty emoluments by the action of the medical profession; unjustly aspersed by coroners ignorant of law, and medicos innocent of pharmacology; libelled by those brigands of modern commerce, the cutters; whose plea for public favour was couched in the terms of St. Paul's appeal to his converts "I robbed other men to do you service." Their motives and honesty were constantly slandered by the big bullies who could spend vast sums in incessant and brazen self-assertion, and, lastly, the educated public to a large extent meet the statements of chemists about the wares they vend with habitual incredulity and invincible distrust. Before their position could be greatly improved a great change must come over the public attitude towards any privilege or monopoly granted to those who have proved their competence to serve the community in any capacity. There were indications that such a change was in progress. The action taken by the dentists, the opticians, and the plumbers showed the trend of public opinion. But the times were far from being ripe yet, and he wished to utter a word of warning against expecting too much from even the return of a member to Parliament to represent their interests.

Mr. BARNES thought it was very desirable that chemists should have

SPECIAL REPRESENTATIVES IN PARLIAMENT,

and he had for a long time hoped that steps would be taken to secure the services of chemists with the ability to advocate their cause in the House of Commons; he was certain that it would be greatly to their advantage. All Governments were much more susceptible to a body of men whose representatives got in the House; as an instance of this he would mention the case of Elementary School teachers. They had been trying for years to get a Pension Bill passed, but without success until the present House of Commons was elected. They have two representatives now, one on each side of the House, and as a consequence he believed a Pension Act was passed last session. It was the same with other associations, everybody was represented but the chemists, and if they did not get all they wanted, they all got something, except the chemists. They had it in their own hands to alter this state of things and he would remind them of the old proverb: "Providence helps those who help themselves."

It was proposed by Mr. W. J. BARNES, seconded by Mr. J. F. BROWN, and carried unanimously,

That it is desirable to have one or more chemists as members of Parliament to represent the whole body of chemists and druggists, and that the trade should provide the funds for election expenses.

Proposed by Mr. W. J. BARNES, seconded by Mr. J. F. BROWN, and carried unanimously,

That this meeting accord their approval of the proposal of the Council of the Pharmaceutical Society to make the Poison Regulations compulsory, and also of approaching the Lord Chancellor on the subject of company trading in pharmacy.

PHARMACEUTICAL SOCIETY OF IRELAND.

On Wednesday, December 7, the monthly meeting of the Council was held at 67, Lower Mount Street, Dublin. The PRESIDENT, Mr. R. J. Downes, was in the chair, and the other members of Council who attended were: The Vice-President (Mr. Beggs), and Messrs. Wells, W. D. Porter, Connor (Newry), Baxter (Coleraine), Ryan, and Dr. Walsh.—The PRESIDENT, in the course of a somewhat lengthy address, referred to

THE RECENT DECISION

in the case of the Queen (Conyngham) *v.* The Pharmaceutical Society of Ireland, argued and decided in the High Court of Justice, Queen's Bench Division, and reported that the Law Committee met at the Courts on the morning of the judgment, and also subsequently in consultation with Counsel, when the question of appeal was fully considered, and it was unanimously decided to recommend that they should abide by the mandamus. He then referred to a friendly visit he had received from Mr. Rankin, the Hon. Secretary of the Chemists' and Druggists' Society of Ireland (North of Ireland Branch), the object of which was to ascertain how the Council were disposed to the druggists as a body, and how it would receive their return. It appeared that they had been discussing the question of whether they would recommend their members to join the Society as associates. Mr. Downes expressed the hope that the year 1898 may be known as the year of reconciliation. He then mentioned that the fine imposed upon Mr. James Hogg had been reduced from £5 to £2. He considered it became an urgent question for the Council to consider whether it would continue to direct prosecutions or refer them to the Crown Prosecutor for the district and ask him to conduct them. The Council would be pleased to learn that the Medical Council had decided to recognise their Society in the review and preparation of the Pharmacopœia.

Mr. WELLS, referring to the visit of Mr. Rankin, said the pharmaceutical chemists did not want to be antagonistic in any way to the druggists. They had never been so to the law-abiding druggists, but they had been opposed to gentlemen who only got a druggist's diploma and then compounded prescriptions. Unfortunately, some of those gentlemen who had been placed on the Council had worked, not in the interests of the druggists at all, but for their own interests. But if the druggists could show men like Mr. Turkington, it would be a pleasure to work with them.

The VICE-PRESIDENT said he met Mr. Rankin at the Law Courts, and told him that they would be perfectly ready to meet the druggists if the druggists would meet them fairly.—Mr. WELLS, speaking on the subject of representation on the Pharmacopœia Committee, questioned whether they would be right in accepting any such representation as the British Society had done. He thought that if the Pharmaceutical Society of Great Britain had acted as they did, and held aloof from the General Medical Council, the Societies would now have been represented on the Pharmacopœia Committee.—The PRESIDENT said the only intimation of the matter he had was a paragraph which appeared in one of the journals, stating that some recognition was decided on.—Mr. KELLY said that "snubbing" seemed to be the portion that the Council was to receive from the Castle, and he thought that if the Lord-Lieutenant had not the power of making remissions, as in the case of Mr. James Hogg, the Council should question them. As for the druggists, he should be delighted to see druggists on the Council who would keep to the law. As to representation on the Medical Council, they should see what their rights were and demand them.—Mr. BAXTER said it was absurd that the Pharmacopœia Committee should not have on it a representation of pharmaceutical chemists. He was at one with the President in desiring to show favour to druggists who would work harmoniously with the Council. A letter from the Privy Council Office transmitted a copy of the report of Sir George Duffey, M.D., Visitor on the examinations held by the Society during the year 1898. The report stated that the examinations of the Society during the year were conducted in a satisfactory manner. The examiners were uniformly painstaking and considerate towards the candidates; the supervision was good and the several arrangements were adequate. The consideration of Sir G. Duffey's report was deferred until the next meeting.—A letter from the Under-Secretary, Dublin Castle, intimated that the Lord-Lieutenant had reduced the fine imposed on James Hogg to £2.—Mr. KELLY: How much has the Society lost by that prosecution?—Mr. WELLS: About £10.—I would be disposed to ask Mr. Field, M.P., to put a question in Parliament as to whether the Society can be expected to carry on

prosecutions under the circumstances.—Several donations of books were then acknowledged.—The VICE-PRESIDENT moved pursuant to notice that Regulation 15 be amended so as to read as follows :

Every candidate for the Pharmaceutical Licence Examination will, in addition to all other certificates hitherto required, be required to present a certificate of having attended a course of botany and materia medica, of not less than three months' duration, at some school recognised by the Pharmaceutical Society of Ireland. Such certificate must show an attendance of not less than twenty lectures of not less than one hour in each subject.

As the regulation stood, the attendance of the candidate might be only for a week or a month, and he proposed to introduce the words "not less than three months' duration" in order to spread the lectures over that period.—Mr. BAXTER seconded the motion, which was unanimously agreed to.—Other business, including reports, having been disposed of, the Council separated.

HALIFAX AND DISTRICT CHEMISTS' ASSOCIATION.

The annual dinner and meeting of this Association were held at the Old Cock Hotel, on December 8, Mr. COBB, President, in the chair. There was a goodly array of members, and there were present also the following guests: Mr. Waddington, President of the Bradford Chemists' Association; Mr. Crook, Vice-President of the Dewsbury Chemists' Association; Mr. S. Norman Pickard, local Secretary of the P.A.T.A.; and Mr. James Smith, of Hirst, Brooke and Hirst, Ltd. A vote of condolence was passed to Miss Farr on the lamented death of her father, an old and esteemed past president and member of the Association. It was explained that it was impossible to postpone the meeting, because all arrangements had been completed and delegates invited from other towns, and there was not sufficient time in which to communicate with country members and guests, and also to countermand the dinner.

The Hon. Treasurer, Mr. W. HAIGH, read his annual report which showed the Association to be in a sound financial position.

The Hon. Secretary, Mr. H. C. BRIERLEY, in his report stated that the past year of the Association had been very successful, and that it had seldom, if ever, been stronger numerically. There had been an increase of five new members, but death had unfortunately taken away two very good members in the persons of Messrs. H. Seely, F.C.S., and J. Farr. The Association had been especially active in Parliamentary work during the past session, and the Pharmacy Acts (Amendment) Bill, which was supported by the members, had since become law. The Duke of Devonshire's Poisonous Substances Bill had been opposed most strenuously, and had since been abandoned by the Government. Last month, Mr. Clement Fielding, M.P.S., was elected local secretary of the Pharmaceutical Society of Great Britain.—The election of officers resulted in Mr. Cobb being re-elected President, Mr. Haigh, Treasurer, and Mr. Herbert C. Brierley, Hon. Secretary for the ensuing year. Speeches were delivered by the visitors, Councillor Hebden, Messrs. T. Briggs, Gibson Q. Dixon, J. B. Brierley, and others.—Songs were sung by the Secretary, Mr. Tiffany, and Councillor Hebden, and selections on the piano were given by Mr. Reginald Brierley.—The dinner was catered for in an exceedingly capable manner by Mr. Talboys, the proprietor.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.

At a special meeting of this Association, held at the County Restaurant, Bradford, on December 13, it was unanimously agreed—

1. That in the opinion of the meeting it is desirable that members of the Council of the Pharmaceutical Society of Great Britain should be requested to visit the different centres and address meetings under the auspices of local associations where possible, submit identical resolutions, and obtain the general opinion of the trade respecting further legislative action. The following questions should be specially considered:—

1. Restriction to chemists of the sale of medicinal drugs and compounding of medicine.
2. Company pharmacy.
3. Covering of unqualified traders by registered chemists.
4. Handling of poisons and additions to Schedule.
5. Compulsory membership of the Society of qualified individuals.
6. Exemption from jury service of members of Society.
7. Exhibition of names of qualified members over their establishments.

2. In view of the passing of the Pharmacy Acts Amendment Act, 1898, this meeting suggests that members of this Association who are at present members of the Pharmaceutical Society use

their best efforts to induce all registered chemists in the district to become members of the Pharmaceutical Society, and are requested to render any assistance in their power to the local secretaries in carrying out this resolution.

3. This meeting of the members of the Bradford and District Chemists' Association records its conviction that it is not worth their while encouraging in any way the sale of such advertised specialties as bear at the current retail prices no appreciable profit. Accordingly they decline to exhibit or distribute advertising matter having for its object the popularising of such specialties, unless their proprietors become members of the P.A.T.A., or guarantee a living profit on their goods, thus showing practically their sympathy with the great body of retail chemists. Also that copies of this resolution be sent to the trade papers and the following firms: Dinneford and Co., Kay Bros., W. T. Owbridge, A. J. White, Ltd., Thomas Beecham, James Cockle and Co., J. M. Richards, Edwards and Co., G. R. Sims Hair Restorer Co., Scott and Bowne, Anglo-American Drug Co., and J. C. Eno, Ltd.

4. That this meeting of the Bradford and District Chemists' Association desires to compliment the Dewsbury and District Chemists' Association on their action in regard to the sales of unprofitable proprietary articles.

PHARMACEUTICAL MEETING AT PRESTON.

An important meeting of chemists was held at the White Horse Restaurant, Preston, on Tuesday, December 13, when Mr. ARKLE occupied the chair, and there was a large attendance of Lancashire chemists.

The CHAIRMAN said they had met to discuss the best means to remedy the existing state of things in pharmacy. The Pharmaceutical Society was helpless to assist chemists unless the latter enrolled themselves as members. If the Society went to Parliament to secure

AMENDMENT OF THE PHARMACY ACTS

its leaders were necessarily confronted with the query, "Whom do you represent?" and they could not say that they represented the bulk of registered chemists. So long as that state of things existed there was little hope of legislation, and it was owing to the apathy which existed that chemists were surrounded on every side by limited companies, who carried on the business of chemists and druggists. So far as concerned company trading, the Pharmacy Act of 1868, from Sections 1 to 15, was a dead letter, but chemists should urge the Pharmaceutical Council to introduce a new Bill, which must, however, be backed up with all the strength available. Chemists wanted the trade for the trade, but the Society could not apply to Parliament unless it received the general support of registered chemists throughout the country.

Dr. PAUL, who was introduced as being present in a private capacity said there appeared to be a strong desire to do something to meet some of the more serious difficulties under which registered chemists laboured at the present time. Competition was a thing which chemists had to face just in the same way as everybody else, but the drawback chemists chiefly complained of was that they had to contend with unreasonable competition on the part of companies carrying on business as chemists and druggists and assuming titles which were intended to be reserved by Statute to persons who had satisfied the requirements of the Pharmacy Acts. The use of the title "chemist" under those circumstances was distinctly an infringement of the provisions of the Pharmacy Act of 1868, and was one of the most detrimental influences that operated against chemists. The sale of poisons and the dispensing of medicine afforded other aspects of what chemists suffered in competition with stores, and here the grievance was not that an unregistered person was competing unlawfully and unfairly with them, but that some of their own fellow qualified men were assisting the stores to carry out a work they could not possibly carry out themselves. When qualified men lent their services to companies consisting of unqualified persons they were assisting in the carrying on of a business which was growing to such an extent that it had become to chemists a question of doing something to stop it or ceasing to exist. So far as chemists were concerned, that was a very serious business, and, so far as the public was concerned, it was equally serious. The protection in regard to the sale of poisons was by no means perfect, for there was no assurance that all poisons sold at stores were handled by registered persons. There was an absolute absence of protection for the public in the matter of dispensing medicines,

because it was generally done out of sight in the back premises, and it was difficult, therefore, to say whether it was dispensed by a qualified man or not. To put a stop to the evils indicated it was essential that the qualified chemists of the country should unite, and by their combined exertions bring such pressure to bear upon public opinion and the Government that some remedies might be obtained. With regard to company trading, in anything the Pharmaceutical Society did it must be supported by such a large majority of the trade that the Council of the Society might be regarded as a representative body with the force and influence of the whole trade behind it. The question was often asked, What had the Society done for the trade? Well, that was a question which involved a fallacy to begin with. It overlooked the fact that the constitution of the Society, according to its Charter, was one of absolute self-government, and if the Society only represented one-fourth of the trade, it was impossible to exercise action which could be said to be representative of the whole trade. The complaint, therefore, was really a censure upon those who entered the trade and who did not join the Society. That had operated against the Society in bringing Bills before Parliament. Added to that was the opposition which came from within, and, as appropriate to the question of company trading, he would refer to Section 16 of the Act, which provided for the continuance of a deceased chemist's business by his executors. It was of course perfectly legitimate if legally carried out, but the privilege had been so grossly abused that it had really become a basis for the construction of bogus one-man companies. Chemists who might endeavour to devise measures for dealing with company trading would probably meet with considerable opposition from persons who still desired to maintain the freedom to continue a deceased chemist's business for all time under the control of executors. That and other difficulties must be fought out within the body, as Parliament would not take much cognisance of affairs of that kind beyond recognising the absurdity of the position. If chemists asked for the suppression of trading by companies of unqualified persons they would almost certainly be met with the answer: "You must first of all provide for removing that objection which exists in Section 16 of the Pharmacy Act!"

Mr. VINCE (Lancaster), in the course of the subsequent discussion, agreed that unless chemists put the Society in a position to help them they could not hope for any benefit. It was unfair to expect the minority to fight the battles of the majority.

Mr. J. H. TAYLOR (St. Annes) believed the great obstacle to membership of the Society had been the guinea subscription. There were only two ways of crippling company trading. The Society must either obtain power to strike off the Register the name of any chemist guilty of unprofessional conduct, or join with the Medical Council in the endeavour to make it illegal for a company to carry on business as an individual. The Society had certainly done all it could to elevate the status of the trade, but he should like it to be made compulsory that every boy must pass his Preliminary examination before entering the trade. Such action would guarantee a certain education and improve the class of boys.

Mr. STUART (Preston) strongly urged the formation of an Association in Preston, and

Mr. WHITEHEAD (Morecambe) thought it might be possible to form a joint Association for Preston, Blackpool, Lytham, St. Annes, Lancaster, and Morecambe. They could then associate themselves with Blackburn, then with Manchester and Liverpool, and so on until the whole of Lancashire was united.

Ultimately, the CHAIRMAN proposed the following resolutions:—

- (1) That the use of the title "chemist" by unregistered persons trading as companies is an infringement of the Pharmacy Act, 1868, is detrimental to the interests of legally qualified persons, and that it requires to be stopped by the co-operation of all registered chemists and druggists as members of the Pharmaceutical Society.
- (2) That the support rendered by legally qualified chemists to companies trading as chemists and druggists being the only means by which companies are enabled to continue that business in defiance of the provisions of the Pharmacy Act, this meeting declares such injurious and disloyal action on the part of legally qualified persons to be deserving of the most severe condemnation of their colleagues.

Mr. WILLIAMSON (Preston) seconded, and the motions were unanimously approved.

ALBUMIN GLYCERIN FOR FIXING MICROSCOPIC SECTIONS ON THE SLIDE.—This is obtained by mixing 1 part of albumin with 1 part of glycerin. The solution is spread out thinly, and the objects fixed by warming them slightly.—*Pharm. Centr.*, xxxix., 112.

NORTH-EAST LANCASHIRE CHEMISTS' ASSOCIATION.

A special meeting of the members of this Association was held at the White Bull Hotel, Blackburn, on Tuesday last, when the chair was occupied by Councillor RALPH SHORROCK, Vice-President, and there was a large attendance.

The CHAIRMAN said chemists were not satisfied with

THE PHARMACY ACT OF 1868.

The great question before them was, whether they should patch that measure up or seek for a new one. It was a very difficult question, but limited liability companies were doing an immense amount of harm to the chemists and druggists. Under the present condition of affairs it behoved chemists to be united, so that they might have more influence with the powers that be. He hoped that Association would take a strong action in bringing about a state of things that would show the country at large that it was necessary to adopt some course that would bring about a measure to their satisfaction.

Mr. WELLS (Blackburn) then moved the following resolution:—

That we are of opinion that limited liability companies owned by unqualified persons are illegal, and we urge this opinion on the Council of the Pharmaceutical Society with a view to immediate action to test the question.

They would all agree with him that the pharmacy laws were unsatisfactory, and that they ought not to rest until they had got them amended. That seven people could form a company and open as many chemists' shops as they chose was, he contended, not in accordance with the spirit of the Pharmacy Act. There was need for qualified chemists for the safety of the public, and though the unqualified companies would say that they did keep qualified assistants, it was simply to hand medicine over the counter. He trusted that some good legislation on the subject would soon be forthcoming.

Mr. J. BROWN (Burnley) briefly seconded the motion, and in the course of the subsequent discussion the meeting was addressed at great length by

Mr. R. L. GIFFORD (Blackburn), who said a monstrous state of affairs existed in the conditions of pharmacy. Though for over thirty years men had been compulsorily trained and examined, yet at the end of the century there was no regulation whatever of the practice of pharmacy. The State's treatment of chemists was both inhuman and dishonest, and the law affecting chemists had become a simple absurdity. The present unholy state of affairs was not known to the general public or to members of Parliament, or they would allow that it is incongruous, unjust, and wrong. That was no mere assertion, but a tested fact, shown to be correct in numberless instances. But reform was impossible except by unanimity, and consequent upon that came the question, "How should they become unanimous?" The first and most urgent duty of the Council of the Pharmaceutical Society was to get into touch with the great mass of chemists, more especially the younger portion. It must be driven home that it was altogether a mistake to think that the Council's interest in men ceased with the examination. As regards the Pharmacy Act, it had become so manifestly absurd and unjust that they were deeply impressed that no tinkering with it would do. They said tackle questions as they arose, as, for example, the poisons regulations and company pharmacies, but let no question whatever prevent them at once preparing to face Parliament with the statement distinctly put, that in the present state of the law the public safety was not protected in the manner intended. The opportunity was there. Public opinion was interested. The medical, dental, and veterinary professions were actively engaged in watching and preparing legislation. Illegal companies were increasing, probably in order to magnify the interests concerned. Those things considered, common sense said "Now is the time for assertion."

Mr. HAWORTH (Blackburn), endorsed everything that had been said. They could not, he observed do better than put their shoulders to the wheel, and with a long pull, a strong pull and a pull altogether make their voices heard.

Mr. COWLEY (Liverpool), Secretary of the Federation of Local Pharmaceutical Associations, also addressed the meeting, and in the course of his speech remarked that registered chemists who joined the Pharmaceutical Society had the power of delegating Councillors to Bloomsbury Square, and it lay with them to select the proper men. They must consider whether the gentlemen proposed

as Councillors were fit and proper persons to represent them, and if they found they were not they should strike their pen through the names. There were capable men in the provinces, as well as in London, and he said the provinces should wake themselves up, throw off their lethargy, and do their utmost to send to the Council gentlemen who were in touch with them.

Mr. WILKINSON (Colne) also supported the proposed resolution, and it was finally carried.

Before the meeting closed the result of the meeting held at Preston was announced (see pp. 657-8), and the CHAIRMAN read the resolutions passed at that meeting. Both the resolutions received the support of the Blackburn meeting as covering the whole situation.

FORFARSHIRE CHEMISTS' ASSOCIATION.

A meeting of this Association was held at the Queen's Hotel, Dundee, on Wednesday last, Mr. KERR, President, in the chair. There was a large attendance.

The CHAIRMAN said he was gratified by such a large attendance, showing an increased interest in pharmaceutical politics, and he congratulated those present on the improved position, the result of the Pharmacy Acts Amendment Act, 1898, which has opened the door to all those who wish to possess the privilege and advantages of membership of the Pharmaceutical Society. He hoped many would show their appreciation by now joining the Society. The chief aim of local associations should be to beat up recruits for the parent Society, the need above all things being the power of numbers. Though Dundee stood fairly well in that respect, there was room for improvement in the district.

The SECRETARY read some correspondence with a London firm of wholesale druggists regarding a complaint that they had supplied cutting grocers with capsules in boxes for retailing, bearing their trade title as "grocers." As they admitted it was the result of a mistake, and that it would not be repeated, the subject was dropped.

The CHAIRMAN said his attention had been drawn to a circular accompanying Beecham's pills, and he was shocked at its contents. He moved—

That this meeting having discovered the nature of the contents of the booklet issued with Beecham's pills, and having seen in the *Pharmaceutical Journal* that Mr. Beecham has had to alter it in order to conform to the Indecent Advertisement Act of South Australia, this meeting regrets that the circulation of such matter is permitted in this country, protests against chemists being made a medium for distributing it, and instructs the Secretary to communicate this resolution to Mr. Beecham.

This proposition was agreed to.

Mr. FERRIER then proposed—

That all chemists trading under ancient titles shall be required to use the name of the present owner in conjunction therewith.

He said this was necessary in the public interest and due to other pharmacists in business.

Mr. KERMATH seconded the proposition, and it was carried.

Mr. KERMATH then moved—

That this meeting considers that the present recommendations for the storage, etc., of poisons should become regulations subject to the provisions of the Pharmacy Act, 1868.

He thought that would strengthen the position of the Pharmaceutical Society in communications with the Privy Council, and impose no serious restrictions on modern pharmacists.

Mr. CURRIE, in seconding, said this was one of the difficult points the Society had to contend with, in needing to explain why the recommendations had not been carried out.

Mr. FERRIER thought it would be difficult to prove any fault against present arrangements to judge from the few accidents in chemists' shops, and to adopt the proposed regulations would be to put their necks in a halter. He was disposed to move an amendment. After some discussion, however, the motion was carried.

Mr. PARK proposed—

That this meeting approves the action of the Pharmaceutical Council in addressing the Lord Chancellor on company trading as affecting chemists.

and read the letter referred to, which explained the chemists' position in a satisfactory manner.

Mr. FORD (Kirriemuir) seconded, and the motion was carried.

BAILIE DOIG speaking to the question What should a new Pharmacy Bill contain? said, while it was easy to state general

wants it was difficult to formulate particulars, but discussion would ripen opinion. First, after severe examinations chemists have a better claim to protection than some other professions; secondly, their position as retailers of poison necessitated amendment of the list of poisons, which should all be under chemists' control; thirdly, they ought to have more liberty in describing the uses of domestic medicines, unfettered by Inland Revenue restrictions. The authorities should, in chemists' interests, modify their regulations. Why should ordinary compound medicines be handicapped simply because they are compound, while every simple escapes? He moved—

That this meeting considers it to be the duty of the Council to draft a Bill.

This also was agreed to.

Mr. KERMATH thought influence should be brought to bear on M.P.'s in reference to the Bill of the Lord Chancellor, and thought all associations should use such influence. A vote of thanks to the Chairman closed the meeting.

LEICESTER CHEMISTS' ASSOCIATION.

A meeting of the members of the Leicester Chemists' Association was held at the Victoria Coffee House on Wednesday night, Mr. E. H. BUTLER presiding.—The object of the meeting was to consider the proposed Pharmacy Bill and poisons regulations.

Mr. GOODNESS, Hon. Secretary, referred to the proposed amendment to the company laws brought forward by the General Medical Council, and thought that the Council of the Pharmaceutical Society had done well in asking the Lord Chancellor to grant them the same privileges as requested by the medical and dental professions. He was of opinion that the compounding and dispensing of prescriptions should be restricted to persons duly qualified under the Pharmacy Acts.

Mr. THIRLBY said he should like to see a resolution sent from that meeting supporting the action which had been taken, with a view of getting the law with respect to company trading altered. He considered the present time most opportune to take action, for it was apparent they had the sympathy of the Lord Chancellor on their side. He begged to move:—

That the members of the trade in Leicester give their unanimous support to the Pharmaceutical Society of Great Britain in their endeavour to obtain an amendment of the law in regard to company trading, whereby the word "person" in the Pharmacy Act, 1868, shall be made to include corporate companies.

Mr. HEARNshaw did not think that to desire that all persons who dispensed should be duly qualified was practical.

Mr. CLEAVER seconded the motion, which was carried unanimously.

Mr. HAMPSON next moved:—

That the members of the trade be urged to become members of the Pharmaceutical Society forthwith, and thus give it all the support in their power.

Mr. LEWIS OUGH seconded, and the motion was carried unanimously.

The meeting next proceeded to consider the storage, etc., of poisons, the resolutions passed by the Newcastle Chemists' Association and the Manchester Pharmaceutical Association being discussed. It was moved by Mr. THIRLBY—

That this meeting of Leicester chemists is of opinion that, if the Council of the Pharmaceutical Society believes that a modified measure of the regulations would improve their position under the present Acts of Parliament and conduce to the greater safety of the public and for future legislation, the case would be met by the promulgation of Parts I. and III. of the 1871 recommendations, but condemns Part II. as unworkable.

Mr. HUTTON seconded, and

Mr. GOODNESS thought it would be wise to leave the regulation of a man's pharmacy to his own judgment and to his own particular requirements. He should fall in line, however, with any scheme that would enforce some special label for all poisons.

Mr. CLEAVER and Mr. HEARNshaw were inclined to agree with Mr. Goodness, and

Mr. OUGH thought it desirable that they as an Association should take some line of action, but considered the proposed resolution as far as they could be expected to go.

On the motion being put it was carried unanimously, and this concluded the business.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY.

A meeting of the members of this Society was held at the Society's rooms in Surrey Street, on Wednesday evening last.—Mr. JOHN AUSTEN presided over a very good attendance. After the usual business, which included the admission of three new members and one associate,

Mr. G. SQUIRE, President, then proceeded to read a paper on

COMPANY PHARMACY: ITS CAUSE AND CURE,

which is printed in full at page 646.

The CHAIRMAN, in opening the discussion, said the chemist was a necessity, and was going to make himself a necessity, notwithstanding company pharmacy.

Mr. G. ELLINOR contended that company pharmacy was not legal. The Act of 1868 only provided for the registration of individuals who complied with its provisions. A company was not an individual, it was a thing without body, soul, conscience, or anything else except the name, and, therefore, could not register. A number of members of Parliament had told him that the President of the Board of Trade had no legal right to go beyond the Pharmacy Act when registering companies; that he did go beyond it was patent, and he was doing a villainous act in registering people who did an illegal thing. He spoke of past discussions in the ranks of the chemists and druggists, and urged that they should all unite and endeavour to obtain parliamentary representation.

Mr. NEWSHOLME said the fault was that the Companies Act was so loosely framed that the Board of Trade was practically compelled to register all applicants.

Mr. MORRISON said that if they went before Parliament they would be asked if the public would be better protected by the fact that they were trading as individuals instead of companies. What difference did it make to the public in general whether the qualified seller of a poison was at the back of his own counter or the counter of unqualified people? The speakers had been arguing for their self-preservation and not really for the preservation of the public. A Bill for the attainment of the ends of individuals would have no prospect of success in Parliament. They were all agreed as to the cause of company pharmacy, but the cure suggested by the President would, instead of aiding pharmacy, make it suspected when it was mentioned in Parliament.

Mr. PRESTON said Parliament had made certain demands upon certain people for certain qualifications, and ought now to see that the body which it had created had some protection. He urged that they should band themselves together and go to Parliament in a united body, and then they might hope to do something with regard to legislation.

Mr. EARDLEY said if anything was brought before Parliament the main thing inquired into would be how the public would be benefited, the pharmacists would not be considered in any way.

Mr. WARD looked hopefully forward to the future of pharmacy. He wanted to see the time come when the pharmacist who went into a drug store would be looked upon as a black sheep. Let the rising generation of pharmacists steer clear of drug stores and the evil would be cured. He moved:—

That this Association strongly recommends every registered chemist not already a member to, in his own interest, join the Pharmaceutical Society, and thereby add to its powers to legislate for the good of its members and the progress of pharmacy, and this Association heartily approves of the action of the Pharmaceutical Council in its communication with the Lord Chancellor.

Mr. NEWSHOLME said the Pharmaceutical Council had not been at all idle on the subject, and he was glad that the views of Mr. Squire coincided so well with what was done at the previous Wednesday's Council meeting. He believed that those who framed the Pharmacy Act never dreamt but that the proprietor of a pharmacy business was to be registered as well as the men who actually handed the poisons over the counter, and this was necessary because there was as much skill required in buying drugs as in selling them. In going to Parliament they must show that the public would be better served by individuals than by companies, and one point which showed this was the greater interest taken in the public by the individual pharmacist, who simply made himself a slave of the public night and day.

The motion was seconded by Mr. H. E. IBBITT, and carried. The meeting ended with a vote of thanks to Mr. Squire.

NOTTINGHAM AND NOTTS CHEMISTS' ASSOCIATION,

At a meeting of this Association, held on Wednesday last, Mr. E. GASCOYNE, Vice-President, in the chair, Mr. EBERLIN, the Secretary of the Association, read a paper on

The More Important Preparations of the new B.P.,

more especially in their relation to the Food and Drugs Act. He instanced a number of articles the standard of which had undergone alteration, and urged the importance of chemists testing their supplies. Though the B.P. was not a legal standard under the Sale of Food and Drugs Act, it had been so often quoted in evidence that it had become unsafe to sell preparations which did not correspond with its requirements, unless distinctly giving the purchaser knowledge of that fact. The rulings of the Courts had of necessity, in so vaguely defined an Act, been most contradictory; they must be so until the Act was amended and a proper standard fixed under it, and a Board of Reference instituted, such as had been proposed. Whilst chemists, as a body of educated and honourable men, were desirous of always supplying the best drugs to their customers, they had a right to demand that the Sale of Food and Drugs Act should not be administered in a harsh and literal manner as against a sensible and reasonable one. It would be well, therefore, where cases of petty persecution took place, for them to unite and defend themselves vigorously; for such action, if crowned with success, would curb the tendency to over-zealousness which officialdom sometimes showed, and would render the analyst employed more careful.—A long discussion subsequently took place, after which Mr. EBERLIN briefly replied.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

A meeting of the above Association was held at the rooms, Whimble Street, on Wednesday, December 14, when Mr. C. J. PARK (President) occupied the chair.

The PRESIDENT having suggested that as many chemists as possible should become members of the Conference,

Mr. J. COCKS introduced a discussion on the best means to adopt to bring before the attention of all non-members the necessity of increasing

THE MEMBERSHIP OF THE PHARMACEUTICAL SOCIETY

so as to make that body more fully representative of the entire trade. He suggested that the only effectual way of increasing the membership was by the personal canvass of all chemists by a deputation of two or three members in conjunction with the local secretaries.

The discussion was continued by Messrs. G. BREEZE and HUNT. The latter, as local secretary, concurred in the suggestion, and pointed out the small number of resident chemists in Plymouth who were not connected with the Society.

The following resolution was then proposed by Mr. COCKS, and passed:—

That this Association is of opinion that it is most important that the membership of the Pharmaceutical Society should be largely increased, so that it may more fully represent the best interest of the trade, and with that view will do its utmost by personal canvass and correspondence to induce all chemists who are non-members to unite themselves to the Society.

The CHAIRMAN then introduced the question of the

STORAGE AND SALE OF POISONS,

and it was proposed by Mr. BREEZE—

That this Association is of opinion that the time has arrived when the Pharmaceutical Society should make the regulation for the sale and storage of poisons into a compulsory Bye-law, to be enforced, if necessary, by an official appointed by the Council of the Pharmaceutical Society.

This was seconded by Mr. READE, who remarked that he had had experience of all the systems given in the recommendations. In its simplest form this consisted in attaching a strip of sand-paper to the back of the bottle, so that, on taking down the bottle the attention of the dispenser was at once called to the fact that he was handling poison. The most effectual plan, and one which he had been using for twenty-six years, was that of poison cupboards, the objection to this being the expense of providing

sufficient accommodation for all the articles containing scheduled poisons.

Mr. TURNER considered that the success of the scheme depended upon the simplicity of the means adopted.

The CHAIRMAN pointed out that it would be much better to have this matter dealt with by the Pharmaceutical Council, instead of having regulations drawn up by the Privy Council and enforced by Act of Parliament.

Mr. DAVY hoped that the particular regulations passed at the General Meeting of the Society would be in accordance with the wishes of provincial chemists.

Mr. BARGE pointed out that a certain latitude should be left to individual chemists to carry out such rules as their intelligence dictated.

Mr. HUNT expressed his approval of the views enunciated by Mr. Proctor in last week's Journal with regard to the use of distinctive labels.—The resolution was then carried unanimously.—

It was subsequently resolved to support the view of the Federation with regard to the taking of steps to empower the Pharmaceutical Society to remove from the list of qualified men any person or persons who shall act in a manner detrimental to the best interests of the profession. A hope was expressed that the Lord Chancellor would be induced to deal with the matter.

MANCHESTER PHARMACEUTICAL ASSOCIATION.

At the monthly meeting of the above Association held on Wednesday evening, Mr. G. S. WOOLLEY presided. At the outset of the proceedings, the Chairman gave a hearty welcome to several gentlemen from Wigan, and after some other preliminary business had been disposed of,

Mr. J. RYMER YOUNG proceeded to read his paper on

The Pharmacy Act of 1868, and its Literal Interpretation.

The paper, which was well received, is printed in full at p. 638.

At the conclusion, the CHAIRMAN said their best thanks were due to Mr. Young for his able paper, which must have taken him a considerable time to compile, and showed great acquaintance with the Pharmacy Act. He thought it could be utilised very materially during the winter if it was printed *in extenso*, as he hoped it would be. On behalf of the Association he begged to thank Mr. Rymer Young for his very able paper.

Mr. J. A. GILBERT seconded the motion, and agreed that the paper should be printed.

Mr. HARRY KEMP, in supporting the motion, said that the paper dealt with an immense amount of matter which it would be impracticable, even if they had the time, to discuss satisfactorily then. He trusted it would appear in the press, so that not only the members of the Association, but chemists throughout the country, would take more than a passing interest in the matter. He urged that the various questions dealt with should be very carefully considered, and if it was possible they should press some of those matters home for decision in the courts of law.

Mr. W. KIRKBY also supported, and said he wished it to be known how thoroughly he supported the views of Mr. Young in finding out how useful that Act might be made to them. There were many points which had been touched upon by Mr. Young, which showed they had not used it as much as they ought to have done, and he hoped the Pharmaceutical Council would feel its hands strengthened by that meeting passing some resolution urging them to test some of those cases which Mr. Young had brought under their notice, with a view to ascertaining if something could not be done with regard to a curtailment of the privileges of company pharmacists.

The CHAIRMAN thought their appreciation of Mr. Young's paper quite covered the ground which Mr. Kirkby had indicated. He left them, therefore, to carry the resolution with acclamation.—This suggestion was cheerfully complied with.

Mr. RYMER YOUNG, in replying, said that what he had advanced was purely his own opinion, and must not be taken as representing that of the Pharmaceutical Council. There was no question of originality about his paper, but he had long thought they might discuss the 1868 Act. He found that different clauses were capable of different readings, and he thought they might do well to rub up an old law, having regard to the present miserable state of the Pharmacy Acts.

NEW REMEDIES.

ERYTHROL IN BUTYRIC ACID DYSPEPSIA.—Under the name of erythrol, A. Robin has prepared a double iodide of bismuth and cinchonidine, which is said to be a useful remedy in the somewhat rare form of acid dyspepsia, in which a butyric fermentation takes place. The remedy is given in doses of 1 to 5 centigrammes combined with hydrated magnesia in a cachet.—*Repert.* [3], x., 260.

ALSOL.—Under this name aluminium aceto-tartrate is introduced as an antiseptic. Having an agreeable taste, it is useful for gargles, especially when sweetened with a little sugar or glycerin. It should not be prescribed in too concentrated solutions, for most purposes from 1 to 5 per cent. is sufficient.—*Nouv. Rem.*, xiv., 228, after *Pharm. Zeit.*

QUINOLINE BISMUTH RHODAATE.— $(C_9H_7N \cdot HSCN)_2Bi(SCN)_3$ is a coarse powder, reddish-yellow in colour, with an acrid smell, insoluble in alcohol, ether, and water. It melts at 76° C. As with nearly all bismuth compounds, decomposition occurs when it is mixed with much cold water, with diluted mineral acids, and long heating with alkali. Otherwise the combination is very stable and may be kept for a long time. Forcheimer has used this preparation with advantage in treating syphilitic and other sores. Applied with a brush or tuft of wool in thin layers on wounds the rhodamate forms a yellowish paste if much secretion is formed. If the secretion is slight it only changes to a brown adherent scab, under which the ulcer in many cases closes and heals. When first used, the powder should be applied daily, but later it is better to leave the dressings a longer time.—*Théráp. Monatsh.*

EUPHTHALMINE SALTS.—Euphthalmine hydrochloride is now obtained in a definite crystalline form by repeated recrystallisation from absolute alcohol. It melts between 130° to 140° C. Euphthalmine salicylate is obtained by combining equal molecular weights of euphthalmine and salicylic acid in absolute ether-alcohol solution. It melts at 113° to 116° C., and is also readily soluble in water.—*Ztsch. d. allg. oest. Apoth. Ver.*, lii., 359.

CORONILLA VARIA AS A CARDIAC REMEDY.—V. Poulet finds that the aqueous extracts of the flowering tops and leaves of *Coronilla varia* afford an excellent remedy in the many cardiac affections in which digitalis and strophanthus are used. It possesses the great advantage over these, that it does not derange the digestive functions. In diuretic action, it is, perhaps, less energetic than digitalis, but this is easily remedied by prescribing at the same time a diuretic drug, such as theobromine. In general affect on the heart, it is to be preferred to digitalis, and has given good results where the latter has failed. The dose of the extract is 10 centigrammes, given three or four times daily, in pilular form massed with the powdered drug; as it is not cumulative in its action, the administration may be continued indefinitely.—*Nouv. Rem.*, xiv. (July 8, 1898), 239.

ORTHOFORM AS AN ANALGESIC.—Although they find that orthoform has but medium bactericidal properties, Lietwitz and Sabrazes state that as a topical application it acts very effectively, relieving pain in cases of cancer, ulcerated sores and similar states. It has proved useful in cancerous affections of the throat, where pain caused dysphagia; applied locally in these cases it gave relief which was more lasting than with other remedies, the alleviation of pain extending over twenty-four hours.—*Bull. Gen. de Therap.*, cxxxv. (May 30, 1898), 799.

INHALATION OF MENTHOL.—Jousset (*Sem. Med.*, 1898) prescribes an inhalation of menthol, 5, and ol. terebinth. rectif., 2, spirit, 100, for acute frontal headache. A teaspoonful of the mixture is used in a cup of hot water, and the vapour inhaled through the nose for several minutes and repeated every hour.—*Pharm. Central.*, xxxix., 511.

VALIDOL.—This is a solution of 30 per cent. of menthol in methyl valerianate, forming a colourless liquid with an agreeable odour, and of the consistence of glycerin. It is free from the burning taste of menthol, and is well tolerated by the stomach. In doses of 10 to 15 drops, in a little wine or on a lump of sugar, it acts as a useful analeptic in the depression of hysteria or in neurasthenia. Its powerful antiseptic properties render it useful as a surgical dressing.—*Bullet. Comm.*, xxv., 516, after *Pharm. Post.*

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE PHARMACY ACTS.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN *v.* FOWLER.

At Stonehouse County Court, on Monday, December 12, the Council of the Pharmaceutical Society brought an action to recover from Louis K. Fowler, 31, Albert Road, Morice Town, Devonport, three penalties of £5 each for infringements of the Pharmacy Act, 1868, viz., keeping open shop on two occasions for retailing poisons, and illegally using the title of "chemist."

Mr. Vaughan Williams, instructed by Messrs. Flux, Thompson, and Flux, London, appeared for the Society. He said defendant was not on the official Register of Chemists and Druggists, and was not entitled to sell poisons. Defendant bought the business from P. A. Kelly, a properly qualified chemist, and issued a handbill stating that he had removed his practice to 31, Albert Road. It also stated that he had taken into partnership J. T. Livesey, chemist and druggist, of Manchester, under whose management the business of chemist and druggist would be carried on. Defendant got an assignment of the lease and became occupier of the premises, and was, in fact, the man whose business was carried on there. Sergeant Down, a detective of Devonport, on September 28 asked for oxalic acid, and was supplied by Mr. Livesey, a qualified chemist. On the 30th Sergeant Down bought chlorodyne from Mr. Livesey. On the first purchase there was a label with the words, "Kelly, dispensing chemist," and on the second a label bearing the words, "Livesey and Co., chemists." Over the shop window was fixed the name "Livesey and Co., chemists, Albert Road Drug Stores."

Philip Alfred Kelly, chemist and druggist, said he sold his business to defendant for £170.—In cross-examination he said he did not know whether defendant wanted to carry on the business of a dentist. Defendant was not a registered dentist, but extracted teeth. Witness inferred that defendant did not want to carry on the business of a chemist, as he wished to dispose of the stock. Witness told him that only a duly qualified man, as proprietor, could carry on the business.

Mr. Vaughan Williams submitted that, even if defendant was misled by Mr. Kelly, that would not exonerate him.

Mr. G. H. E. Rundle, for the defence, admitted that defendant was not a chemist. The name over the shop showed the public there was a duly qualified chemist to dispense drugs, and the public had not been injured in the slightest degree.

His Honour said Mr. Rundle need not trouble about the paragraph alleging the use of the name of "chemist."

Mr. Williams submitted the label was sufficient proof of that paragraph.

His Honour: It is "Livesey."

Mr. Williams: If he takes an assumed name it makes the offence worse.

His Honour: I am against you on that paragraph.

Mr. Rundle submitted the cases decided showed that the defendant was not liable to penalties.

His Honour: The difficulty is this circular, where he says Livesey is a partner.

Mr. Williams contended the law was not complied with through Livesey, as a partner, being a proprietor. If that were the case, the effect of the Act would be destroyed, as anyone would be able to employ a qualified person, and so evade the Act.

J. T. Livesey, chemist and druggist, said he entered into an arrangement with defendant that he should look after the business. He took sole charge of the stock, and sold for a small salary and commission. Defendant took no part in the business, and never served a customer.—Cross-examined: Witness was Livesey, and defendant the Co.—Articles of partnership were drawn up.

His Honour said there must be judgment for plaintiffs. Very great mischief was done by unqualified persons selling poisons, and it was the duty of the Society to protect the public and bring actions of this kind. He was satisfied in this case no real harm was done. It was obvious defendant knew from the outset he could not carry on the business, and did not intend to carry it on as a chemist, and there was no reason to doubt Mr. Livesey's statement that he had sole charge of the chemist's department. But, however *bona fide* defendant's intentions, he had brought himself within the Act by keeping open shop, and however much he (his

Honour) might be of opinion that no harm had been done, there must be judgment for plaintiffs as to the first two penalties. He did not think defendant had rendered himself liable to the penalty for exhibiting the name of "chemist." There would be a verdict for the Pharmaceutical Society for £10 and costs, and he would certify for counsel's costs.

HIGH COURT OF JUSTICE.

BOGUS DEGREES IN COURT.

On Friday, December 9, before Mr. Justice North, in the Chancery Division of the High Court of Justice, in the case of the Attorney-General, at the relation of the General Medical Council, *v.* The General Council of Safe Medicine Co., Ltd., Mr. Muir Mackenzie moved that a writ of sequestration might issue against the defendant company for breach of an undertaking. The action was brought to restrain defendants from issuing or granting diplomas or degrees purporting to confer a title to practise medicine. After the statement of claim was delivered, an order was made, by consent, by which defendants undertook not to grant any further degrees or diplomas. The action was brought in consequence of a case which came before the Queen's Bench Division on the prosecution of a person named Steel for the use of the degree M.D. (B.C.).—His Lordship: What does "B.C." mean.—Mr. Muir Mackenzie said "B.C." meant "Botanic." Steel was convicted under the Medical Act for falsely using a medical title, and after the conviction an action was brought by the Attorney-General to restrain the issue of further diplomas. The objects of the defendant company, according to the memorandum, were the granting of degrees, scholarships, and awards in magnetic and botanic system of safe medicine, the highest distinction being M.D. (B.C.), which signified the rank of Doctor of Botanic Medicine. Since the order was made in 1895 it had been brought to the attention of the General Medical Council that the degrees of the defendant company were still in circulation, only with a different description. Accordingly the present motion was brought for sequestration on the ground that there had been a breach of the undertaking by granting a degree and diploma purporting to confer the right to practise medicine and surgery under the title of Fellow of the College of Safe Medicine Co. It was only right to say that Mr. Younger, the President of the defendant company, had filed an affidavit in which he denied that any degree had been granted since the undertaking was given, and, of course, if that were true it would be an answer to the motion. Before bringing the motion the Registrar of the General Medical Council wrote to Mr. Younger asking him if it was the fact that no certificate had been issued since the date of the order, but Mr. Younger declined to give any information at all. Under these circumstances he asked for an order to cross-examine Mr. Younger before the examiner. It appeared that one of the managers of the defendant company was now using the title F.C.S.M., attending patients and signing death certificates.—Mr. Vernon, for the defendant, did not object to the order for cross-examination, and his Lordship accordingly made the order and directed the motion to stand over until the examination was completed.

BEECHAM'S PILLS.—AN INJUNCTION.

On Saturday, December 10, Mr. Justice Stirling granted a perpetual injunction against the defendant in an action of Beecham *v.* Flintoff, restraining him from passing off pills not of defendant's manufacture as Beecham's pills, and ordered him to pay the costs. The plaintiff waived an inquiry as to damages. The defendant was described as carrying on business at Blackburn as a druggist and patent medicine vendor, but his name does not appear on the Register of Chemists and Druggists for 1898.

UNFAVOURABLE ACTION OF SACCHARIN.—From experiments made upon his own person Bornstein considers that saccharin cannot, with certainty, be regarded as innocuous in certain cases, such as those of diabetes. After taking 2.5 grammes of pure saccharin for several consecutive days the author found the drug to produce diarrhoea, the amount of nitrogen, of free fats, and of fatty acids in the excreta being abnormally high. It appears either to exercise a purgative action or else to hinder normal assimilation. It has been noted that diabetic patients have developed symptoms of intestinal dyspepsia while taking saccharin.—*Nouv. Rem.*, xiv., 236.

LETTERS TO THE EDITOR.

THE ADVANTAGES OF LOCAL ORGANISATION.

Sir,—In your last issue there is a report of a meeting of Preston chemists, convened to discuss the desirability of forming a local association. I am disappointed to see that it was not unanimously decided at the meeting to found one. It is, however, evidence of the healthy spirit extant in North Lancashire, and of the energy of the gentlemen connected with the Federated Associations of that district. This laudable example might be followed with advantage in other parts of the country wherever there is a town of any size, or a group of small towns, as we have in many parts of Lancashire and in other manufacturing parts of the country. Local associations, even though they are not frequently convened, form the nucleus round which the members of the trade in the neighbourhood may collect to discuss matters of importance locally, and to the members of their calling throughout the country. From a business point of view it is an advantage to meet the members of our craft who reside in the same town. It has a tendency to break down that reserve, or, I should say, trade jealousy, that often exists. It will be found, when this has rubbed off, that we have often misjudged our neighbours, and that they are at the bottom really good fellows. In these days of competition, it may be often an advantage to buy together, and it is surprising what this will do in increasing our profits if we are able to pay cash. Apart from the friendships that are sure to follow from attending such Association meetings, there is the fact that it tends to draw us out of ourselves and to bring us into touch with our fellow-men, which is essential to a business man.

Liverpool, December 12, 1898.

R. C. COWLEY,
Hon. Sec. Federation of Local
Pharmaceutical Associations.

THE USE OF NETTLES AS FOOD.

Sir,—Both *Urtica urens* and *Urtica dioica* are used extensively in some rural districts of Ulster as food for pigs and fowl. The peasantry occasionally use the young shoots of *Urtica urens* as a substitute for cabbage. The shoots are chopped finely and immersed in boiling water for a short time; the water is then poured off and the shoots subjected to pressure, after which they are cooked in a variety of ways. The preliminary treatment is said to prevent them discolouring other articles of food with which they may be served. I have known tea made with both plants to be used in the same districts as a spring medicine or "blood purifier," but in this case the preliminary steeping was omitted.

Belfast, December 12, 1898.

WM. GEO. STRATTON.

MELLIN'S EMULSION OF COD-LIVER OIL.

Sir,—I did not write my previous letter with any idea of keeping up a correspondence on this subject, but feel now, sir, with your permission, that I should like to say a word in reference to Messrs. Mellin's letter to Messrs. J. Cross and Co. in your last week's issue. One thing, I am glad Messrs. Mellin so frankly acknowledge having been guilty of such practices, but I should like to inform them they had no need in this case, as they say they had in many places where chemists refuse to stock their preparation, to get the grocer to hold a stock of the emulsion, because the three chemists in the immediate district had, for months before their representative introduced it to the grocer, held a stock of it, and as for there existing a demand from the general public, demand or no demand the grocer had never been asked for the article. Whoever heard of a medical man sending a patient to a grocer for a medicine when there are chemists in the same town? Had it been in a small country village with no chemist it would be different and quite excusable, but in my town we can muster six chemists, and if the medical men dispense their own physic, they look to the chemists for such extras, not to the grocers. Messrs. Mellin and Co. may be well astonished at any trader being so palpably dishonourable to take such a despicable advantage; but does the retailer, who knows how this firm's goods are cut without any attempt to stop or prevent it, hold the same opinion. As for the handsome profit attached to it for handling, the price now is 18s. 6d. wholesale, and sold, I am told by my customers, for 1s. 8d.? Where does the talked-of protection come in? Who is to prevent anybody getting a supply and cutting it to cost price? Could Messrs. Mellin find out where any vendor, wishing to do it, gets his supply? I doubt it under their present

protection arrangements. We country chemists have enough to contend with what with drug stores and cutting grocers in the near larger towns where so many of our people flock, and railway companies offering every facility to take the people there, without manufacturers coming and giving grocers a licence which is available for all stamped medicines, except, of course, those containing a poison, which grocers are not allowed to retail.

December 13, 1898.

DEVON (160/43).

Sir,—I cannot allow Messrs. Mellin's reply to Messrs. Cross and Co. to pass unnoticed. First, because the case referred to in Devonian's letter does not apply to the exceptional cases quoted by Mellin and Co., as their emulsion was stocked by the two nearest chemists, right and left of the shop in question. Secondly, I fail to see where the "consideration" and "handsome profit" mentioned by Mellin come in when the article is retailed at stores at 1s. 8d.—being, I believe, the minimum price fixed by Mellin, Ltd., themselves. This wonderful profit does not pay the working expenses of any business. Thirdly, to use their own words: "We are astonished at any trader being so palpably dishonest as to take such a despicable advantage," reminds one of the old metaphor of the "Pot calling the kettle smutty," because they leave a chemist's shop after offering their goods at a certain price, and immediately offer them to a grocer with an extra bonus, thereby making him a competitor with the whole of the chemists in the neighbourhood.

December 13, 1898.

ANOTHER DEVONIAN (161/5).

ARROW POISONS.

Sir,—The manchinele poison mentioned by Dr. Gordon Sharp is in all probability the milky juice of *Hippomane mancinella*, Linn., a euphorbiaceous tree, the juice of which is said to have been used by the Caribs as an arrow poison, together with other poisons derived from the Apocynaceæ. The manchinele is evidently an irritant poison, causing vomiting, diarrhoea, and all the symptoms of a powerful irritant like *Croton tiglium*, but cases of death from eating the fruit appear to be rare. The ripe fruit is eaten by goats, sheep, macaws, and land-crabs, but those who eat the crabs suffer from vomiting. It has been recommended as a diuretic in dropsy (*Therapeutical Gazette*, 1889, p. 243). An excellent figure of the plant is given in Descourtilz' 'Flore des Antilles,' tom. iii., p. 12, and a good deal of reliable information in Lunan's 'Hortus Jamaicensis,' vol. i., pp. 482-484. It is much more likely that the chief ingredient in the Carib arrow poison should have been some apocynaceous plant. One of this family, *Echites suberecta*, has long been used in Jamaica and other islands as a poison for criminal purposes, and is a most powerful heart poison. The active principles it contains were described by M. J. J. Bowrey in the *Proc. Royal Society*, 1878, vol. 27, pp. 309-332, and in the *Chem. Soc. Journ.*, 1878, vol. 33, pp. 252-269.

London, December 12, 1898.

E. M. HOLMES.

RETAIL CHEMISTS AND THE P.A.T.A.

Sir,—After reading what Mr. T. S. Wokes has to say I conclude that gentleman has not seen a full account of the history of the Dawsbury meetings, or he would not have written as he does. In reference to Mr. Broadhead's letter, he says: The P.A.T.A. is an Association which is endeavouring according to its lights to ameliorate the condition of the chemist. The only places in which the P.A.T.A. can claim that it has been able to maintain fixed prices are towns where there is no cutter, and in such places the profits would have still been about the same without the P.A.T.A. The Association has been in existence three years, and anyone who has followed the subject carefully must admit that it is an absolute failure in all towns where it has been fully tested. The P.A.T.A. was started by chemists, and I am convinced that there is now only an "insignificant minority" supporting it, and this minority is labouring under a delusion. I have before me the first six numbers of the *Anti-Cutting Record* (Grocery Section) and if any chemist will obtain these from a grocer and look through them he will find ample evidence that the P.A.T.A. is tending to draw the trade in proprietary articles from the chemist to the grocer. I learn therein that the P.A.T.A. grocery retailers think that a profit of 12½ per cent. on proprietary articles is quite sufficient, while the P.A.T.A. Chemists' Section insists on about 25 per cent. A list appears in each issue entitled "Selection of Goods from the Present Drug-List of Protected Articles in which Grocers are Interested." These comprise over eighty make-ups, while the

whole P.A.T.A. drug-lists consists of only about 170 articles, so that the P.A.T.A. Chemists' Section is making a present of half the articles to the Grocery Section of the Association. In the October issue of the grocery *Record* the Secretary writes:—

Hitherto the Chemists' Section of the Association has borne the major portion of the expense of organising the Grocery Section. This naturally cannot go on indefinitely, and the grocery trade in this matter must help itself. Grocers have nothing to lose and everything to gain by joining the movement, and we hope that we may speedily see a large influx of retailers in the ranks of the Grocery Section of the P.A.T.A.

While the Assistant-Secretary says in the November issue:—

If irreconcilable cutters are being effectively restrained in the drug trade, they can be dealt with quite as well in the grocery trade, especially as the amount of profit to be charged (12½ per cent.) is severely moderate. Though the Chemists' Section of the Association has hitherto borne the bulk of the expense of organising the Grocers' Section, this cannot be expected to go on indefinitely. There is probably ten times the wealth in the grocery trade than there is in the other, and I hope this consideration will be allowed to have full weight amongst those most concerned. Five shillings spent in this way is destined to prove a good investment, if the grocers turn out to be as far-sighted business men as chemists have been. The former are usually said to be the abler men in matters of business.

I am a chemist and I have never believed in the P.A.T.A. or its methods. That I was justified in this opinion the foregoing should convince any chemist. I read that a copy of the *Anti-Cutting Record* (Grocery Section) is sent free monthly to 5000 retail grocers. Thus, mainly at the expense of the chemists, they are teaching grocers, who now only dabble in a few patents, to stock more proprietary articles than they otherwise would have, and I venture to predict that this movement will lead to a greater number of patent medicine licences being taken out by grocers to the detriment of chemists.

Portsmouth, December 12, 1898.

HERBERT H. BAILEY.

A WARNING.

Sir,—Would you kindly insert the following warning:—A young fellow, well dressed, came to my shop a week or so ago in the evening, asking me to change a cheque for £3, stating he was a nephew of a doctor in the neighbourhood whose medicine I make up, and who had told him I would change it for him. It turned out to be an old cheque and worthless. I learn at the bank that the same trick has been played on several other chemists.

London, December 13, 1898.

ALICK MAITLAND.

MEMBERS, NON-MEMBERS AND THE PHARMACEUTICAL COUNCIL.

Sir,—If the Pharmaceutical Society wants a "lead" for company pharmacy legislation let its Council draw up and issue petitions (explaining the subject to our legislators) for chemists to sign, as suggested in the candid letter from "T. Hulme" in your last issue. Would there be apathy over doing that? I think not. No, sir, the vast majority will willingly sign. At length, too, the Pharmaceutical Society would have done something to justify its existence to the many retail chemists who now regard it with a haughty and magnificent indifference. I have been a subscriber to the Society since the day I passed the Preliminary, eighteen years ago. What real benefit has it done me in business? No doubt the local secretaries would get the provincial signatures. I will be answerable for Lowestoft.

Lowestoft, December 10, 1898.

A. H. HINDE.

Sir,—As an adherent of the Society for the last quarter of a century, permit me to express the satisfaction with which I have perused the proceedings of the Council this week. The adoption of the memorial to the Lord Chancellor and the decision to call a meeting with the view to the consideration, and as I trust the adoption, of poison regulations are both of very great significance, and I am much mistaken if both proposals do not meet with the unanimous approval of all true pharmacists. I agree with much that Mr. Hulme says in his letter to-day, but I have no doubt that he and all others likeminded will see that the time for criticism is now past, and that present duty demands the united efforts of all loyal sons of the Society in the attempt to place pharmacy once more in its proper position. The Council are truly representative of the feeling among the best pharmacists in the country, both inside and outside the Society, and I am convinced that under the guidance of our worthy, level-headed President, they will leave no stone unturned to secure the object so long aimed at and desired by us all. Doubtless, they will not be able to satisfy everyone in the way they carry out the campaign, least of all will they conciliate a jealous journalistic opposition which cannot afford to

miss an opportunity for unscrupulous "pin-pricking," but they may be assured that in the arduous fight that must now be faced, they will be backed up by the rank and file of pharmacists throughout the country.

December 10, 1898.

ONE OF THEM (160/6).

CORRECTIONS.

Sir,—The word printed "feights" (line 35, page 632) in my letter in last week's Journal should have been "fright," and the word "years" (line 22) should have been "yours."

Bury, December 9, 1898.

T. HULME.

* * The first word was printed as written; the second was a printer's error [Ed. P. J.]

ANSWERS TO QUERIES.

DENTAL PAPER.—The *British Journal of Dental Science* is probably as widely circulated as any. It is published by J. P. Segg and Co., 289, Regent Street, W. [Reply to F. C.—20/11.]

RHUBARB PETIOLE.—If the bundles be arranged as you state, it may be due to unusual development of parenchymatous tissue produced by cultivation under peculiar conditions of growth. Send a specimen if you can. [Reply to PETIOLE.—20/9.]

SAPONACEOUS SHAMPOO POWDER.—Powdered soap, 3 ozs.; dried sodium carbonate, 1½ oz.; borax, 1½ oz.; oil of *Myrcia acris*, 10 minims. [Reply to DEMETRIUS.—20/21.]

HAIR-CURLING POWDER.—Borax, 16; dried sodium carbonate, 2; powdered gum acacia, 2. Mix. Perfume if desired with a little bergamot. [Reply to DEMETRIUS.—20/21.]

MANAGER OF BRANCH.—We fear you have no remedy in the matter, unless you can prove that he is the actual proprietor. You might consult the local rate books, and so determine whether or not he is the occupier. [Reply to SALICYLAS.—20/26.]

MAKING ARTIFICIAL TEETH.—The Dentists Act, 1878, only prohibits the use by an unqualified person of the title "dentist" or "dental practitioner," or any name, title, etc., implying that he is registered under the Act, or a person specially qualified to practise dentistry. [Reply to DENS.—20/33.]

INCOMPATIBLES.—We do not know any book which treats the subject of incompatibility in medicines in the comprehensive manner you desire. The various treatises on pharmacy and materia medica for the most part contain merely a list of incompatibles under each drug or preparation. We shall be pleased to answer any query you like to send. [Reply to R. H.—20/32.]

CHEAP GINGER WINE ESSENCE.—Probably merely a mixture of burnt sugar and "gingerine," acidulated with tartaric acid, and flavoured with a few drops of lemon oil, will be what you require. Work out the proportions of those ingredients to meet the requirements of your case in price and strength. [Reply to W. W.—20/24.]

CLEANSING GLASS BEFORE SILVERING.—The most effectual way to clean glass is to rub over the surface with a piece of filter paper moistened with solution of ammonia. Care must be taken not to touch the clean surface afterwards with the bare fingers. The same method is applicable to all cases where it is requisite to have the glass absolutely clean and free from grease, as in silvering processes. [Reply to W. M.—20/20.]

MAKERS OF CHEMICALS.—For lead chloride try Typke and King, 7, Jeffrey Square, St. Mary Axe, E.C.; T. Morson and Son, 31, Southampton Row, W.C.; or Thos. Tyrer and Co., Stirling Chemical Works, West Ham. For tin oxide try Acton and Borman, 7, Shoe Lane, E.C.; and for uranium oxide apply to Johnson and Sons, Cross Street, Finsbury, E.C.; Hopkin and Williams, 16, Cross Street, Hatton Garden, E.C.; Johnson, Matthey and Co., Hatton Garden, E.C.; or Harrington Bros., Shandon Chemical Works, Cork. [Reply to POTTER.—20/14.]

Owing to pressure on our space numerous Letters and Answers to Queries are unavoidably held over.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

A New Sugar. Camille Vincent and J. Meunier have isolated from the mother liquors left on crystallising sorbite, a new sugar "octite, $C_8H_{13}O_8$," which is not itself crystalline, but yields crystalline derivatives. After converting the last traces of sorbite into sorbose by means of specific bacteria, the solution is concentrated and the new sugar isolated as its crystalline dibenzoic acetal, $C_8H_{16}H_8(C_7H_6)_2$. The crystals of this compound deposited from chloroform melt at $230^\circ C.$, but when simply washed with ether they melt at $140^\circ C.$ The specific rotation of the new sugar is $-3^\circ 42'$ at $20^\circ C.$ It does not reduce Fehling's solution. The acetic ester forms tabular crystals melting at $114^\circ C.$ —*Comptes rendus*, cxxvii., 760.

Absorption of Carbohydrates. Jules Laurent finds that plants are not only capable of absorbing carbohydrates by their roots, but, at the same time—under the influence of sunlight—of converting them into reserve material, so that carbon may be assimilated thus, as well as by the action of chlorophyll. The process, in the case of plants which are devoid of chlorophyll, is only an instance of what takes place in plants in general. Among other experiments, it was found that when the roots of plants which had previously been deprived of their starch were plunged into a solution of glucose, the whole experiment being conducted in an atmosphere deprived of carbon dioxide and exposed to sunshine, starch was detected in the leaves in a few hours. In a control experiment, where pure water alone was employed, no starch was formed.—*Comptes rendus*, cxxvii., 786.

Detection of Water. According to Brooks the double iodide of lead and potassium, $PbI_2 \cdot 2KI$, is a very delicate reagent for the presence of water, the double compound being resolved into its two constituent salts by the least trace of moisture. The double salt is prepared thus: Lead nitrate, 1 Gm., is dissolved in 10 C.c. of water, and saturated potassium iodide solution is added as long as the precipitate at first formed continues to dissolve. The solution is then allowed to crystallise, after which the white crystals of the double salt which separate are collected, washed with absolute alcohol, and kept over quicklime.—*Pharm. Zeit.*, xlii., 720.

Nicotine in Tobacco Smoke. To demonstrate the presence of nicotine in tobacco smoke, Kissling uses a bottle half full of water rendered faintly acid with sulphuric acid; two tubes pass through the stopper, one dipping into the fluid, and having a cigar inserted in the upper end; through the other, much shorter, tube the assistant draws the smoke in the ordinary way of smoking. When a portion of the cigar is consumed, a few drops of Mayer's reagent are added to the liquid, in which a copious precipitate is produced in the presence of nicotine. Further evidence of nicotine may be obtained by rendering the solution alkaline with soda and distilling. The idea that a picoline base, and not nicotine, causes the reactions described is not borne out by this experiment. Previous investigations by the author also show that tobacco smoke contains a relatively large proportion of nicotine, and never more than a very small proportion of picoline base.—*Chem. Ztg.*, lxxviii., 805.

Taka-Diastase. W. E. Stone and H. E. Wright have examined taka-diastase with a view to ascertaining its value as an analytical reagent for the determination of starch, to supersede malt diastase, which is commonly used for the purpose but possesses the disadvantage of being unstable. The result of experiments, however, on the starch of wheat, rice, and maize indicates that taka-diastase is not adapted for use in the quantitative determination of starch, in spite of its stability. Though the commencement of the action of taka-diastase on starch is more immediate than that of malt-diastase, the experiments prove that after the lapse of a few hours a considerable quantity of starch remains in presence of the former, whilst there are only traces in presence of malt diastase. After seven hours the digestion is quite complete in the case of malt diastase, but not so when taka-diastase is used.—*Journ. Amer. Chem. Soc.*, xx., 639.

Formaldehyde and Thyroid Glands. According to M. E. Lépinois a 1 per cent. solution of formaldehyde exercises a preservative action on thyroid glands, after they have been immersed in it for two or three days. He finds that this treatment does not appear to modify the chemical composition of the glands sensibly, as regards the iodised albuminoid matter; the solubility of the latter in pure or saline water is very slightly diminished. The author concludes that on subsequently extracting from the preserved glands the active principles, the latter will be found to possess better keeping qualities.—*Bull. Soc. Chim. de Paris*, xix.-xx., 932.

Enzyme of Nepenthes. S. H. Vines supplements his previous paper on the proteolytic enzyme of *Nepenthes* (see *P. J.* [4], vi., 385). Statements there made as to the great stability of this enzyme are verified by experiments relating to the action of high temperatures and of alkalies upon it. It would appear to be the most active of all known proteolytic enzymes. It is probably derived from a zymogen present in the gland-cells. Its classification is facilitated by the discovery by Ramsden of true peptone among the products of digestion; in this it resembles the tryptic ferment found by J. R. Green in germinating seeds, as also in the fact that it acts in an acid medium, thus differing from the trypsin of the pancreatic juice.—*Annals of Botany*, xlvi., 545.

Enzyme of Yeast. J. Reynolds Green has followed up his researches of last year on the alcohol-producing enzyme of yeast, with the result that he now confirms Buchner's announcement that the alcoholic fermentation of sugar is effected by the activity of an enzyme or soluble ferment which, by appropriate means, can be extracted from the yeast-cell. When so extracted it sets up fermentation in sugar solutions under conditions which prevent the activity of living yeast. The enzyme is easily decomposed; like enzymes in general it is largely thrown out of solution by the formation of an inert precipitate in the liquid in which it is contained. The secretion of the enzyme by the cell is intermittent, only taking place during actual fermentation by the yeast. It is soon decomposed when this activity ceases, so that resting yeast does not give it up to a solvent. The completeness with which it can be extracted from the yeast-cell depends upon successful disintegration of the cell. The author finds that the enormous pressure used by Buchner (500 atmospheres per square inch) is unnecessary, inasmuch as an extract obtained by a pressure of five atmospheres per square inch was more active.—*Annals of Botany*, xlvi., 491.

CRITICISM OF SOME CHEMICAL MATTERS IN THE NEW PHARMACOPŒIA.*

BY LEONARD DOBBIN, PH.D., F.R.S.E.

Some curious anomalies and inconsistencies in the 1898 B.P., when viewed from various standpoints, have already been pointed out; but, so far as I have seen, the descriptions of chemical operations and changes, the statements concerning matters of chemical fact, and the notation employed in the chemical formulæ have almost entirely escaped mention. It is the main purpose of the present paper to show that these, in numerous instances, are not what we have a right to expect in an important official publication of the kind. It will be convenient to take up the subjects to be considered in as systematic a manner as possible, but it may be stated at once that, except as regards the notation, no endeavour has been made to collect chemical matters for comment from the new Pharmacopœia as a whole, nor even from a number of successive pages in any selected part. Such of the points referred to below as do not relate to notation were simply met with during the perusal of monographs, etc., here and there at random.

(a) VAGUE OR INCOMPLETE CHEMICAL STATEMENTS.

In the monograph on potassium chlorate (p. 263) it is stated that "When heated it fuses, gives off oxygen gas," etc., but no indication whatever is given as to whether it is necessary to raise its temperature to that of boiling water (under ordinary conditions), to a red heat, or still higher. The official statement is wanting in the very desirable attribute of scientific precision, which could easily have been attained by a few additional words.

On page 257 we read, "Lead oxide, PbO, is prepared by the action of air on melted lead." This is no doubt true, but it is, nevertheless, vague, and it may even be highly misleading, for the intelligent boy who melts lead in an iron ladle and finds that a scum gathers upon the surface of the melted metal may easily arrive at the erroneous conclusion that this scum is lead oxide, B.P.

In the monograph on "Potassium Bichromate" (p. 261), we read:—"Fuses below redness; at a higher temperature is decomposed, yielding green chromium oxide and yellow potassium chromate, which may be separated," etc., but no mention is made of the oxygen which is simultaneously liberated, and is at least equal in importance to the other two substances. The official statement is here culpably incomplete.

(b) INEXACT OR INACCURATE CHEMICAL STATEMENTS.

Respecting both hyoscine hydrobromide (p. 153) and hyoscyamine sulphate (p. 154), we are told that, "heated to redness with excess of air, it leaves no residue." This statement would make it appear that these two salts can be heated, as such, to redness; but the writer of the monographs certainly did not mean to say so. The idea which it was doubtless intended should be conveyed is accurately expressed in (for example) the monograph on atropine sulphate (p. 49): "It leaves no ash when burned with free access of air."

Morphine tartrate, it is stated on p. 219, "may be prepared by the combination of morphine and tartaric acid in molecular proportions." The author of the monograph presumably meant to write "equivalent" instead of "molecular."

On p. 265 we read that potassium permanganate "may be obtained by the interaction of potassium chlorate, potassium hydroxide, and manganese dioxide," and on p. 400 potassium ferrocyanide is stated to be "the yellow crystalline salt . . . prepared by fusing together potassium carbonate, nitrogenous organic matter, and iron." Both of these statements are simply

incorrect. Potassium manganate—not permanganate—is obtained by the interaction, at a dull red heat, of the substances mentioned; while potassium cyanide—not ferrocyanide—is the valuable nitrogenous product of the fusion referred to.

(c) MISCELLANEOUS CHEMICAL ANOMALIES.

We find "hydrogen borate" formally stated in heavy type (p. 7) as a synonym for boric acid, but no other acid is dealt with in an analogous manner, although "hydrogen citrate" and similar names are met with in the text. Yet the preface says, p. x: "Of synonyms, only the more important have been inserted."

It is difficult to know what to make of the statement concerning phosphorus (p. 244), where this substance is described as "a solid non-metallic element obtained from calcium phosphate." No one can seriously suppose that phosphorus obtained from the mixture of phosphates and other compounds, commonly known as bone ash, or from natural mineral phosphates other than calcium phosphate, is not phosphorus, B.P. But it is worth while to compare the above strangely narrow official statement respecting phosphorus with the corresponding one relating to sublimed sulphur (p. 318): "May be prepared, more or less directly, from native sulphur or sulphides." That is at least comprehensive, and for its purpose it is no doubt sufficient.

In view of the method given on p. 61 for preparing calcium phosphate from bone ash, it seems very inconsistent to state that this preparation should yield no characteristic reaction with the tests for magnesium. It is well known that the substance precipitated when the solution obtained by treating bone ash with dilute hydrochloric acid is mixed with dilute ammonia solution in excess contains combined magnesium in notable quantity. The B.P., moreover, does not even say that the ammonia solution, in the preparation as described, would require to be employed in excess.

No excuse can now be given for such chemical archaisms, dignified even though they may be by appearing in Latin, as acidum arseniosum and acidum chromicum in a work which has the word "hydroxide" substituted for the older word "hydrate." The substances referred to by these names are not acids in the modern acceptance of the term.

(d) THE CHEMICAL NOTATION.

The Pharmacopœia contains chemical formulæ for almost two hundred different substances. It might be supposed that the compilers would have observed some uniformity of practice in regard to the representation of kindred substances by means of formulæ, and in the use of the various signs such as a bracket, the comma, the period, and the decimal point. This, however, is in a great many instances not the case. It is very difficult to attribute to anything but carelessness or indifference the utterly haphazard manner in which the compositions of closely related substances are often represented by formulæ which differ greatly from one another. The numerous examples which follow will amply illustrate and yet not exhaust the kinds of irregularities met with.

The Pharmacopœia gives formulæ for five metal acetates. For these, three different modes of representation are adopted:—

Lead acetate	Pb(C ₂ H ₃ O ₂) ₂ , 3H ₂ O	p. 256.
Barium acetate	(CH ₃ COO) ₂ Ba	p. 394.
Potassium acetate ...	CH ₃ COOK	p. 260.
Sodium acetate	CH ₃ COONa, 3H ₂ O	p. 400.

Even potassium and sodium acetates are not represented by quite analogous formulæ.

Excluding bismuth oxycarbonate, which is perhaps scarcely comparable with the others, there are four basic carbonates mentioned in the Pharmacopœia. Three variations are met with in the mode of formulating these:—

*Read at an evening meeting of the Pharmaceutical Society in Edinburgh on December 21, 1898.

Magnesium carbonat	$3(\text{MgCO}_3), \text{Mg}_2(\text{HO})_2, 4\text{H}_2\text{O}$	... p. 210.
Lead	$2\text{PbCO}_3, \text{Pb}(\text{OH})_2$	..... p. 256.
Zinc	$\text{ZnCO}_3, (\text{ZnH}_2\text{O}_2)_2, \text{H}_2\text{O}$	p. 386.

Acetanilide and phenacetin are closely allied substances, the latter containing the ethoxy-group, OC_2H_5 , instead of one of the hydrogen atoms of the phenyl-group, C_6H_5 , of the former. But the official formulæ are :—

Acetanilide	$\text{CH}_3 \cdot \text{CO} \cdot \text{NH} \cdot \text{C}_6\text{H}_5$	..... p. 2.
Phenacetin	$\text{C}_2\text{H}_5\text{O} \cdot \text{C}_6\text{H}_4 \cdot \text{NHCOCH}_3$	p. 242.

There are two official sulphocarbates, and the formulæ assigned to them are :—

Sodium sulphocarbonate	$\text{C}_6\text{H}_4\text{OH} \cdot \text{SO}_2\text{ONa}, 2\text{H}_2\text{O}$	p. 301.
Zinc sulphocarbonate	$\text{Zn}(\text{OH} \cdot \text{C}_6\text{H}_4 \cdot \text{SO}_3)_2, \text{H}_2\text{O}$	p. 388.

The use of the decimal point is met with in many of the formulæ (as, for example, in those of acetanilide and phenacetin, above). Its signification is not always exactly the same, but this need not be entered into. Why it should be introduced into the formula for citric acid, however, and omitted from that of gallic acid is not apparent :—

Citric acid	$\text{C}_3\text{H}_4 \cdot \text{OH} \cdot (\text{COOH})_3, \text{H}_2\text{O}$	..... p. 10.
Gallic acid	$\text{C}_6\text{H}_2(\text{OH})_3\text{COOH}, \text{H}_2\text{O}$	..... p. 11.

Neither is it clear why the period should be substituted for it in the two following cases :—

Salicin	$\text{C}_6\text{H}_{11}\text{O}_5 \cdot \text{O} \cdot \text{C}_6\text{H}_4 \cdot \text{CH}_2\text{OH}$ p. 281.
Phenol-phthalein	$\text{C}_6\text{H}_4 \cdot \text{OH}$ p. 399.
	$\text{C}_6\text{H}_4 \cdot \text{OH}$	
	$\text{C}_6\text{H}_4 \cdot \text{CO}$	
	O	

and in no others.

The above formula for phenol-phthalein is probably the most unsatisfactory of the whole two hundred. Besides the fact that the lines sloping towards the symbol for carbon on the left do not properly represent what they are designed to represent, the formula as a whole obscures in a needlessly bewildering manner, the relation of phenol-phthalein to phthalic anhydride.

The use of the comma in the formulæ for salts of alkaloids, and in those for substances represented as containing water of crystallisation, is almost quite consistent, and is in conformity with general usage. Thus (choosing an example of each kind) we have :—

Apomorphine hydrochloride	$\text{C}_{17}\text{H}_{17}\text{NO}_2, \text{HCl}$	... p. 39.
Ferrous arsenate	$\text{Fe}_3(\text{AsO}_4)_2, 6\text{H}_2\text{O}$	... p. 125.

but why are the following, and they alone, distinguished by the omission of the comma :—

Atropine sulphate	$(\text{C}_{17}\text{H}_{23}\text{NO}_3)_2\text{H}_2\text{SO}_4$	... p. 49,
Morphine tartrate	$(\text{C}_{17}\text{H}_{19}\text{NO}_3)_2\text{C}_4\text{H}_6\text{O}_6, 3\text{H}_2\text{O}$	... p. 219,
Tartarated antimony	$[\text{K}(\text{SbO})\text{C}_4\text{H}_4\text{O}_6]_2\text{H}_2\text{O}$	... p. 39,
Hydrous ferrous phosphate	$\text{Fe}_3(\text{PO}_4)_2, 8\text{H}_2\text{O}$	... p. 130?

And why do we find such needlessly diversified formulæ as :—

Cerium oxalate	$\text{Ce}_2(\text{C}_2\text{O}_4)_3, 9\text{H}_2\text{O}$	..... p. 72 and
Ammonium oxalate	$(\text{COONH}_4)_2, \text{H}_2\text{O}$	..... p. 393;
Sodium bichromate	$\text{Na}_2\text{B}_4\text{O}_7, 10\text{H}_2\text{O}$	..... p. 56 and
Potassium bichromate	$\text{K}_2\text{CrO}_4, \text{CrO}_3$	..... p. 261;
Calcium hydroxide	$\text{Ca}(\text{HO})_2$	..... p. 60 and
Barium nitrate	Ba_2NO_3	..... p. 394;
Ethyl acetate	$\text{CH}_3 \cdot \text{COO}(\text{C}_2\text{H}_5)$	..... p. 26,
Ammonium benzoate	$\text{C}_6\text{H}_5 \cdot \text{COONH}_4$	..... p. 31 and
Salol	$\text{C}_6\text{H}_4 \cdot \text{OH} \cdot \text{COO} \cdot \text{C}_6\text{H}_5$	..... p. 231?

The formulæ given for potassium permanganate and for potassium ferricyanide are incorrect :—

Potassium permanganate	$\text{K}_2\text{Mn}_2\text{O}_8$	..... p. 265.
Potassium ferricyanide	$\text{K}_6\text{Fe}_2\text{C}_{12}\text{N}_{12}$	..... p. 399.

They ought to be KMnO_4 and $\text{K}_3\text{FeC}_6\text{N}_6$ respectively. It would be of interest to learn how the correct formula for potassium permanganate of the 1885 B.P. has been displaced by an incorrect one in 1898.

THE VOLUMETRIC OPERATIONS OF THE BRITISH PHARMACOPŒIA, 1898.*

BY JOHN LOTHIAN.

The volumetric methods of the Pharmacopœia are of special interest to pharmacists owing to the ease and rapidity with which these determinations can be performed compared with gravimetric methods. While, therefore, it may be regretted that the number of volumetric solutions has not been augmented, it is gratifying to find that the scope of the volumetric analysis has been enlarged, and now embraces a number of important substances which were not previously so determined.

In the following short note I wish merely to touch on a few points suggested to me by practical work.

In the first place the requirements defined for the burette are rather vague. It is required to *hold* within the graduated portion 50 grammes of distilled water; the burette should *deliver* 50 grammes of distilled water.

"The graduated portion is divided into 50 equal parts, each of which is to be taken as corresponding to 1 C.c."

The burette should be first divided into 10 equal parts, and each division calibrated by weighing the amount of distilled water which it delivers. If equal, each division will represent 5 C.c., and can then be further sub-divided. If volumetric work is to be accurate and give concordant results too great care cannot be taken in verifying the measuring apparatus.

I now make a few remarks on the official directions for preparing the volumetric solutions.

SILVER NITRATE SOLUTION.—"Take of silver nitrate 16.869 grammes." We are not told how this quantity is to be weighed, presumably neither 1/10 of a milligramme more or less; nor supposing, on verification with sodium chloride, it should be weaker than decinormal, how the so-called strengthening of the solution is to be carried out. This could only be done by a method of "dodging," as Sutton has expressed it, which would be both tedious and impracticable.

It is better to make a stronger solution with 17 grammes AgNO_3 , which need only be roughly weighed, standardise with pure sodium chloride, and adjust by dilution to the requisite bulk. It saves trouble to have the solutions accurately normal or decinormal as the case may be, as then, with a series of factors, the determinations can be more rapidly calculated than when abnormal solutions are employed. The same remark applies to the directions for preparing iodine and potassium bichromate solutions.

SULPHURIC ACID SOLUTION.—The directions given here are not very specific. The sodium carbonate prepared by ignition of the bicarbonate should be cooled in a desiccator. No indicator is specified to be used in titrating the solution, but as the carbonic anhydride is directed to be boiled off, presumably litmus is intended. This is an unsatisfactory method, the litmus on boiling assumes a mezzotint and the point of "exact neutrality" is by no means easy to observe. I find that very concordant results are obtained by using cochineal as an indicator and titrating in the cold. Cochineal has also the advantage over litmus that the "colour change" is easily observed in gaslight.

The accurate standardisation of this solution is of the utmost importance, as it is the standard of the acidimetry, as well as the

* Read at an evening meeting of the Pharmaceutical Society in Edinburgh on December 21, 1898.

* $\text{K}_2\text{Cr}_2\text{O}_7$ occurs on p. 431 of the Pharmacopœia.

alkalimetry of the Pharmacopœia, and I find it most satisfactory to make several gravimetric determinations, precipitating the sulphuric acid solution with barium chloride, washing and igniting the resulting barium sulphate—

231.74 BaSO₄ represents 97.34 H₂SO₄ (factor 0.42004).

I think it is unfortunate that a decinormal solution of potassium permanganate has not been included in the B.P. It is undoubtedly much more convenient than potassium bichromate for the determination of ferrous salts, especially where a large number of titrations have to be performed. It is applicable to all the ferrous salts, with the exception of Ferri Carb. Sacch. Although objection may be made to its instability compared with potassium bichromate, its strength can be very rapidly determined by means of ferrous ammonium sulphate.

A number have protested against the lowering of the standard of Ferri Sulphas Exsiccatus from 97.5 per cent. to 92.5 per cent., but I think that the lower standard will be found to keep better and the analysis of five wholesale samples shows that not one even comes up to the new standard, although this should not present the slightest difficulty—

FERROUS SULPHATE EXSICCATED.		
No. 1	.....	70.51 per cent. FeSO ₄ , H ₂ O
„ 2	.....	80.76 „ „
„ 3	.....	74.57 „ „
„ 4	.....	82.11 „ „
„ 5	.....	72.06 „ „

HYDROGEN PEROXIDE SOLUTION.—In the nitrometer determination of this solution, chlorine is evolved by the action of the sulphuric acid and nascent oxygen on the brine, and a saturated solution of sodium sulphate has been recommended instead of brine.

The strength of this solution is, however, much more expeditiously determined by diluting 1 or 2 C.c. well with water, acidulating with sulphuric acid and titrating with N/10 potassium permanganate.

1 C.c. corresponds to 0.558 C.c. available oxygen at 0° and 760 Mm. I find Fletcher's autometric stopper an accurate and convenient pipette for delivering this and other solutions.

It would have been well if a process for the preparation of this hydrogen peroxide solution had been inserted in the Pharmacopœia, so that it could be made up freshly when wanted, or at least the supply regulated to the demand, seeing its tendency to diminish in strength. I append analysis of six retail samples:—

HYDROGEN PEROXIDE DETERMINATIONS.		
No. 1	.....	1 C.c. yields 9.3 C.c. Oxygen.
„ 2	.....	9.0 „ „
„ 3	.....	9.1 „ „
„ 4	.....	8.3 „ „
„ 5	.....	9.6 „ „
„ 6	.....	Absolutely nil.

TARTARIC ACID.—The standard has been raised from 99 per cent. to 100 per cent. I append a very careful analysis of five samples, the best was in crystals and the lowest in powder:—

TARTARIC ACID DETERMINATIONS.		
No. 1	.....	99.40 per cent.
„ 2	.....	98.87 „
„ 3	.....	98.68 „
„ 4	.....	99.73 „
„ 5	.....	97.60 „

POTASSIUM BICHROMATE AND POTASSIUM PERMANGANATE are determined by ferrous sulphate and oxalic acid respectively. Ferrous ammonium sulphate is better in both cases.

I give herewith a table of factors and their logarithms to five places (without indices) for the B.P. volumetric solutions, which I find useful in my own laboratory:—

Table of Factors for B.P. Volumetric Solutions.

1 C.c. Volumetric Solution.	Factor.	[Log. f.	Substance.
Normal, NaOH	*08619	55859	HCl
	*08258	79644	HNO ₃
	*08035	90499	HBr
	*08937	95119	HC ₂ H ₅ O ₂
	*05958	77510	HC ₂ H ₃ O ₂
	*18675	27126	KHC ₄ H ₄ O ₆
	*04867	68726	H ₂ SO ₄
	*06255	79623	H ₂ C ₂ O ₄ .2H ₂ O
	*07446	87192	H ₂ C ₄ H ₄ O ₆
	*0695	84198	H ₂ C ₆ H ₅ O ₇ .H ₂ O
	*16415	21524	CCl ₃ .CH(OH) ₂
Normal, H ₂ SO ₄	*02288	35946	Na
	*03976	59945	NaOH
	*05571	74593	KOH
	*01694	22591	NH ₃
	*18956	27775	Na ₂ B ₄ O ₇ .10H ₂ O
	*027795	44397	CaO
	*036735	56508	Ca(OH) ₂
	*05265	72140	Na ₂ CO ₃
	*14205	15244	Na ₂ CO ₃ .10H ₂ O
	*08343	92132	NaHCO ₃
	*0686	83632	K ₂ CO ₃
	*09938	99730	KHCO ₃
	*05201	71609	N ₃ H ₁₁ C ₂ O ₅
	*12123	08361	K ₂ C ₄ H ₄ O ₆ .H ₂ O
	*14	14613	KNaC ₄ H ₄ O ₆ .4H ₂ O
	*10137	00591	K ₂ C ₆ H ₅ O ₇
	*14301	15537	C ₆ H ₅ .COONa
N/10, H ₂ SO ₄	*0283	45179	C ₁₇ H ₁₉ NO ₃ , Morphine
N/100 „	*00287	45788	C ₁₇ H ₂₃ NO ₃ , Atropine
N/10 „	*018807	27432	Pb(C ₂ H ₃ O ₂) ₂ .3H ₂ O
N/10 „	*013593	13331	PbO.Pb(C ₂ H ₃ O ₂) ₂
N/10, AgNO ₃	*005313	72534	NH ₄ Cl
	*009729	98807	NH ₄ Br
	*010223	00958	NaBr
	*014878	17255	NaI
	*011818	07254	KBr
	*016473	21677	KI
	*01537	18667	FeI ₂
	*00537	72997	HCN
N/10 K ₂ Mn ₂ O ₈	*00556	74507	Fe
	*015094	17880	FeSO ₄
	*016882	22742	FeSO ₄ .H ₂ O
	*02761	44107	FeSO ₄ .7H ₂ O
	*011848	07365	Fe ₃ (PO ₄) ₂
	*014761	16912	Fe ₃ (AsO ₄) ₂
	*006255	79623	H ₂ C ₂ O ₄ .2H ₂ O
	*558 C.c.	74663	Oxygen from H ₂ O ₂
N/10 K ₂ Cr ₂ O ₇	*00556	74507	Fe
	*015094	17880	FeSO ₄
	*016882	22742	FeSO ₄ .H ₂ O
	*02761	44107	FeSO ₄ .7H ₂ O
	*011848	07365	Fe ₃ (PO ₄) ₂
	*014761	16912	Fe ₃ (AsO ₄) ₂
	*011515	06127	Fe ₂ O ₃
	N/10, Iodine.....	*024644	38171	Na_{2}S_{2}O_{3}.5H_{2}O
*004916		69161	As ₂ O ₃
*016478		21690	[K(SbO)C ₄ H ₄ O ₆] ₂ .H ₂ O
*007141		85376	Sb ₂ O ₆
*003179		50229	SO ₂
*00473		67486	H ₂ SO ₃
*012519		09757	Na ₂ SO ₃ .7H ₂ O
N/10, Na ₂ S ₂ O ₃ .5H ₂ O ..	*01259	10003	Iodine
	*003519	54642	Chlorine

MALIC ACID OF THE CRASSULACEÆ.—The doubt which has existed with regard to the isomeric forms of malic acid has led F. Bullenheimer to investigate the subject. He finds that malic acid may exist in three stereo-isomeric forms, two of which—the acid of crab apples and of the Crassulaceæ—are known; the third form has not yet been isolated. The form from apples occurs in a crystalline state, but that from the Crassulaceæ is amorphous. The former readily forms an acid calcium salt and a crystalline acid ammonium malate, the latter gives an acid calcium salt with difficulty and no acid ammonium salt. The former acid is lævogyre, and its salts dextrogyre, while the latter acid is itself dextrogyre, and forms lævo-rotatory salts. The chemical relations and differences of the acids are described, and the author indicates that the synthesis of crassularia malic acid will probably soon be accomplished.—*Chem. Zeit.*, xxii., 194.

NOTES ON LIME AS A PRESERVATIVE FOR CHLOROFORM.*

BY DAVID BROWN, F.C.S., F.R.S.E.

In the *Lancet* of January 23, 1897, Dr. D. Newman and Professor Ramsay published a "Note on Decomposition of Chloroform and Sickness," in which they say freshly distilled chloroform produces little or no irritation on the air passages, little excitement, and if the agent is carefully given, sickness, fainting, and irregularity of pulse and respiration seldom occur during its administration.

There is a very important qualification here which deserves careful attention when it is desired to localise the cause of disagreeable or dangerous symptoms—it is said that if the freshly distilled chloroform "is carefully given," practically no bad results follow its administration—the natural inference being that if it is not carefully given bad results will follow, which means that pure chloroform carelessly administered can produce the bad effects which are known to follow the use of an impure one. This is a very important admission, for after establishing the purity of the chloroform, we are brought very much nearer the true cause of accidents. They also say chloroform which has been exposed to air and sunlight causes excitement and sickness during and after administration. This is far too sweeping an assertion, and might more truthfully be confined to chloroform which has become decomposed by exposure. In order to prevent bad results from chloroform inhalation, distillation is recommended as a cure, and it is then put aside in favour of slaked lime treatment, which they say gives equally good results. Three cases are given in support of their statement, two of which are after lime treatment and one after distillation, the results being that sickness in a mild form follows the use of lime-treated chloroform, and that there is none when the distilled article is used, which points to distillation, not lime treatment, as the better of the two methods. The authors do not say the chloroform they were working with, and which was subjected to their treatment, was actually in a decomposed state, neither do they give any details of the effect produced on the chloroform by the treatment, they only tell us how it affected the patients. Judging, however, from the title of the paper and from the fact that they describe the action of lime on carbonyl chloride, I think they must have been under the impression they were working with decomposed chloroform, and that the treatment they recommended was intended not only to restore it to a state of purity, but also to prevent it again showing any signs of decomposition. The theory that the lime would, under the given conditions, combine with the products of decomposition as they were formed, and that there would therefore always remain a quantity of pure chloroform ready for use, is not found, however, to be true in practice.

From the results they obtained I am inclined to think their original chloroform was not decomposed, because, had it been so, neither simple distillation nor their treatment with lime would have removed the products and made it suitable for anæsthetic purposes. In reply to inquiries regarding the use of this lime treatment, I have said I could not recommend it, and have advised instead the application of the recognised tests to the chloroform, and its rejection and immediate return to the maker if it did not stand them. My experience has been that even short contact with lime hastens decomposition, and that a decomposed chloroform cannot by the treatments recommended be transformed into a pure anæsthetic, more complicated processes in which water plays a necessary and important part are required to

bring about this change. I have also found that pure chloroform of sp. gr. 1497 if properly stored may be kept for many months in a state of purity, and I know that after being so stored it has been sent to distant parts of the world, when after reaching its destination it has been found pure and was used with only beneficial results as an anæsthetic. It is also my experience that 1497 chloroform is not the delicate article some people imagine, but that it may be exposed to sunlight for many weeks without undergoing change. Some years ago I exposed a quantity for 144 days and could then find no trace of impurity in it. An exposure such as this is much longer than chloroform when properly used should ever be subjected to. In further evidence of the keeping qualities of chloroform reduced to 1497 with alcohol I have recently examined 640 samples, all now remaining, and representing part of our production for the past twenty years. I have taken the only five samples of the 1879 make, and one indiscriminately from each of the following years (twenty-four in all), and have subjected them to the zinc iodide and starch test, and to the nose, without being able to find the slightest trace of decomposition in any of them. The samples were originally drawn from finished bulks, and have been kept in white glass bottles. After standing on my table for a few days they were put into a glass case standing in a room the temperature of which is generally about 60° F., and they have been protected from light by brown paper hung up inside the case. During the time, they have been frequently exposed to light for short intervals three or four times a week, but I am unable to say how many days or weeks this exposure may represent. The fear of bad effects from the action of light and air on chloroform dates back to the time when it was made and sent out of sp. gr. 1500. It was then, and still is, a very well-founded fear so far as 1500 chloroform is concerned, but I think it has in its full force been frequently very unjustly allowed to attach itself to the alcohol-reduced article now so universally employed. In order to compare the effect of exposure to sunlight on lime-treated and ordinary chloroform, the following experiments were made with pure chloroform and slaked lime:—

1. Chloroform sp. gr. 1500 + slaked lime and exposure, decomposed in two days.
2. Chloroform sp. gr. 1497 + slaked lime and exposure, decomposed in five days.
3. Chloroform sp. gr. 1497, exposed without lime, was not decomposed after several weeks.

Nos. 1 and 2 contained carbonyl chloride, and free lime combination had not therefore, as indicated by Dr. Newman and Professor Ramsay, taken place, and the remaining chloroform contained such large quantities of carbonyl chloride that it could not possibly have been used for anæsthetic purposes. Although the results of only three experiments are given, others were made which confirmed them. Lime treatment, as a means of purifying decomposed chloroform and maintaining it in a state of purity, has been fairly tried and found wanting; it should, therefore, be abandoned in favour of alcohol, the agent which has for the past thirty-five years done its duty so well. Since its introduction I have not met with a single authentic case of decomposition, which is fairly strong evidence in its favour, and justifies the refusal to accept a substitute until it has proved its equality or superiority to it as a preservative.

STYPTICINE IN METRORRHAGIA.—Bakoffen (*Klin. Therap. Woch.*) has found stypticine (cotarnine hydrochloride) prompt and serviceable in the treatment of metrorrhagia. It is prescribed in doses of 2½ to 5 centigrammes three or four times daily, either with sugar in a cachet, or else in pills.—*Bull. Gen. de Therap.*, cxxxv., 931.

* Read at an evening meeting of the Pharmaceutical Society in Edinburgh, on December 21, 1898.

PHOTO-MICROGRAPHY.—X.

BY EDMUND J. SPITTA, L.R.C.P. LOND., M.R.C.S. ENG., F.R.A.S.

High Power or Critical Photography.

[WITH PLATE.]

This subject commences where medium power may be said to end. I shall take specimens of several objects and describe each in detail, as it is a necessity, seeing that arrangements peculiar to each nearly always obtain. We now use our 1/6th inch objective and obtain a specimen of *Polyxenus lagurus*, the hair of the pencil-tail. This innocent-looking little hair is an excellent test for colour correction of the objective, and few lenses but the very best will show the object white. If a photograph be taken, then, with a badly corrected objective, it will look dirty, and the object, instead of standing out cleanly cut, will look as if it was steeped in mud. The N. A. 1.0 condenser must be used, and I confess to having a predilection for Powell and Lealand's new apochromatic. It is not quite free from spherical aberration, so must be centered with the greatest of care. First close the iris as small as possible, lower the condenser till the image of the hole is seen with a low eye-piece. Centre it and re-obtain critical light. Expose, about five to ten seconds; it is short, but the object is exceedingly faint. Slightly close the iris with caution and open the Davis diaphragm. The *Navicula spectabilis* may be photographed with this objective. Keep the diaphragm rather closed and widely open the Davis; the exposure about the same.

Now we come to a more difficult, in point of fact the most difficult part of the subject. I refer to the use of the larger and 1/12 immersions, and must premise my remarks upon the use of these lenses by saying that as the larger and 1/12 apochromatics both have a N.A. of 1.40, nothing save magnification is gained by the use of one power over the other. With respect to my own personal experience I find that for general work, excepting that of photographing bacilli, no lens ever made, that I have seen, and I have tested a great many in the last twenty years, can compare with the larger or 3 Mm. apochromatic made by Zeiss. A large working distance, excellent definition, and a perfection of optical centring are all combined in this lens. For photographing diatoms I know of no equal to it. It will stand a 27 eye-piece with suitable objects without producing the faintest falling-off in any respect. But for bacteria I do not find the field is so flat as we could desire, and the 1/12, especially made by Powell and Lealand for this class of work, whilst not in my estimation rendering such a good performance with diatoms, is far better for the purpose for which it was especially designed. The field is so much flatter in the Powell lens, whilst the definition of the faintest flagellum is superb. Hence for diatoms I always employ the Zeiss 3 Mm., and for bacteria the Powell and Lealand.

With these high powers it is needless to point out that only a very small portion of a specimen can be photographed at one given time; hence it has to be carefully searched for a typical place in the case of tissues, bacilli, etc., and for a well-marked and evenly-mounted specimen when dealing with diatoms. It is best to do this at some time previous to taking the photograph; in fact, to do it at one's leisure, noting the place by the verniers attached to the mechanical stage. By this means, when the actual photograph is to be taken, the verniers have only to be reset, and no search made at the time.

I say this because searching for an object when the microscope is horizontally placed on the table necessitates a continued bending of the body over it, which is certainly fatiguing. This is a fault I am aware of in my own arrangement, about which I have spoken, and it is remedied to a certain degree in the

best forms of expensive apparatus sold ready made, by having a sort of turntable to the microscope, which allows the whole instrument, with its jet and condensers, to rotate away from the camera, and permits the operator to hunt through the specimen certainly with more comfort than is afforded by the use of our own plan. This I willingly admit, but what I have found personally is that it is far better, as previously pointed out, at some other time to have searched through the slide, and not to leave it until the moment of taking the picture. Hence the lack of this arrangement, which is very expensive, is much more apparent than real.

Let us select a *Navicula rhomboides*, and, having oiled the immersion objective to the cover-glass and obtained critical light, we may for the specimen under consideration close the diaphragm a little, taking especial care to avoid diffraction effects. The attention of the photographer must be very close, or they may be very easily overlooked. The auxiliary condenser had better be used, and perhaps the faintest amount of oblique light, to sharpen up the dots. It is not an easy object to take, as the diatom itself is not flat, being as its name implies—boat-shaped. Occasionally monochromatic light—green is very good—may be employed.

It may require half to a minute's exposure with this colour, but considerably less if without. The exact time is difficult to state, for with these high magnifications the state of the lens, its quality, and the purity of the gases used, not to mention the blending of the two gases at their best illuminating power, are all such variable and yet such important factors. Of these one should be especially mentioned, it is the purity of both gases. The limes, it is true, are difficult to get good, but when a good tin is opened, and if kept well shut down when not in use, all of its contents are mostly of the same quality. But with the gases it is different. The amateur cannot test either without elaborate means, not often at his disposal. Hence he may often find that his exposures go wrong when he least expects it, entirely owing—or anyhow very largely—to his oxygen being exceedingly impure. To prevent any accident of this kind, at Brin's oxygen works the oxygen is tested almost hourly, and users need have but little fear that it is absolutely of the finest quality, which cannot be said of the producers at cheap rates, for the writer has heard of some instances where it was so very largely adulterated as to be next to useless. Another source of trouble will come from a blackening of the lime during the exposure, which lessens the brilliancy perhaps some 20 per cent. The firm to whose method of procedure I have alluded has made this an especial subject of study, and traced it to impurities in the coal-gas, which when compressed have some ill-defined chemical action on the steel of the tube itself. After much consideration and experiment they have found that it can be very largely—if not entirely cured—by coating the inside of the coal-gas cylinder with a dressing which, whilst preventing the gas attacking the metal, in no way alters its chemical properties. I have had my own coal-gas cylinder dressed this way, and so far have found it very successful.

It is interesting now to take the same diatom with a half-inch N. A. .65, using a high eye-piece or camera length to get the same magnification. It will be found that although the pictures are of the same size, one reveals the dots and the other does not, or if it does at all, most imperfectly. This is an illustration of the value of numerical aperture.

Another very good specimen to photograph is the *Coscinodiscus asteromphalus*, selecting, of course, the fine secondary markings. These require a little more oblique light than the previous, and in the Zeiss pattern microscope is easily effected by turning the screw of the oblique-light-motion just a touch more. In other

microscopes the auxiliary condenser and the light will require setting obliquely, or if using a mirror to reflect the light up the microscope it will have to be obliquely placed, and a stop added beneath the condenser with crescent-shaped stop. Focussing becomes now quite an art and the operator must not be disappointed if he has to take several negatives to get one really well in focus. The diaphragm will require careful adjustment for the object, but the Davis must be opened wide. Exposure will here vary greatly according to the amount of oblique light; and if a faint negative be obtained it is better at once to give three times the exposure to the next one. It may be better not to use any monochromatic screen or glass, but this varies very much with the ability of the operator, the amount of oblique light used, and the beauty of the specimen, for some are so much better marked than others.

Seeing we may now be using over 1000 diameters, according to the eye-piece used and the camera length, the greatest attention must be exercised in all adjustments, and the dark slide must be put into the camera in the most gentle manner possible, whilst opening the draw-slide cannot be effected with too much care. Centering the condensers and the light becomes now more than ever an act of refinement, and all movements around or about the table whilst taking the photograph must be strictly forbidden, even though it is supported on cement feet apart from the floor.

The *Pleurosigma angulatum* is another test object of much interest. It can be procured, mounted on the cover-glass, which means in air, or in a highly refractive medium such as realgar. It has two principal planes of focus, and much difference of opinion exists as to which is the correct one. For some reason, which is not very easy to discover, many microscopists find the diatom easier to photograph if mounted in air; and the easier plane of focus, the one adopted by Dr. Zeiss in his celebrated picture, where black hexagonal marking surrounds a white centre. But other authorities are equally strong in their opinion that the true focus is where the hexagonal markings are white and the centre portions dark. The last pictures taken by Dr. Van Heurck with the new Zeiss 1.6 objective and the attendant paraphernalia seem to show that after all the "black dot" is more correct than the white one. As before stated, the white one is somewhat the easier to photograph, and the dark dot seems never to be sufficiently defined to look as sharp as we should like it. It is also more often ovate, and this peculiarity I have noticed in photographs taken by others more experienced than ourselves. No arrangement that I am aware of will cure this peculiar defect, but it is not easy to notice it unless special attention be paid to the point.

When specimens are mounted in realgar another appearance may often be seen. It has been called the "pearl dot" where each white dot—which is now seen dusky around its base—seems literally elevated from its surroundings, whilst it is crowned at its summit by a very pronounced white tip, the so-called "pearl." Of course this is an optical phenomenon, but it is very beautiful in some specimens.

In photographing the white dot plane of focus—the first I mentioned—a narrow illuminating cone is required, and perhaps a touch of the faintest kind of "oblique light," too much will make the black hexagonals look elongated and distorted. With the black dot plane of focus no oblique light should be used, but the cone of light issuing through the condenser should be carefully controlled by the iris so as to get the best effects without more closure than possible. As I have before stated, it is not easy to get the definition so perfect at this plane of focus, as will be seen by inspecting pictures taken by the few who have given attention to the matter.

As regards the "pearl dot," I have never been able either to see them well or to photograph them, unless the specimen was mounted in realgar—hence I am led to suppose their presence is in some way due to the high refractive index of the mountant. A narrow cone and small amount—only a touch of oblique light is required. A somewhat peculiar point must be mentioned before we leave this specimen. To obtain a photograph of it direct, of more than 1000 diameters, is a most difficult thing, and the result has never been good, no matter what plane of focus. Neither have I ever been satisfied with the results obtained by others. The only way to get increased amplification is to re-enlarge the negative, a plan adopted by several of the best photo-micrographers, including Dr. Van Heurck. This is curious because with *Surirella gemma*, there is no difficulty of doing so, even up to 3000 diameters.

SURIRELLA GEMMA.—Oblique light is here needed, and a specimen mounted in realgar best and a narrow cone of light is wanted. The little dots are mostly square, ovate, or circular, sometimes all shapes being found in one specimen. In Dr. Van Heurck's last photographs with the new lens they appear in general ovate, but some are round. They are about 50,000 to the inch.

PODURA SCALES.—The scales of the podura are also by some considered fine tests for a good objective. If studied they will be found to exhibit curious markings—"notes of exclamation" as they are called. These simple markings should be shown easily with a 1/6th, but of what I am about to speak and what I may, for convenience of description, call "the white interior of the note," requires more magnification and a little higher N. A. Indeed, to do so perfectly an 1/8th, with fairly high N. A. and a fairly high eye-piece or much camera extension is required. I say a fairly high N. A. because I am aware that N. A. is not of so much consequence with this specimen. It is the colour correction that is of so much importance, and any failure in this respect will be readily apparent visually by showing the "white interior of the note" coloured, and photographically by failing to show it clear and well defined. Indeed, nothing but the very best of apochromatics exhibit this centre as strictly and absolutely white. Concerning definition, the white centre should in the photograph distinctly show a well-marked construction around its neck at the broadest part, and the whiteness should be prolonged, becoming narrower and narrower until almost a line for about two-thirds of the entire length of the black note itself. Good specimens are difficult to obtain; R. and J. Beck, of Cornhill, have the largest assortment.

AMPHIPLEURA PELLUCIDA, KÜTZ.—Perhaps the most difficult specimen, both to obtain as well as to photograph, is an *Amphipleura pellucida*, Kütz. None that the writer has ever seen can compare with those mounted in realgar by Dr. Van Heurck. Some considerable practice is necessary before the beginner can even see the lines, much less photograph them. It may be of service to assist him if I mention the following:—Although it is difficult to explain, still I have found that to see the lines well no auxiliary condenser is absolutely necessary; I can do so perfectly and without any difficulty, measure them with the N. A. 1.0 condenser, the F-line screen, and oblique light. But to photograph them so that the lines shall be pure and of about one-third the thickness of the white space between any two, that the auxiliary condenser, as well as the 1.30 substage condenser oiled to the slip, must be employed. It is also to be recollected that the final perfection of the image, as seen on the ground glass with the 18 or 27 eye-piece, should be attained by manœuvring the auxiliary condenser from side to side, rather than by using more and more oblique light.

This point to bear in mind is of all importance, as I have found that by so doing the lines appear finer and the exposure is enormously reduced. Without the additional condenser and not using so wide angled or so perfect a substage condenser, I failed after even an hour had been spent with the plate exposed, to obtain a good negative, and this I traced to the fact that the heat either caused the realgar to melt—if it may be so said—or it upset the focussing of the microscope itself. But after repeated trials I discovered the advantage of obtaining the perfected image by finding the suitable position for the auxiliary lens, and also the advantage of using Mr. Conrady's perfectly achromatised 1.30 condenser, for I was able to reduce the time so considerably that my son actually obtained a first-rate negative with only thirty seconds' exposure, although using the F-line screen. The closeness of the lines differs with various specimens. In my case I actually measured them and found they were about 76,000 to the inch. Hence, if an ordinary hair of the head was split into 400 strips, one strip would about fill the space between any two lines. To photograph these lines as dots is the highest record for the photo-micrographic student. According to some great authorities it can only be done with a lens which has an aperture of over 1.40, which means an expense of no small amount, seeing that a special condenser is also required, let alone slips and cover-glass cut and polished from a block of glass having the actual refractive index required for the optical combination.

Dr. Van Heurck, however, it is believed, somewhere about 1884, with some form of silvered preparation, made a photograph showing the lines resolved into beads, but in 1887 actually succeeded in photographing them by transparency, employing monochromatic solar illumination. I have never seen the photograph, but in 1889 the same renowned microscopist and photographer took with the new lens, what must be considered as his *opus magnum*, a photograph of the lines at 2000 diameters which sets any doubts at rest concerning the possibility of obtaining such resolution. Here I must pause a moment, for I know there are many authorities who entirely disagree with the reality of these pictures, believing them to be nothing but photographs of optical phenomena. I admit that the matter is very uncertain, for it is a known fact that the phenomena displayed by the *Pleurosigma angulatum* have been the subject of mathematical inquiry, and it is maintained by no less an authority than that of Professor Abbe himself, that the mathematician can accurately show what this image should be in direct accordance with the number of diffraction spectra that the objective itself has transmitted. Hence, in the case of this diatom, theory indicated the optical, but not necessarily the structural existence of the tiny markings. Dr. Eichhorn actually made the calculations of their size and shape without knowing of their existence, and when Mr. Stephenson re-examined the object with annular light he saw them, whilst Dr. Zeiss has since been able to photograph them. Why should this not apply to *Amphipleura pellucida* equally well?

Another disturbing appearance is that of a distinct image of the dots being occasionally seen outside the diatom itself, lying in space. Here we are confronted with an exhibition that nothing but optical phenomena can possibly explain. Hence I never employ oblique light unless it emphasises what can be seen without its use. If by its extreme use I can benefit my pictures, but get these "outside" effects, I reject them, and only accept photographs which may not to the eye be so elegant, but to the mind which prefers unquestionable reality, appeal all the more readily.

(To be concluded.)

BRITISH PHARMACOPŒIA, 1898.

THE PROPOSED INDIAN AND COLONIAL ADDENDUM.

The following is the list, with descriptions—continued from page 612—of drugs already proposed by Indian and Colonial Authorities for official recognition in the British Pharmacopœia, and suggestions for pharmaceutical preparations. Further suggestions are invited by the Pharmacopœia Committee of the General Medical Council from any British Dependency where the drugs of the British Pharmacopœia of 1898 are insufficient for local requirements, and comments are invited from readers of the Journal in India and the Colonies.

BUTEÆ GUMMI.

Butea Gum.

An exudation from the stem of *Butea frondosa*, *Roxb.* [Bentl. and Trim. 'Med. Pl.,' plate 79].

CHARACTERS AND TESTS.—In small angular pieces of a very dark ruby colour, opaque by reflected light, but transparent by transmitted light when in thin films. Partially soluble in *water*; in *alcohol* (90 per cent.) about 40 per cent. of the gum is soluble, the solution being scarcely coloured. It has no odour; but it has a purely astringent taste. It should be free from an admixture of corky or woody particles.

[Proposed by the Indian Government Committee for use in India as the equivalent of the official (East Indian) Kino.]

PREPARATIONS.

Pulvis Buteæ Gummi Compositus. (Formula as Pulvis Kino Compositus, 1898.)

Tinctura Buteæ Gummi. (Formula as Tinctura Kino, 1898.)

BUTEÆ SEMINA.

Butea Seeds.

The seeds of *Butea frondosa*, *Roxb.* (*Butea monosperma*, *Taub.*) [Bentl. and Trim. 'Med. Pl.,' plate 79.]

CHARACTERS.—The flat reniform seeds are from one to one and a half inches (twenty-five to thirty-eight millimetres) long, from three-quarters of an inch to one inch (sixteen to twenty-five millimetres) wide, and from one-sixteenth to one-twelfth of an inch (one and a half to two millimetres) thick. The testa is thin, glossy, veined, wrinkled, and of a dark reddish-brown colour. There is a large prominent hilum situated in the middle of the concave edge. The cotyledons are large, leafy, and of a yellow colour. The seeds have a faint odour and a slightly acrid taste.

[Proposed by the Indian Government Committee for use in India as the equivalent of *Santonin*.]

PREPARATION.

INFUSUM BUTEÆ.

Infusion of Butea.

	IMPERIAL.	METRIC.
Butea Seeds.....	¼ ounce	12.5 grammes.
Distilled Water (boiling)..	1 pint	1000 cubic centimetres.

Infuse in a covered vessel for fifteen minutes; strain.

Cambogia indica, Indian Gamboge.—[The Indian Government Committee have suggested that the Gamboge of *Garcinia Morella* might be used in India instead of the official Gamboge of *Garcinia Hanburii*.]

The product of *Garcinia Morella*, *Desr.*, appears to agree in every particular with that of *Garcinia Hanburii*. As all the specimens in this country are greatly contaminated with extraneous matters, it is desirable to know if it is possible to obtain a gum resin in commerce which contains such a small quantity of impurities as to permit of favourable comparison with the official drug. If such can be obtained it will only be necessary to include *Garcinia Morella*, *Desr.*, in the British Pharmacopœia as an additional botanical source to that already named.]

[Camphorodyne.—The word "chlorodyne" does not appear in the British Pharmacopœia, and it would not be desirable to employ the word "camphorodyne." The article, however, might be made official, if at all, under the name of "Tinctura Chloroformi et Camphoræ Composita." It is desirable, however, that any such official compound should have more than absolute local use. Information should be afforded as to whether camphorodyne is used in diarrhœa and colic over a wide area.

Suggested for use by the Principal Medical Officer, Her Majesty's Forces in India.]

CAT'CHU NIGRUM.**Black Catechu.**

An extract prepared from the wood of *Acacia Catechu*, Willd. [Bentl. and Trim. 'Med. Pl.,' plate 95].

CHARACTERS AND TESTS.—In irregular masses of a dark brown colour, brittle, having a porous, glossy, somewhat conchoidal fracture. Partially soluble in cold water, almost entirely in boiling water. Not less than 80 per cent. should be soluble in alcohol (90 per cent.) The dilute aqueous solution gives a dark green colour with test solution of ferric chloride, changing to purple when made alkaline with solution of sodium hydroxide. It is without odour; it has a sweetish, astringent taste. When incinerated it should not leave more than 6 per cent. of ash.

[The extracts of the wood of *Acacia Catechu* and of the fruit of *Areca Catechu* are suggested by the Indian Government Committee for use in India instead of the Pale Catechu from *Uncaria Gambier*. It seems doubtful if the extract of *Areca* fruit is required.]

PREPARATIONS.

Pulvis Catechu Nigri Compositum. (Formula as **Pulvis Catechu Compositus**, 1898.)

Tinctura Catechu Nigri. (Formula as **Tinctura Catechu**, 1898.)

Trochiscus Catechu Nigri. (Formula as **Trochiscus Catechu**, 1898.)

CISSAMPELOS.**Cissampelos.**

The root of *Cissampelos Pareira*, Linn. [Bentl. and Trim., 'Med. Pl.,' plate 15].

CHARACTERS.—In slightly compressed undulating pieces attaining a diameter of half an inch (twelve millimetres). It is covered with a dark brown bark, easily separable from the underlying fibrous wood, marked with broad shallow longitudinal furrows and fine transverse cracks. A transverse section exhibits a rather narrow bark surrounding a yellowish-brown woody column consisting of one ring of from ten to twenty woody wedges separated from each other by distinct narrow medullary rays; the vessels of the xylem are large and may be seen with the naked eye. The fracture is fibrous. The root has no odour; it has a very bitter taste.

[Suggested by the Indian Government Committee for use in India instead of the dried root of *Chondrodendron tomentosum*.]

PREPARATION.

Extractum Cissampelos Liquidum. (Formula as **Extractum Pareiræ Liquidum**, 1898.)

COSCINIUM.**Coscinium.**

The stem of *Coscinium fenestratum*, Colebr. [Hooker's 'Botanical Magazine,' plate 6458, contrib. III. 22, plate 28].

CHARACTERS AND TEST.—In cylindrical straight or twisted pieces of variable length and attaining a diameter of four inches (one decimetre); furrowed longitudinally and bearing occasional transverse narrow fissures. It is covered with a pale yellowish-grey cork, which is removed in many places and displays the subjacent brown cortical tissues. On transverse section it exhibits a cortex which varies considerably in thickness according to the age of the stem; this contains in the inner portion numerous semilunar masses of phloem; the wood consists of one ring of wedge-shaped bundles containing many large vessels and surrounding a small central pith. There are many well-marked expanding medullary rays of a rather lighter colour than the woody wedges. The wood breaks with a splintery fracture. The stem has no odour; it has a bitter taste. A cooled decoction gives no reaction for starch with solution of iodine.

[Suggested by the Indian Government Committee for use in India instead of *Calumba*.]

PREPARATIONS.

Infusum Coscinii. (Formula as **Infusum Calumbæ**, 1898, using boiling water.)

Liquor Coscinii Concentratus. (Formula as **Liquor Calumbæ Concentratus**, 1898.)

Tinctura Coscinii. (Formula as **Tinctura Calumbæ**, 1898.)

CRINUM.**Crinum.**

The bulb of *Crinum asiaticum*, var. *toxicarium*, Herbert [Wight, 'Icones,' plate 2021].

CHARACTERS.—The bulb consists of a lower solid fusiform portion and an upper bulbous portion composed of numerous whitish or brownish-white membranous leaves longitudinally traversed by narrow equidistant nerves. The two portions are frequently found in sections from an eighth to a quarter of an inch (three to six millimetres) thick. The solid sections have an outer, dark brown, transversely wrinkled corky layer surrounding a broad cortical portion of a brown or whitish-brown colour and marked with narrow radial wrinkles. The centre portion is of a darker colour and has a granular surface. The whole of the solid section is considerably shrunken and has a wavy margin. It has a characteristic odour somewhat resembling dried figs, but no marked taste.

[Suggested by the Indian Government Committee for use in India instead of *Squill*.]

PREPARATIONS.

Pilula Ipecacuanhæ et Crini. (Formula as **Pilula Ipecacuanhæ et Scillæ**, 1898.)

Oxymel Crini. (Formula as **Oxymel Scillæ**, 1898.)

Pilula Crini Composita. (Formula as **Pilula Scillæ Composita**, 1898.)

Syrupus Crini. (Formula as **Syrupus Scillæ**, 1898.)

Tinctura Crini. (Formula as **Tinctura Scillæ**, 1898.)

Acetum Crini. (Formula as **Acetum Scillæ**, 1898.)

CINNAMOMI LIGNUM.**Cinnamon Wood.**

[The wood of *Cinnamomum Glanduliferum*, Meiss., is suggested by the Indian Government Committee for use in India as the equivalent of *Sassafras*. A description of commercial specimens of the wood should be supplied from India, specimens in England differing widely in character.]

DATURÆ FOLIA.**Datura Leaves.**

The leaves of *Datura fastuosa*, Linn., var. *alba* Nees [Wight, 'Icones,' plate 1396], and *Datura Metel*, Linn. ['Bot. Mag.', plate 1440].

CHARACTERS.—Ovate, acuminate leaves with long petioles and sinuate-dentate margins; often unequal at the base; they attain seven or eight inches (seventeen or twenty centimetres) in length and four or five inches (ten or twelve and a half centimetres) in breadth. They have a characteristic odour and a bitter taste.

[Suggested by the Indian Government Committee as an equivalent in India of the official *Folia Belladonnæ*, and by the Authority at Hong Kong for use there in addition to *Stramonium Leaves*.]

PREPARATION.

Tinctura Daturæ. (Formula as **Tinctura Stramonii**, 1898.)

DATURÆ SEMINA.**Datura Seeds.**

The seeds of *Datura fastuosa*, Linn., var. *alba* Nees (*Datura alba*, Nees [Wight, 'Icones,' plate 1396].

CHARACTERS.—The seeds are somewhat wedge-shaped, with rounded, thickened, furrowed, wavy margins, strongly compressed latterly; from one-sixth of an inch to one-fifth of an inch (four to five millimetres) broad, and about one twenty-fifth of an inch (one millimetre) thick. The hilum is situated on one edge and extends from about the middle to the acute end of the seed. The testa is finely pitted and reticulated and is of a dull yellowish-brown colour; it is comparatively thick, and encloses a narrow translucent endosperm. The seeds are without odour; they have a rather bitter taste.

[Suggested by the Indian Government Committee for use in India instead of *Stramonium Seeds*.]

PREPARATION.

Tinctura Daturæ. (Formula as **Tinctura Stramonii**, 1898.)

DUBOISIA.**Duboisia.**

The leaves of *Duboisia myoporoides*, R. Br. []

CHARACTERS.—Shortly-petiolate, lanceolate, entire leaves; from three to four inches (seven and a half to ten centimetres) long, and from three-quarters to one inch (eighteen to twenty-five millimetres) broad; thin, smooth, narrowed at both ends; margin slightly thickened. Inodorous, but having a bitter taste.

[The Medical Society of Queensland send a small specimen of the leaves of this plant, and, together with the Queensland Pharmacy Board, recommend various preparations of the plant and of its alkaloid, duboisine, for official recognition.]

The Victorian Branch of the British Medical Association also recommend the inclusion of *Duboisia myoporoides*, R.Br., and, with the concurrence of the Pharmacy Board of Victoria and the Pharmaceutical Society of Australasia, give formulæ for *Tinctura Duboisie* and for *Unguentum Duboisine*.

The late Baron Von Mueller, the Government Botanist, supported the Victorian recommendation, and gave copious references to the chemical, pharmacological, and pharmaceutical literature of the *duboisias* up to 1884.

The subsequent literature, however, shows that as regards the alkaloid duboisine, it is sometimes hyoscyamine, and sometimes hyoscyne (Ladenburg), but never a separate distinct alkaloid, to which such a name as duboisine could properly be applied. The mother liquors of hyoscyamine sulphate, whether from hyoscyamine or from *duboisia*, yield hyoscyne sulphate (Schering). It should be remembered, too, that the alkaloid atropine probably does not exist as atropine in *belladonna*, but is a product of the alteration of, and is isomeric with, hyoscyamine, said to be the chief and often sole alkaloid in *belladonna*, and that the so-called daturine of *stramonium* is hyoscyamine.

That the official recognition of *Duboisia myoporoides* as a local medicinal substitute for *Atropa Belladonna*, Linn., or *Hyoscyamus niger*, Linn., is not considered by the Australians to be desirable by reason of any local scarcity of the latter plants, is obvious from the recommendation, by the Victorian Authorities, of the official recognition of both *belladonna* and *henbane* grown in the Colony of Victoria, where, indeed, they are stated, in the Committee's report, to flourish satisfactorily.

Considering the foregoing facts and that salts of hyoscyamine and hyoscyne are now official, the Medical and Pharmaceutical Authorities of Queensland and Victoria are invited to reconsider their recommendations in regard to *duboisia* and duboisine.

The Queensland authorities draw attention to *Anthocercis viscosa*, R. Br., and *A. Tasmanica*, Hook., as containing an active principle similar to duboisine. Probably this principle also is hyoscyamine or hyoscyne, or a mixture of these two alkaloids.

As to *Duboisia Hopwoodii*, F. Muell., the "pitury," tree of Central Australia, and its alkaloid piturine—said to be allied to but not identical with nicotine—to which the Authorities in Victoria draw attention, its pharmacology has not yet been sufficiently determined to warrant its official recognition.]

EMBELIA.

Embelia.

The fruit of *Embelia Ribes*, Burm. [Burm., 'Flor. Indic.' plate 23].

CHARACTERS.—Globular, superior fruit, about one-sixth of an inch (four millimetres) in diameter; varies in colour from a dull red with dark spots to nearly black, striated longitudinally; often attached to a five-partite calyx and surmounted by a minute beak. It contains a horny seed of a reddish colour surrounded by a delicate membrane and covered with a fine efflorescence. Taste slightly astringent and aromatic.

[Recommended by the Indian Government Committee for use in India in place of the official *Kouso* and *Male Fern*. What preparations are desired?]

Eucalypti Gummi.—*Eucalyptus Gum*.—[The Victorian Authorities recommend that official *Eucalyptus Gum* be limited to the product of *Eucalyptus rostrata*, and suggest a *Suppositoria Eucalypti Rostrate*, a *Syrupus Eucalypti Rostrate*, a *Tinctura Eucalypti Rostrate*, and a *Trochischus Eucalypti Rostrate*. Information is desired as to the special advantage of thus limiting *Eucalyptus Gum*. Is it desirable to include *Eucalypti Gummi Rostrate* in the Addendum under present circumstances? Would it be satisfactory if the preparations above mentioned were made with the gum as defined in the British Pharmacopœia of 1898? The Lozenge thus made is already official.]

Euphorbia pilulifera.—[The Victorian authorities suggest the inclusion of this drug and its preparations, but do not support their recommendation in any way. Is there sufficient evidence of the value of the drug to render its admission advisable?]

EXACUM.

Exacum.

The dried plant of *Exacum bicolor*, Roxb. [Wight, 'Icones,' vol. iv., plate 1321].

The stems are about two feet (six decimetres) in length, sharply quadrangular and narrowly winged, and about one-fifth of an inch (five millimetres) in diameter. The leaves are opposite, sessile, ovate or ovate-lanceolate, two and a half to three and a half inches (six to nine centimetres) long and three-quarters to an inch and a half (two to three and a half centimetres) broad, and furnished with five veins. The calyx is deeply four cleft into ovate-subulate segments. The corolla is large, the segments being one inch (two and a half centimetres) long and about two-fifths of an inch (one centimetre) broad; white, but tipped with purple. The inflorescence consists of cymes which are two to three times trichotomously branched.

[Recommended by the Indian Government Committee for use in India as the equivalent of *Chiretta*. Should the preparations be similar to those of *Andrographis*?

EXTRACTUM GLYCYRRHIZÆ SPIRITUOSUM.

Spirituos Extract of Liquorice.

Mix ten ounces (or five hundred grammes) of Extract of Liquorice with sufficient Distilled Water to form a liquid; add five fluid ounces (or two hundred and fifty cubic centimetres) of Alcohol (90 per cent.); then add sufficient Distilled Water to produce a well-mixed bulk of twenty fluid ounces (or one thousand cubic centimetres); filter if necessary.

[This mode of preparing a "Liquid Extract of Liquorice" is desired for local convenience in Hong Kong.]

Fœniculi Fructus—Fennel Fruit.—[The Examiner of Medical Stores in India inquires of the Indian Government Committee as to whether or not Indian fennel may be employed in making *Pulvis Glycyrrhizæ Compositus*. The Committee reply in the affirmative, but state that the powder is not issued by the medical depôts. If the official recognition of "Indian Fennel" is still desired, the name of the plant and descriptions of its fruit should be supplied from India.]

Fœniculi Fructus.—Fennel Fruit.—[A description of the fruit of *Fœniculum officinale*, *Fœniculum vulgare*, Mill., desired for official recognition, should be forwarded by the Victorian Authorities, if it differs in any important respect from the Fennel Fruit now official. In the latter case the distinctive name should be *Fœniculi Fructus Victoriae*—Victorian Fennel Fruit.]

Glycyrrhiza Radix.—[The Indian Government Committee suggest the use of the root of the *Abrus precatorius* in place of *Liquorice Root*. The seeds of this plant (Jequirity Seeds) are very poisonous, and Dymock, Warden, and Hooker ('Pharmacographia Indica,' vol. i., p. 432) consider the root bears very little resemblance to liquorice either as regards appearance or qualities. It would seem better not to recognise the root until some report of any further investigation has been published.]

GOSSYPII RADICIS CORTEX.

Cotton Root Bark.

The root bark of *Gossypium herbaceum*, Linn. [Berg. und Schmidt, 'Off. Pflanz.' plate 106.]

CHARACTERS.—In thin flexible bands or quilled pieces, covered with a thin periderm of a brownish-yellow colour and marked with fine longitudinal ridges and meshes; it is marked with small black dots or short transverse lines. Where the periderm has been removed it exhibits the underlying orange-brown tissues. The inner surface is whitish, silky, and finely striate. The liber portion is readily separated into thin fibrous laminae. It has a tough fibrous fracture. Inodorous and with a slightly acrid astringent taste.

[Recommended by the Indian Government Committee for use in India instead of *Ergot*. Suggestions from India are desired as to the most efficient preparation. A Liquid Extract is official in the 'United States Pharmacopœia' of 1890.]

GRINDELIA.

Grindelia.

The dried leaves and flowering tops of *Grindelia squarrosa* Donal, and *Grindelia robusta*, Nuttall [

The leaves of *Grindelia squarrosa* are alternate, pale green, smooth, coriaceous, brittle, oblanceolate, or elongate-oblanceolate, the lower leaves tapering considerably below, but scarcely enlarged, and at the sessile base the involucre bracts are long with reflexed subulate points. The leaves of *Grindelia robusta* are similar in colour and texture, but are shorter, more oblong, and have a cordate amphlexicaul base, are furnished with a few glandular hairs, and are sharply serrate at the margin. The

involucre in both species is about half an inch (twelve millimetres) in diameter, and the tips of the bracts are beset with short many-celled glands. Both the involucre and the leaves are more or less covered with glossy patches of exuded resin. The odour is balsamic and the taste pungently aromatic and bitter.

Grindelia Robusta.—[The Victorian authorities suggest the official recognition of this drug and its preparations, but do not support their recommendation by any data. The books allude to it as a remedy in bronchitis, asthma, and whooping-cough, and to *G. squarrosa*, Dunal, as a remedy in ague, hay-fever, and malarial diseases. The Pharmacopœia Committee of the Medical Council has therefore provisionally included both species. What preparations are desired?]

(To be concluded.)

CHEMICAL SOCIETY.

A meeting of the Chemical Society was held on Thursday, December 15, Professor DEWAR, LL.D., F.R.S., the President, in the chair.—The minutes of the previous meeting were read and confirmed, a few new Fellows signed the Register, and the preliminary business concluded with the reading of certificates of candidates for the Fellowship. Among these appeared the name of an old student in the Pharmaceutical Society's School, Mr. Thomas Anderson Henry.

The first paper, by A. W. CROSSLEY, Ph.D., dealt with the Interaction of Ethylic Sodiomalonate and Mesityl Oxide.

The author reviewed his previous work on the subject, and briefly explained how, by condensation of mesityl oxide with sodio-malonic ether, two molecules of each substance react, giving a product which by hydrolysis was found to have the formula $C_{16}H_{24}O_4$. It is an unsaturated compound, combining with bromine, its melting point is $148^\circ C.$, it yields a stable silver salt, and decolorises alkaline permanganate in the cold.

There being no discussion, the same author followed with a short résumé of his recent work on the

Interaction of Ethylic Malonate and Acetylene Tetrabromide in Presence of Sodium Ethoxide.

This paper likewise drew forth no comment, and Dr. WYNNE, Secretary, read a paper by Stanley Kipping, D.Sc., F.R.S., in the absence of the author, entitled

Derivatives of Camphoric Acid. Part III.

Recent investigations by Dr. Kipping have been directed to π -bromo-camphoric acid, which have invariably ended, on oxidation of this acid and further treatment, with the production of hydroxy-campho-tricarboxylic acid, beyond which there was difficulty in getting. The paper dealt with the bromination of π -bromo-camphoric acid, whereby the substance w - π -dibromo-camphoric acid was obtained. This body, in presence of alkalies, lost bromine, giving a bromo-lactone and the dilactone of dihydroxy-camphoric acid. By further oxidation of these derivatives the author obtained hydroxy-campho-tricarboxylic acid as before. In this substance the bromine occupies the same position as in bromo-camphoric acid.—This paper was received with the same silence as its predecessors, whereat the PRESIDENT remarked that the members seemed saturated with camphor derivatives.—After a communication by H. PERKIN, jun., F.R.S., and F. J. THORPE, Ph.D., on the

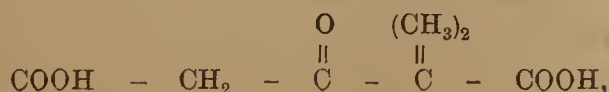
Synthesis of Trimethylglutaric Acid,

a paper was read by Dr. WYNNE on the

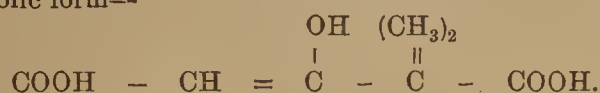
Hydrolysis of Methylic and Ethylic γ -Cyano-aceto-Acetates and their Derivatives, Part I.,

by W. TREVOR LAWRENCE.—This was the signal for the disappearance of the majority of the members.

The SECRETARY, in an able and succinct statement, pointed out that the investigation had resulted in the discovery of a new series of acids. The formula of one of the compounds dimethyl-keto-dicarboxylic acid obtained, however, drew forth criticism from Dr. LAPWORTH, who preferred the ketonic form—



to the enolic form—



Mr. VERNON HARCOURT then took the chair, while the PRESIDENT gave a brief account of his recent attempts to utilise liquid hydrogen in chemical research. The first scientific use to which he sought to apply

Liquid Hydrogen

was in the production of high vacua. By dipping a tube containing air in the liquid, the enclosed air rapidly condenses in the solid state. On sealing off the upper part of the tube in a blow-pipe, a vacuum is obtained, through which an electric spark passes with difficulty. The immersion lasted for no more than a minute, and the temperature attained was $35^\circ C.$ on the absolute scale. At this temperature it was incidentally mentioned that chlorine being $80^\circ C.$ below its boiling point, has no smell and no appreciable vapour pressure. It is necessary for the tubes to be chemically clean and dry, otherwise the carbonic oxide spectrum is obtained, resembling that of a substance which has been called metargon. Sir William Crookes prepared tubes containing no hydrogen and filled with dry air. These were treated as before by Professor Dewar, and showed no carbon spectrum, but one revealed the presence of hydrogen when spectroscopically examined, whilst others contained neon and helium. Some electrodeless tubes on examination by Professor Liveing gave traces of carbon, probably due to carbonates in the glass.

Speaking of the low temperatures attainable by boiling off liquid hydrogen under diminished pressure, Professor DEWAR gave his audience some insight into the extraordinary difficulties that attend low temperature research. The platinum resistance thermometer, the only variety of thermometer hitherto devised that is of any service in the work, has reached the limit of its usefulness. If its powers of registering low temperatures were limitless, then it would indicate the temperatures at which liquid hydrogen boiled under different diminished pressures, but as a matter of fact its resistance only indicated a diminution of $1^\circ C.$ in temperature when the hydrogen was boiling away at one inch pressure.

After some complimentary remarks from Mr. Harcourt, the meeting was adjourned for the Christmas vacation.

SELECTED PRACTICAL FORMULÆ.

LIQUOR HÆMALBUMINI.

Hæmalbumin, 30, is dissolved in water, 652, with heat. Simple syrup, 200; alcohol (90 per cent.), 100; aromatic saccharin solution, 10; arrack, 7; spirit of nitrous ether, 2; bitter almond oil sugar, 0.4 parts; rose oil sugar, 0.4; coumarin sugar, 0.2 (1=1000), are added and the mixture filtered. After standing, the resulting fluid is clear and brown in colour.—*Pharm. Cent.*, xxxix., 460.

FACE POWDER.

The best snow-white face powder requires for its preparation the best white talc powder, very white chalk, rice starch and zinc white, all of the highest quality. Flesh tints for blondes are obtained by using carmine alone; for brunettes burnt umber or sienna is employed. An addition of finely-powdered orris root is advisable, as imparting an agreeable odour to the powder. The following are the proportions:—Zinc white, 500; precipitated chalk, 3000; powdered talc, 500; wheat starch, 1000; white rose essence, 30; jasmine extract, 30; orange blossom extract, 30; cassie extract, 30; musk tincture, $7\frac{1}{2}$.—*Quar. Therap. Rev.*, xvi., 31, after *Pharm. Rundschau*.

LEATHER VARNISH OF VARIOUS COLOURS.

An elastic unbreakable black leather varnish may be prepared from resin, 30; thus, 30; oil of turpentine, 30; sandarach, 60; shellac, 120; alcohol (90 per cent.), 900. Mix and shake together until dissolved, then filter and mix with lampblack, 15, previously rubbed down with some of the alcohol. If another colour is desired use instead of lampblack a sufficient quantity of the desired pigment, such as kermes or zinc white, ultramarine, chrome yellow, or cinnabar (red).—*Deutsch. Amer. Apoth. Zeit.*, xix., 61.

REVIEWS AND NOTICES OF BOOKS.

COMMERCIAL ORGANIC ANALYSIS—PROTEIDS AND ALBUMINOUS PRINCIPLES, ETC. Vol. IV. By A. H. ALLEN, F.I.C., F.C.S. Second edition. Pp. 580. Price 18s. London: J. and A. Churchill. 1898.

In this volume Mr. Allen completes the second edition of 'Commercial Organic Analysis.' This edition has occupied fourteen years in its production, and his readers will learn with regret that the author now finds it to be impossible to undertake the enormous labour which would be necessary for the thorough revision of the earlier volumes, long out of print, although appendices are promised in order to maintain their standard of excellence. This part of the work deals with proteids and albuminous principles, and proteoids or albuminoids. There is a description of their general characters, with classification and analytical reactions, including colour tests and methods for their detection and determination. The proteids of eggs, of blood plasma, of urine, of plants, of milk, and of digestion; then proteoids, which include gelatin, isinglass, glue, the fibroids for silk, and keratin for hair and wool, are separately described and treated in the exhaustive manner that is characteristic of Mr. Allen's work.

There is a mass of information collected from various sources, some of it more or less contradictory, and the reader is frequently bewildered as to which authority to accept and which to reject. It is true that our knowledge of proteid matter is still very limited, and that the conception of the composition of the proteids is entirely hypothetical, for the figures "obtained by the ultimate analysis of the proteids lead to extremely complex formulæ, none of which can be said to have been fully established or even empirically correct, since the difficulty attending the study of the proteids is enhanced by their molecular complexity and tendency to change. At the same time they retain certain neutral salts with great tenacity, and hence it is almost impossible to obtain some proteids free from more or less mineral matter." It may be useful to advance theories as to "the living proteid being composed of a chain of cyanhydrins or cyan alcohols united to a benzene nucleus," but at present we know very little about the nature and composition of proteid matter. This is evident when albumin has to be expressed by the empirical formula $C_{77}H_{120}N_{20}O_{26}S$. The article on the proteids of milk consists of 178 pages, or nearly one-third of the book, and whilst it may be a matter of opinion as to including in a work on proteids a subject more adapted to a treatise on food analysis, it may certainly be said that this memoir on milk and its analysis is about the best that has been written on the subject. It treats very copiously of the various methods adopted in the analysis of milk, and what is of equal importance to the reader, of the interpretation to be placed on the analytical results. It is, of course, only to be expected that the Somerset House chemists are subjected to adverse criticism.

It seems opportune here to suggest that food analysts might now devote their abilities to other investigations, and leave for a time the consideration of the "fluid secreted by the mammary glands of female mammals." Meat preparations might well receive their attention, for it is only necessary to read Mr. Allen's article on meat and meat products to see the necessity of a systematic method of analysis being formulated for these preparations. The author truly states that while meat extracts have a true value as stimulants and restoratives, all attempts to give them characters of nutritive concentrated food can meet with but limited success, and a failure to appreciate these facts has caused

very delusive values to be placed on such preparations, and the errors have been further magnified by the discordant methods of judging the value of such articles. That this latter view is correct may be inferred from the divergent statements that have been expressed and results obtained by various authors. Stutzer, for instance, is of opinion that the only constituents of value in a meat extract are albumoses and peptones, ignoring meat fibre, gelatin, and coaguable albumin, whilst König and Bömer believe that meat extracts contain no peptone, or at most 2 to 3 per cent., and this view is confirmed by Denaeyer and by the author. On the other hand, there is given an elaborate table of analysis, in which all meat extracts are represented as containing peptones, as much, in some instances, as over 10 per cent. Some authoritative expression as to a correct method of analysis is surely necessary to prevent such contradictory statements, if only to afford the means of avoiding the exhibition of commendatory reports on valueless meat preparations, which are upheld as being highly nutritive on the basis of faulty methods of analysis, or on the result of nitrogen determinations, all the outcome of imperfect knowledge of the subject.

In about sixty pages the author deals very clearly with hæmoglobin and its allies, giving analyses of blood, tests for blood with spectra, and methods for its spectroscopic examination and for the enumeration of blood corpuscles. The section on albuminoids, which are here termed proteoids, relates to gelatin, keratin, fibroin, etc. Attention is very properly directed to the still unsolved question as to the importance of ascertaining whether gelatin, although readily digested, has a true alimentary value, in view of the practice of feeding invalids on gelatinous preparations. Analyses with practical tests are given of commercial gelatin, photographic gelatin, isinglass, glue, and kindred bodies. The section on fibroids includes silk and its detection, analysis of mixed fabrics, and the weighting of silk, whilst that on keratin contains descriptions of the constituents of horns, feathers, whalebone, hair, and wool. An addendum of twenty pages contains the latest work on proteid matter, including a criticism on the alleged synthesis of a proteid by Lilienfeld, who seems to have been premature in his claim as to the production of an artificial proteid in the absence of a substance containing sulphur, unless it is to be presumed that a pure proteid contains no sulphur.

It will be perceived how thoroughly Mr. Allen has dealt with his subject matter, and he is to be congratulated, and chemists and pharmacists in particular, on the completion of another excellent volume on commercial organic analysis.

PRESERVATIVE COMPOSITION FOR FURNITURE AND WOOD-WORK.—A composition for the preservation of wood-work and furniture has been patented in France (*Maler Zeitung*). This composition is said to possess the peculiarity of imparting to the articles upon which it is used, not only the desired gloss, but also the appearance and the brilliant colour of perfectly new articles. This distinguishes it from other preparations used for like purposes. The coating leaves no visible layer after the application. It is composed of pale resin, 10; benzene, 82; palm oil, 5; mirbane essence, $\frac{1}{2}$; and essence of peppermint, $\frac{1}{12}$ th. The mixture is prepared by the cold process and the application made as follows:—Apply a little of the composition on the furniture, floors, etc., by rubbing with an old silk rag, then finish off by wiping at once with a dry silk rag, pressing down well, an incomparable lustre is said to be produced. The objects remain in this glossy condition one to two months, according to the amount of dust developing in the rooms. The product must be kept in well-corked bottles. If used in summer it is well to add a few drops of oil.—*Sci. Amer.*, lxxix., 183.

PHARMACEUTICAL JOURNAL.

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ADMINISTRATION AND AMENDMENT OF PHARMACY LAW.

It will be convenient at the present time to direct attention to the desirability of distinguishing between procedure for effecting amendment of the Pharmacy Act and such steps as may be possible for enforcing its provisions in a manner more consistent with regard to the safety of the public and also with the claims of chemists and druggists who have complied with the requirements of the Statute. That the Pharmacy Act is defective in many respects cannot well be disputed, and experience has sufficiently demonstrated the necessity for amendment of many of its provisions. Originally a misbegotten measure, sorely crippled in its passage through Parliament, the Act has never been intelligible, but a fertile source of opposite opinions; it has been condemned by almost every Judge who has had to deal with it, as being so confused, contradictory, and obscure in its language that its meaning is inscrutable; its panic-bred provisions for public safety have fallen short of effecting their object so far that they have come to be regarded as constituting "a trade monopoly," and the ultimate result of their construction by the Judges has been to establish a state of things utterly subversive of every object the Act was intended to secure. Among other defects of importance may be mentioned the absence of any suitable definition of the chemist and druggist's business of dispensing and compounding medicine, the want of a yearly registration fee, admitting of ready detection of persons unlawfully carrying on the business; of regulations making the admission of an apprentice conditional on passing the Preliminary examination, and making the interval between that and the qualifying examination at least three years. But to obtain those desiderata would require further legislation, and on many of the points referred to there may be need for greater agreement than at present exists.

In regard to the operation of the Act as it stands, past experience has, however, shown that it has not been altogether abortive but capable of being made useful for effecting much that had not been thought possible. Even its greatest failure, in regard to the proprietary qualification of keepers of chemists' shops, has been somewhat compensated for by the judicial construction that the person who actually sells or dispenses, whether he be proprietor or servant, requires to be qualified. Though that construction turns the Act upside

down and establishes an apparent basis for a grievous abuse, it has done some good, for thus both the improper keeping of branch shops and the delegation of duties for the performance of which legal qualification is necessary, have been counteracted to a great extent. Another good effect is that the mischievous sale of poisons in the shape of secret remedies, so long thought to be consistent with the provisions of the Pharmacy Act, has, by more rational regard for the object of the Act, been declared illegal and incapable of being practised under protection of the Patent Law. In all these particulars a common-sense consideration of the main object of the Pharmacy Act 1868—regard for the safety of the public—has been in the end, sufficient to secure for its provisions judicial constructions tending partially to uphold that object. But in one important point the Act has failed to secure even that object, and it has also still more signally failed to secure to legally qualified persons—not protection in the ordinary sense, or "a trade monopoly," but the advantage that should be necessarily an incidental result of the provisions by which the main object of the Act is to be secured.

The development of the system by which combinations of unqualified persons carry on the business of chemists and druggists, has its root in the House of Lords decision in the case of the London and Provincial Association, and under present conditions it practically amounts to a repeal of the Act in every sense. The difficulties of enforcing the law, even in cases of the sale of poison at shops kept by unqualified companies, and of obtaining evidence as to its infringement, render the attainment of its object almost impossible, while the assumption of the title of "chemist" by such companies misleads the public into the belief that the shops designated "drug store" and "cash chemist" are conducted in conformity with the provisions of the Pharmacy Act. In the more important matter of dispensing there is absolutely no means of ascertaining whether it is properly conducted, by duly qualified persons, at such shops. In both cases there is no security that the conditions held to be expedient for public safety are adequately observed. But in addition to failure in that respect, there is another consideration which claims attention. According to every construction of the Act, the "person" legally entitled to dispense, or even to sell poison, or to use the title of chemist and druggist in connection with that business, has been held to mean a person who is registered and has given proof, by examination, that he has a competent practical knowledge of his business. Compliance with those conditions, imposed upon the exercise of the chemist's business and the use of the title, confers by implication upon persons who have satisfied those conditions a prescriptive right to the exercise of that business and to the use of that title which the Act declares to be otherwise unlawful. Moreover, if either of those acts be unlawful for any but qualified persons, the formation of a company to carry on business in connection with the title of "chemist" must be in itself an infringement of the Companies Act. It is this view of the matter which, at the present moment, most urgently requires attention and a united effort by legally qualified chemists and druggists, to obtain from the Law Courts as in the other instances above mentioned, a decision that would relieve them from the unjust interference with their business which they have so long had reason to complain of and one that would, at the same time, give greater effect to the main object of the Pharmacy Act, 1868—the safety of the public.

ANNOTATIONS.

LANCASHIRE CHEMISTS, while still adhering with characteristic tenacity to their conviction that, in dealing with the evils of "company pharmacy," it is the business of the Pharmaceutical Society to take the initiative, have given a very important additional significance to that proposition by recognising the fact that, in order to render the Society sufficiently strong for the purpose of taking action in the general interest of the body, it is the first duty of all persons on the Register of Chemists and Druggists to enrol themselves members of the Society. The recognition of that duty constitutes a great advance from the position of apathetic discontent which has hitherto been too prevalent. The action now being taken to give effect to it in Blackburn, Burnley, Manchester, Preston, and the neighbouring towns is such as will help to make the Society co-extensive with the Register, and to place at the disposal of the Council all the power and influence chemists and druggists are capable of exercising individually and collectively.

IN THE NEIGHBOURING COUNTY OF STAFFORD there is an equally strong conviction as to the prime necessity of a largely extended membership of the Society, for the purpose of establishing solidarity of interest and for creating a power capable either of acting in defence of the position that chemists and druggists hold under the Pharmacy Act, or of endeavouring to promote their interests by further legislation. If the action taken by chemists and druggists in those two counties is not spontaneously followed up elsewhere, their example will, at least, entitle them to call upon their brethren in other parts of the country to join in the good work they have set going. One very noticeable indication of sounder views in regard to the Pharmaceutical Society is the feeling of disgust, and even of resentment, produced by persistent attempts to excite hostility to the Society, to disparage the work of the Council, to represent it as disregarding the interests of chemists and druggists, as being animated only by a covetous desire for guineas, and the President as a mere utterer of "pious opinions," or "irresponsible after-dinner speeches." The just condemnation of such unworthy tactics is an encouraging sign of progress.

"A PARTY RENT BY SECTIONAL DISPUTES and personal interests is one which no man can consent to lead, either with credit to himself or advantage to the country." Thus wrote Sir William Harcourt in his now famous letter, published last week, and the remark is probably one of the most accurate he ever gave utterance to. Applying the words to our own affairs, they fit the situation exactly, for in the world of pharmacy sectional disputes and personal interests have predominated to a disheartening extent for many years past. They existed before the Pharmaceutical Society began its career, and they have continued in a more or less acute form ever since. At the present moment, however, an exceptional opportunity presents itself for repairing the rent in the craft, and that opportunity should be taken the fullest advantage of. It will be simply disastrous if sectional disputes and personal interests are permitted to retard the progress of pharmacy any longer, and the insidious attempts made to perpetuate differences—from a quarter whence those differences were originally suggested—ought to meet with but little support from registered chemists. In this connection, it may be observed that a member of the Pharmaceutical Society, writing to the Secretary, says he "resents the useless hypercriticisms of trade journals whose object is to live on pharmacists rather than elevate pharmacy." What another

member thinks of impertinent interference with the Society's affairs may be judged from his letter printed at page 687.

NO ABATEMENT IS SHOWN, as plainly indicated by the reports in our pages this week, in the interest taken by registered chemists throughout Great Britain in the topics suggested for their consideration by the Federation of Local Pharmaceutical Associations. There cannot now be many parts of the country from which expressions of opinion have not come, and the Council of the Pharmaceutical Society will be able, at its next meeting, to form a fair estimate of the state of feeling on the points discussed. Though the fact has not always been indicated in the reports, we are given to understand that the attendance at the various meetings has been exceptionally large in most cases. Indeed, they have generally been meetings of the whole trade in the respective districts rather than mere association meetings. That is as it should be, and we hope it may be accepted as an omen of that real union of the trade which has been lacking so long.

Mr. JOSEPH BOSISTO, C.M.G., whose death is announced as having occurred on November 8, at Richmond, Victoria, had been an honorary member of the Pharmaceutical Society of Great Britain since 1887. A letter received from him within the past fortnight afforded no indication that he was in ill-health. It has been stated that, in his early days he studied at the Leeds School of Medicine, but we are informed that, after searching the books of the Leeds Medical School, the Dean has been unable to find any record of such a person on the School lists. What is certain is that, having decided to adopt pharmacy as a calling, Mr. Bosisto came to London and studied for some time at the School of Pharmacy. Subsequently, he emigrated to Adelaide, where he established a business, and later he settled at Richmond, near Melbourne. He was a great authority on eucalyptus, and was markedly instrumental in introducing the oil of that plant into medical practice. Mr. Bosisto was also a founder of the Pharmaceutical Society of Victoria, and he took an active interest in everything pertaining to pharmacy in that Colony. At the time the Colonial and Indian Exhibition was held in London, in 1886, the Council and officers of the Pharmaceutical Society were invited by Mr. Bosisto, as President of the Victorian Commission, to inspect the exhibits from the Colony he represented. At the luncheon following the inspection, Mr. Bosisto proposed the toast of the Pharmaceutical Society, and spoke in appreciative terms of the advantage he had derived when a student at the School of Pharmacy. He helped to establish in Australia a counterpart of the institution with which his early associations were so pleasantly connected and, as remarked in the Journal at that time, he may be said to have done for pharmacy in Victoria what Jacob Bell effected for Great Britain.

THE UNIVERSITY OF LONDON and the question of its future habitation still continue to receive a considerable share of attention, the proposal to utilise the Imperial Institute for the purpose being debated with much show of warmth on both sides. The Senate of the University is reported to be divided on the subject, and Professor Karl Pearson has written to the *Times* to say he thinks that the haste with which the scheme for establishing the headquarters of the new University for London at the Imperial Institute is being pushed through is probably the best evidence that its proposers and supporters have a very bad case. In the Treasury memorandum with regard to the scheme it is stated that only three bodies are concerned in the sanction of it—namely, the Treasury, the Imperial Institute, and the present

examining University. Professor Pearson, however, thinks there are a great many other bodies which will or ought to be heard in the matter, first and foremost coming the governing body of the new University. "That body is not a new edition of the old University Senate; it is an entirely new body, representing a great variety of new and important interests. . . . But before this representative body comes into existence a deliberate attempt is being made to tie its hands by localising the centre of gravity of the new University, and by creating accommodation for various types of teaching and various types of teachers."

THE NEW UNIVERSITY, it is pointed out, will come into existence pledged to a commercial or applied science faculty in an outlying part of London. If there is to be a commercial faculty, then the City, somewhere in the neighbourhood of Gresham College, is the right and proper place for it, in Professor Pearson's opinion. If pure and applied science are to be concentrated, it should be in a district of London, not only easily reached by students from all parts, but where students can find, at a moderate rate, lodgings suited to their needs. A fashionable quarter like South Kensington hardly meets that requirement, and it is suggested that, to place the centre of gravity of the new University there, is to give its ultimate control to the teachers working on the spot, a thing which ought to be avoided, as they are not the only distinguished teachers in the metropolis, and form at best only a minority of such teachers. In conclusion, it is urged that no scheme whatever for localising the headquarters of the new University ought to be settled without consulting the corporations chiefly concerned. "As things are at present, neither future teachers nor future students are being consulted; only the Senate of a moribund University which has long ceased to inspire the public confidence."

LIQUID HYDROGEN AND ITS USES served Professor Dewar as a text at a meeting of the Royal Society last week. He showed how it could be used as a condensing agent for the production of very high vacua, the contents of a closed tube containing air being quickly condensed as solid air when one end of the tube was immersed in the liquid. Moreover, when the portion of the tube from which the air had thus been removed by condensation was sealed off with a blow-pipe, a vacuum was obtained so high that it would scarcely allow an electric discharge to pass. The rapidity with which this result was achieved was very remarkable, the immersion never lasting more than a minute, and Sir William Crookes stated that the vacuum produced in that short space of time was higher than he could obtain with the ordinary pump after working it for several hours. The lowering of temperature produced by boiling hydrogen under reduced pressure is much less than anticipated, but Professor Dewar was unable to say whether the observed results were due to the thermometer giving way, or whether liquid hydrogen does not fall in temperature like other liquids when evaporated under reduced pressure. The result may also be due in some way, he thinks, to the conduction of heat by the platinum leads. In any case further experiment is required to determine how far the platinum resistance curve can be trusted at the lowest attainable temperatures. Professor Dewar dealt with the same subject at the meeting of the Chemical Society on December 15 (see p. 675).

A LONDON DUST PROBLEM offers a fine opportunity for the many representatives of the class "inventive genius" who are to be found in the ranks of pharmacy. It has long been a matter of complaint in the Metropolis that, during the collection of house refuse, a nuisance is caused to the public by the dust being blown about the streets, and the London County Council has had under

consideration the question whether that nuisance cannot be obviated by the use of some improved form of dust cart. Inquiries have been made as to the arrangements in force in several of the principal cities and towns in England and Scotland but, so far, no form of dust-cart has been discovered which can be recommended as entirely obviating the nuisance. With the view of solving the problem the Council have decided to offer a premium of twenty-five pounds for the best design for a dust-cart and cover, and that the designs sent in shall be adjudicated by Captain Sir Douglas Galton, K.C.B., F.R.S., chairman of the Council of the Sanitary Institute.

POISONOUS CLOTHING is the latest scare, the wearing of flannelette and other fabrics weighted with zinc chloride having, not unnaturally, been followed by ill effects. The *Warehouseman* comments on a sample of flannelette received from a correspondent, who thought it had "a suspicious feel," and wished to know whether it contained "any deleterious matter prejudicial to health." On analysis the sample proved to be loaded with zinc chloride, so that if the material had been worn next the skin, without being previously washed, the consequences would probably have been serious. The effect of such adulteration is shown by a report of a recent Birmingham case, more than sixty men employed in clearing away snow in the streets having been invalided in consequence of skin irritation produced by the zinc chloride washed out from their overcoats and overalls. Half the number were still under treatment as out-patients at the hospitals a few days ago, and it was thought likely to be some time yet before they were back at work again. The zinc chloride had, as might be expected, produced a cauterising effect upon those portions of the skin with which it came into contact, and either destroyed the epidermis or created nasty sores. Imagine the effect of flannelette treated with the same chemical upon the delicate skin of women and children. The popular demand for certain goods at impossible prices is, of course, to be chiefly blamed for such things occurring, but the tradesman who touts for custom by helping to supply that demand is not free from responsibility in the matter. As for the manufacturers who produce the loaded fabrics, they are simply doing their best to ruin British trade.

ON AND AFTER CHRISTMAS DAY, the postage to be prepaid on letters from this country for the undermentioned British possessions and protectorates will be 1d. per $\frac{1}{2}$ oz., instead of 2 $\frac{1}{2}$ d. as at present:—Aden, Ascension, Bahamas, Barbados, Bermuda, British Central Africa, British East Africa, British Guiana, British Honduras, Canada, Ceylon, Cyprus, Falkland Islands, Fiji Islands, Gambia, Gibraltar, Gold Coast Colony, Hong Kong, India, Johore, Lagos, Leeward Islands, viz.: Antigua, St. Kitts, Nevis, Dominica; Montserrat and the Virgin Islands, Malay States (federated), viz.: Perak, Selangor, Negri-Sembila and Pahang; Natal, Newfoundland, Niger Coast Protectorate, Niger Territory, St. Helena, Sarawak, Seychelles, Sierra Leone, Straits Settlements, Tobago, Trinidad, Turks Islands, Uganda, Windward Islands, viz.: Grenada, St. Lucia and St. Vincent. Letters to and from her Majesty's ships abroad will be transmissible at the same rate of postage. It will be noticed, with regret, that the Australasian Colonies are not included in the list, and to that extent, as well as regards Cape Colony and Malta, the scheme of imperial penny postage is yet incomplete, as persons writing to their friends and relations in those colonies must still spend 2 $\frac{1}{2}$ d. in stamps for each $\frac{1}{2}$ oz. The postage payable on letters addressed to any foreign country, and that payable on postcards, printed papers, samples, etc., for any part of the world also remain unchanged.

CAMBRIDGE PHARMACEUTICAL ASSOCIATION.

At a meeting of this Association held on Friday, December 16, Mr. A. SIDNEY CAMPKIN, J.P., delivered the presidential address for the year, his subject being

Pharmaceutical Politics.

Mr. CAMPKIN said chemists were now awaiting the result of the passing of the Pharmacy Acts Amendment Act, which he hoped would secure an enlargement of the membership of the Society. At the present time chemists were very little better off than the grocer and draper, notwithstanding the many attempts they had made to secure protection as a return for their long special training and experience. They occupied a position in which they had to encounter opposition and competition at the hands of absolutely unqualified men, to an extent almost unparalleled in any other business or profession. The public appeared to be in many respects short-sighted, and to be willing to risk the results of serious defects in the quality of their medicines and in the methods of their preparation, though they were unwilling, for the sake of a false economy, to buy food and drink and clothing at any price. Despite the spread of education and the demand for qualifications and certificates in nearly every walk of life, the public was content to buy drugs from unqualified men working in establishments having none of that seclusion and quietness necessary for the proper preparation of prescriptions. There was a growing tendency to carry on all the trade of the country by joint-stock companies. The sense of personal responsibility, of personal association in business, was being destroyed. But if chemists could bring a proper and reasonable case to bear upon the public, he thought they would see that they were all bound up in and with one another. The Pharmacy Act of 1868 had not fulfilled the anticipations of its authors, and chemists were now suffering from slight omissions and errors in the Act. Several coaches had been driven through the Pharmacy Act, and they wanted the Legislature to assist them in amending it. The present Lord Chancellor by his action last session had shown himself alive to the position, but without unity in the craft it was absolutely useless to expect adequate legislation. In order to secure unity the Society must have all the members possible, and be able to show that it was completely representative of the pharmacists of the kingdom. There were 15,000 registered chemists in the country, but not more than one-third of them were members of the Pharmaceutical Society, and yet the Society was the only body recognised by the State as acting on behalf of the chemists and druggists of the country. It was absurd for those outside the Society to sit down, fold their arms, and grumble at those who managed the Society, because unless they came into the Society it could not with any certain and definite tone speak to the Government of the country. Why did outside chemists grumble at the Society and at the same time take no steps to strengthen it, or to direct its course, by making the slight sacrifice—if it were a sacrifice—that was necessary? It was quite open for every registered and fully qualified chemist to join the Society, and then the Society might be made just what they thought fit to make it. The present Council did not, perhaps, represent the entire body of chemists and druggists, though it no doubt represented the existing members of the Society. In order to make the Council entirely representative of the trade, it was necessary that all registered chemists, or the great majority of them, should join the Society. If the 15,000 chemists of this country did but know their strength, and realise the power of association and unity, they would be able to make their mark upon any legislation affecting them, in the same way that other great organised bodies had done. He had always felt that chemists as a body had not been sufficiently united, either nationally or locally. Therefore he urged a more thorough adhesion to the Pharmaceutical Society.

Mr. W. L. WHITE thought it ought to be considered whether it would not be advisable for the Pharmaceutical Society to accept smaller subscriptions from men who did not feel justified in paying a guinea each. He would like the Society to make some endeavour to gain the allegiance of every registered chemist in the country, even were it only by a half-crown subscription. He proposed a hearty vote of thanks to Mr. Campkin for his address.

Mr. ADDISON seconded the proposition, and it was carried *nem. con.*, after which

Mr. E. SAVILLE PECK, B.A., the Cambridge delegate to the Belfast Conference and the Federation of Local Pharmaceutical Associations, said that the Belfast meetings were eminently calculated to promote a cheerful spirit among pharmacists. Neither the Conference nor the Federation was officially connected with the Pharmaceutical Society, and it would greatly help to consolidate their forces if these two bodies were more intimately connected with the Society. The Federation of Local Pharmaceutical Associations was not so much an association as a bond of union between pharmaceutical associations in different parts of the country. Nearly fifty local associations were now federated and brought in constant touch with one another, and the great usefulness of the work done by the Federation could best be understood by a perusal of the reports in the *Pharmaceutical Journal* of the discussions which had recently taken place, and the resolutions which had been passed by the various local associations throughout the kingdom. Referring to the proposed poison regulations, Mr. Peck recommended the voluntary adoption of such regulations as being more dignified than having them made compulsory by the Privy Council. The poisons question would probably occupy a prominent place in the business of the next Parliamentary Session, the adoption of regulations would indicate to the Privy Council that pharmacists were best qualified to deal with the matter. With regard to company trading, he thought it would be unwise for them to make any direct attack upon companies, but they could do much to make the way of transgressors harder. He thought that no better course could possibly have been taken at the present stage than that taken by the Pharmaceutical Council at its last meeting. He proposed:—

That this meeting of members of the Cambridge Pharmaceutical Association views with much satisfaction the recent deliberations of the Council of the Pharmaceutical Society in (1) calling a special meeting of the Society to consider and, if thought fit, adopt regulations for the improved storage and sale of poisons; and (2) endeavouring to obtain the assistance of the Lord Chancellor in prohibiting the assumption by incorporated companies of the privileges of persons qualified to practise pharmacy.

This proposition was seconded by Mr. H. F. COOK, and carried unanimously.

BRISTOL PHARMACEUTICAL ASSOCIATION.

A conference of registered chemists was convened by the Bristol Pharmaceutical Association at the Grand Hotel, Bristol, on Thursday, December 15. Mr. B. ALLEN presided, and there was a large number of registered chemists present.

The CHAIRMAN said he thought they would all agree that it was desirable to increase the membership of the Pharmaceutical Society. Then they would see that something must be done in the direction of enforcing the intentions of the Pharmacy Act, and, as had been reported in the *Pharmaceutical Journal*, the Council had started on very good lines with a good prospect of success.

Mr. B. KEEN then proceeded to explain that the object of the meeting was to discuss the present position and prospects of the retail trade. As they calmly surveyed the situation and prospects of the trade to-day they might very justifiably be a little pessimistic about the future. An Act of Parliament had been passed providing that individuals should possess certain qualifications to carry on a certain trade; and yet there were loopholes in the Act the effect of which was that the Act was practically repealed. The medical and dental corporations were moving in the direction of preventing limited companies from doing what qualified individuals only had the right to do. The medical authorities were applying, as the Pharmaceutical Society was applying, to the Lord Chancellor and asking him to move in the matter. For years past the Pharmaceutical Council had been making attempts to get the law altered, and chemists were now beginning to feel that the thing had really become too urgent, and it was quite time that they moved themselves. The individual pharmacist was in danger of being ridden over and annihilated by limited companies, and the question was whether they would try to resist this thing, and if so, how? He thought it was quite time they threw aside all selfishness and acted with each other in some attempt to meet their difficulties. The first step should be for every registered chemist to become a member of the Pharmaceutical Society. In Bristol a large number of chemists did belong to the Society, and there were only about fourteen whom he could invite to join. The Council of the Society could do nothing without numbers behind it; but if a very large proportion of the chemists belonged to the Society, then the Council might get almost

anything it asked for in reason. The Society would then represent the whole trade, and the Council, as its executive, would do their bidding. The only way to get the help they wanted was by consolidating their ranks and making it clear that they were all working for the same thing. There was a fight before them, and they must be prepared for the struggle, simply because the House of Lords decision in the case of the London and Provincial Supply Association was to the effect that since a corporation could not be examined, or qualify as the Act provides, it was outside the Act so far as selling poisons went. He considered that was a misinterpretation of the Act, and that a combination of unqualified persons should not be allowed to keep open shop for carrying on the business of a chemist and druggist. Registered chemists were appointed by Act of Parliament to perform certain duties. The object of the 1868 Act was to compel persons who did those things to have certain qualifications. Another question for consideration dealt with the position of qualified men covering unqualified people. It should be possible to have the names of such men struck off the Register. With regard to the proposed poison regulations, he thought they ought to adopt them as a matter of expediency, if only in order to get on better terms with the Privy Council. Then, with regard to the so called "Widow's Clause," they should go in strongly for altering or modifying it. He thought they should agree to a modification of that clause so that its operation should be limited to a year.

Mr. E. W. ISAAC thought it was as palpable as the sun at noon-day that chemists must now do something to protect themselves. The Legislature with one hand had granted a Charter to the Society and with the other had opened the flood-gates to every abuse which it was the object of the Society to prevent. The first step should be the enlargement of the constituency of the Society. He thought that there was half-heartedness amongst the trade simply because so many did not belong to the Society, and for that very reason—that they did not belong to it—they had got into a habit of abusing the Society for not doing that which they ought to give it power to do.

Mr. MILTON heartily supported the views of the previous speakers. The Society had done much to elevate chemists from the low state in which they were to their present higher level. All honour to the Society and shame to registered chemists if they did not support it to the utmost of their power. As to legislation, he was afraid that too many members of Parliament were interested in the stores. But he thought they ought to go to their parliamentary representatives and say, "If you want some of our support you must give us some of yours."

Mr. VIGIS (Bath) said he had made a point of seeing every chemist in Bath, but with the exception of three they were unable for various reasons to be present at that meeting. They were, however, in sympathy with its objects. He had the honour to represent the P.A.T.A., and in twelve months he had got seventeen out of thirty-three chemists to join. They had now twenty-one members, representing thirty-nine shops, and if they could only get a like number of members for the Pharmaceutical Society it would be a great thing. He wished there was an Association at Bath, or that they could amalgamate with the Bristol Association. The present aspect of trade matters was a most serious one, and it was very necessary that something should be done.

Mr. WHISTON pointed out the necessity for ascertaining the feeling of chemists who were not in business for themselves. It was their action in many instances that was ruining the retail trade. He saw that one of the rules of the Chemists' Assistants' Union struck a blow at co-operative stores by saying that no member should sell his services to those who were not duly qualified chemists. It seemed to him that they should get into correspondence with that organisation, because, if all assistants worked on those lines, the difficulty would become a very small one.

Mr. W. PITCHFORD said he had not been in accord with the Pharmaceutical Society for many years, but if it would act up to its prerogatives and privileges he, and he thought every registered chemist in Bristol, would most cordially support it—not merely with the guinea a year, but with any other money that might be necessary for carrying on the crusade against the difficulties which the trade had to contend with. He knew something, as they did, of the action of the Society in the past, and he was not able to accept the eulogy which had been pronounced. If the Society had continued the active measures it adopted in 1870, or thereabouts, and had fought vigorously against the first stores, a large measure of success would have been ultimately gained. But apart from

that, if the Society would now really promote the interests of chemists as it should, and not simply enforce petty and absurd restrictions, the whole trade would be with it. They wanted a business-like Society, and not one that was a goose laying golden eggs for London officials. He was sure there would not then be one of the dissenting fourteen chemists in Bristol who would not subscribe to the Society.

Mr. CHANDLER suggested that chemists should abandon the so called "Widow's clause" altogether; it was of no good.

Mr. ISAAC thought there should certainly be a limit of time.

Mr. PLUMLEY said they must not make it impossible for apprentices and students to hand over pharmaceutical preparations if they were not poisons.

Mr. KEEN thought it was quite understood that was not suggested.

Eventually resolutions were passed affirming the desirability of taking action on the following points:—

- (1) The urgent necessity there was that every registered chemist should avail himself of the privilege given by the Amendment of the Pharmacy Act of becoming a member of the Pharmaceutical Society.
- (2) That legislation is much needed to enforce the Pharmacy Act, which is based upon the principle of personal proprietary of all retail chemists' shops, and the restricting to qualified persons the compounding and dispensing of medicines and the sale of pharmaceutical preparations.
- (3) That it was desirable to adopt the regulations for keeping and storing poisons.
- (4) That the so-called "Widow's clause" ought to be modified or abandoned.

It was also agreed that the operation of the "Widow's clause" in any particular case should be limited to one year.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.

Members of this Association mustered strongly at the Exchange Rooms, Birmingham, on December 14, on the occasion of the second smoking concert of the season. The chair was taken by Mr. G. E. PERRY, who at the outset congratulated the Association upon its vigorous and healthy condition. Associations of older pharmacists were, he said, sometimes prone to become weak and apathetic, and it was, therefore, thought necessary, or at any rate desirable, that they should be supplemented by associations of younger men. They had energy, enthusiasm, and determination, without which no association was likely to discharge the duties for which it was formed. Their object was the advancement of pharmacy and the protection of the pharmacist. Pharmacy at present was passing through somewhat troublous times, and it would need the wisdom and experience of the older associations, as well as the energy and resoluteness of the younger men, to enable it to grapple with and overcome the difficulties that beset it. He was confident, however, that these difficulties would be overcome, and in the struggle the Midland Assistants' Association would no doubt play its part. As an older pharmacist he urged the younger men to keep steadily on in the work they were doing, to have high ideals, and to maintain the best traditions of pharmacy. He thought it was the duty of every pharmacist to endeavour to leave pharmacy a little better than he found it.—A most enjoyable musical programme followed, in which Mr. A. Cutler, Mr. Milward, Mr. Burford, Mr. Brindley Roberts, Mr. Colley, and Mr. Joe Longmore took part, the last-mentioned scoring with imitations of several of the idols of the music halls.—The artistes and Chairman were heartily thanked for their services on the proposition of Mr. W. F. COX, seconded by Mr. T. H. THOMAS.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION.

A meeting of this Association was held on Thursday, December 15, Mr. W. L. CURRIE, President, in the chair.

At the commencement of the proceedings, Mr. SUTHERLAND directed attention to a handsome bookcase which had been presented to the Association by Messrs. R. and O. Templeton. It was an article of considerable value, and the gift would be a great saving to their funds, and would enable them to purchase additional books. He proposed that the Secretary be instructed to forward the thanks of the Association to Messrs. Templeton, and the motion was carried unanimously.

The CHAIRMAN then announced that he had taken it upon himself to call a special meeting of chemists in Glasgow and the West of Scotland for Wednesday, December 21, to consider what action

should be taken regarding company trading in pharmacy, and the adoption of regulations for the keeping, dispensing, and selling of poisons as recommended by the Pharmaceutical Society. Both subjects were very important, and were receiving the attention of kindred associations throughout the country. He hoped the attendance at the special meeting would be large.

The meeting then proceeded to discuss Mr. DUNLOP's paper on

The British Pharmacopœia,

read at the previous meeting of the Association.

Mr. MACMILLAN referred to the typographical errors in the book, and said those could have been avoided had the Pharmacopœia Committee sent proofs to the local associations to be read, just as Mr. Foulis, printer to the University, put up his proof sheets for the students to criticise and revise. He thought it a pity that the Committee had not given an authoritative deliverance as to what the sign "ζi" meant. It would have been a very easy matter to say that ζi represented 480 grains, just as ζi means 60. The monograph on acetum ipecac. ought to read: "Mix, add sufficient diluted acetic acid to produce one pint, filter." Benzoic acid ought to be prepared exclusively from benzoin. The dose of hydrargyrum c. creta might be safely increased. For adults it was more commonly prescribed in Glasgow in doses of 6 to 10 grains than from 1 to 5. It was unfortunate that sanction had not been given for the use of concentrated infusions. What the concentrated liquors were introduced for was one of the things no one knew. How were fresh infusion of gentian and compound infusion of orange to be prepared in midsummer, when fresh lemons could not be obtained? The calcium hydroxide for liquor calcis sacchar. should be washed the same as for liquor calcis. He feared lotio hydrarg. nigra would be found too thick for use. The spirits would have been more miscible and probably equally efficacious if made one-quarter of the strength. Speaking of ungu. cetacei, he said that according to Boa—and he thought his experiments were conclusive—the directions for this ointment should read: "Strain and set aside to cool without further stirring." In reference to ungu. gallæ c. opio, he thought a better ointment could be prepared by melting the lard, pouring it upon the galls and opium in a heated mortar and stirring till cold.

Mr. BOYD thought the B.P. a good work on the whole, and more scientific than former publications. He advocated the publication of a condensed pocket form of the B.P. for the use of medical men.

Messrs. DUNLOP, BRODIE, and WATSON also took part in the discussion, at the conclusion of which

Mr. CURRIE exhibited an apparatus for the preparation of retail quantities of granular effervescent preparations. The apparatus had been designed by himself, and consisted of a large copper tinned plate about 1½ ft. in diameter, with turned up edges. The steam was supplied from a copper boiler with safety valve. With the apparatus from 2 ounces to 2½ lbs. could be prepared very expeditiously. A number of the usual preparations were shown. All were of a very regular granular size and were prepared without a sieve. The exhibition was a most interesting one, and the opinion was freely expressed that the apparatus was one likely to find favour among chemists who desired to meet the wishes of medical men prescribing granular preparations with medicaments of various strengths.

At the special meeting of the registered chemists of Glasgow and the West of Scotland, called by the Association and held on Wednesday, Mr. W. L. CURRIE, the President of the Association, took the chair, and there was a good attendance.—The CHAIRMAN having explained that the meeting was called to consider

Company Pharmacy and Poison Regulations,

Mr. SUTHERLAND then proceeded to deal with the proposed regulations. He did not think the recommendations which it was proposed to adopt as regulations would entail any very great hardship on retail chemists and druggists. Limited companies were held to be outside the scope of the Pharmacy Act, but if such companies were to be recognised they must be put under the same restrictions as the individual chemist. If the Pharmaceutical Society was to have any power so far as legislation was concerned, it must be supported to the fullest extent.

Mr. MACMILLAN feared limited companies had come to stay, and possibly chemists should devote their energies to minimising as much as possible the mischief those bodies might do. When once the original object of the Pharmacy Act was departed from every-

thing got into a muddle. That Act made it clear that it was intended the principal should be qualified, and that it was not necessary the assistant should be, but, according to recent decisions, limited liability companies were placed in exactly the opposite position, the assistant having to be qualified while it was not necessary that the members of the company should be. The Society had already been beaten on this point, but he thought chemists ought to support it in trying another fall. It was quite possible they might get something better; he did not think they could possibly be worse. He suggested that the poison regulations should be incorporated in a new Act, which might be an excuse for getting the Pharmacy Act altered to something like what they desired it to be. At the same time, he did not agree with the suggestions about the poison regulations. He did not see why chemists should put any more halts round their necks.

Mr. BRODIE was also of opinion that more restrictions would be more chains round the necks of chemists, and that it would be difficult to remove them.

Mr. MOIR said some restrictions on the storage and sale of poisons would have to be made, and it remained for them to say whether the Pharmaceutical Society should not do it instead of the Government. He thought the Society should do it.

Mr. FORGIE (Falkirk) could not see that there was any hardship in chemists putting their business places in order, so as to meet the requirements of the Act.

Mr. D. S. ROBERTSON (Rutherglen) said he did not see how any Government could consistently ask an educated body of men like chemists and druggists to keep their bottles in a certain way; as well define where a medical man was to keep his instruments. But if the proposed regulations would assist them in getting more legislation, then he said by all means let them agree to adopt them, though he for one would only yield under protest.

Mr. D. WATSON said the reason for adopting regulations was not so much to interfere with the handling and selling of poisons as the keeping of the chemists' business in a proper manner. It was better that the Society should carry out any regulations and so have the necessary inspections made by their own inspectors than that Government should enforce them and hand chemists over to inspection by the municipal authorities or the police. Regarding the Companies Act, they should have legislation to make it clear whether companies were within the meaning of the Pharmacy Act or not.

The CHAIRMAN said that he had made up his mind that the best thing they could do to support the Pharmaceutical Society and better their own position was to adopt as a resolution the motion which stood in the name of Mr. Robinson for the special meeting of the Pharmaceutical Society in January. Most of the speakers had looked at the matter from an individual point of view, but they should look at it as a body, and not forget that, while they as individuals might exercise every possible precaution, there were a great many individuals who did not. It would be much better if there were to be inspectors that those should be nominated by the Pharmaceutical Society than by the Government or the police. So far as the company question was concerned, the judgment of 1880 against the Pharmaceutical Society entirely reversed the order of things which they were accustomed to believe was correct, in so far that, while the Statute required a qualified master and did not require a qualified assistant, the judgment dispensed with the qualified master and sanctioned the qualified assistant. He had little doubt that if they approached Parliament and put the matter fairly before it, the justice and reasonableness of their demands would be recognised. No limited company should be entitled to call itself a chemist, as companies were not examinable bodies, and so were outside the Act.

Mr. MOIR then moved, and Mr. SUTHERLAND seconded—

That the time has arrived for the Pharmaceutical Society to adopt as regulations the recommendations issued in 1871, for the selling and dispensing of poisons, in accordance with the provisions set forth in Section 1 of the Pharmacy Act, 1868.

This was unanimously agreed to, as was also a resolution expressing satisfaction at the course the Pharmaceutical Society had adopted in relation to the Companies Act.

SASSAFRAS OIL FOR PEDICULI.—According to the *Medical Brief*, a single application of oil of sassafras will destroy all kinds of pediculi and their ova. The oil should not be allowed to come in contact with the mucous membrane. If it does so, the burning sensation it produces may be allayed by the application of olive oil.—*Mod. Med.*, vii., 187.

NORTH STAFFORD AND DISTRICT CHEMISTS' ASSOCIATION,

A well-attended monthly meeting of the above Association was held at the Copeland Arms Hotel, Stoke-on-Trent, on Thursday, December 15. There were present: Mr. John Averill, J.P. (President), Messrs. W. Marson, F. Fowke, W. Westhead (Stafford), Weston Poole (Treasurer), E. H. Croydon, C. J. Wain (Newcastle), R. Prince, Geo. Fisher (Longton), T. H. Jenkins, F. Jacks (Stone), W. Oldham, T. Charles, W. Bates, A. P. Tiley (Burslem), F. Adams (Vice-President), W. B. Allinson, W. Hemingway (Stoke), F. W. Wrench (Silverdale), W. Hartley, J. B. Blades (Leek), F. W. Goodman (Eccleshall), T. C. Cornwell, T. Bentley, and Edmund Jones, Hon. Secretary (Hanley), S. C. McKee (Tunstall). Letters and telegrams of apology for absence from Mr. Booth (Crewe), Mr. Cowley (Liverpool), Mr. G. W. Bullen (Ashby-de-la-Zouch), Mr. A. Parker, and Mr. G. R. Hankinson (Uttoxeter). Communications were read from the Secretary of the Federation of Local Pharmaceutical Associations and the Western Chemists' Association (London). Dr. B. H. Paul (London) was also present by invitation.

Mr. AVERILL addressed the meeting on the subjects of company trading in pharmacy, the illegal use of the title "chemist" by unqualified persons, and the "covering" of unqualified persons by registered chemists, concluding by moving—

1. That this meeting of the North Staffordshire and District Chemists' Association respectfully and strongly urge the necessity of the Pharmaceutical Council taking early action to secure the amendment of the Pharmacy Acts, so that companies may be prevented doing that which it is illegal for a single person to do.
2. That we consider the use of the title "chemist" by unregistered persons trading as companies is an infringement of the Pharmacy Act, 1868, is detrimental to the interests of legally qualified chemists, and that it requires to be stopped by the co-operation of all registered chemists and druggists as members of the Pharmaceutical Society.
3. That the Council be requested to represent to the Privy Council that the covering of unqualified persons in the exercise of the business of a chemist and druggist is sufficient ground for the removal of their names from the Register, as in the case of the medical profession.

Mr. W. MARSON (Stafford) seconded the propositions, to which no amendment was offered, and an active and interesting discussion followed, in which Messrs W. Poole, Hartley, Croydon, Tiley, McKee, Charles, Wain, Jacks, Allison, Jones and Cornwell took part, the resolution ultimately being unanimously carried.

Dr. PAUL was then invited by the Chairman to address the meeting, and at the conclusion of his remarks, a hearty vote of thanks was passed to Dr. Paul, on the proposition of Mr. AVERILL, seconded by Mr. E. H. CROYDON, and supported by Mr. JONES.

Mr. AVERILL also proposed the following resolution:—

That this Association hereby resolves to request the Pharmaceutical Council, for the purpose of drafting a new Pharmacy Bill, to invite delegates from all local associations, to assist in the deliberation and formation of a new Bill.

Mr. JONES seconded, and it was unanimously carried.

Mr. T. BENTLEY (Hanley) and Mr. BLADES (Leek) were admitted members of the Association. During the evening seven gentlemen expressed their intention of joining the Pharmaceutical Society in the new year. Four gentlemen promised last meeting to join the Society, making eleven new members for the Society from the North Stafford district in a month.—After the meeting the members sat down to supper.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.

At a meeting held on Wednesday, December 14, Mr. G. H. C. ROWLAND in the chair.

Mr. GEORGE COULL, B.Sc., dealt with

The Latinity of the New Pharmacopœia.

He had intended treating the subject fully, but pressure of other work prevented, and he only gave a few examples of things he intended to point out. In the paper he read before the Glasgow Association last year he made suggestions, several of which were embodied in the new Pharmacopœia, while others, which he still adhered to, had been disregarded. Notwithstanding what had been said by Mr. Ince, he still maintained that the genitive of "rosmarinus"

should be "rorismarini." It would also have been better Latin to adopt stibium for antimonium. No doubt ethylic alcohol was alcohol *par excellence*, but it was to have as infirmative a name as possible, and therefore alcohol ethylicum was much to be preferred to the official name, alcohol absolutum. There was no reason why such words as chloral and guaiacol should not be declined just as alcohol was. He was much disappointed to find that such words as carbonas -atis and sulphas -atis were now made masculine, and he thought Mr. Ince's remark that this was in accordance with the custom of other nations, was a particularly weak one, coming from such a classical purist. Why should we follow others if we thought them wrong? Better maintain our splendid isolation. He had failed to discover any good argument in favour of this change, and the great majority of Latin words in "as -atis" were feminine. Incidentally he remarked that he had recently compared the Latinity of forty wholesale price-lists, and found many curious discrepancies. They were mostly conspicuous for inaccuracies. Such articles as rape oil, for instance, was designated usually as ol. rapii, whereas it should be ol. rapæ, from rapa -æ, and in only one instance was it correctly so spelled.

Mr. FRASER MCDIARMID said there were some misleading names in the Pharmacopœia, such, for instance, as extractum belladonnæ viride. This extract was black and not green, and the official name was apt to cause confusion with extractum foliorum belladonnæ viride, which was of a bright green colour.

Mr. LUNAN said there were some official names which were not clear enough to obviate possible error on the part of the dispenser by misinterpreting the intention of the prescriber. There were, for instance, elaterium and its active principle elaterinum. It might result seriously if one were used by mistake for the other, and it would have been safer to have called the drug elaterium and the active principle momordicinum.

Mr. COULL, in replying, said he agreed that extractum belladonnæ viride was a misnomer. Another example was glycerinum acid borici, there was a chemical change, and the product was not really glycerin of boric acid, but glyceryl borate.

Mr. J. RUTHERFORD HILL then gave an address on "The Position and Privileges of Pharmacy and the Pharmacist," and the meeting closed with a vote of thanks to Messrs. Coull and Hill.

WESTERN CHEMISTS' ASSOCIATION (OF LONDON).

A well-attended meeting of this Association was held at the Westbourne Restaurant, London, on Wednesday last, the PRESIDENT, Mr. J. F. Harrington, in the chair. After the usual preliminary business, the President proceeded to deliver his

Inaugural Address,

in the course of which he thanked the members for the honour conferred upon him in selecting him as President of the Association, and referred to his election as a member of the Council of the Pharmaceutical Society, urging all who are not already members of the Society to join, and so strengthen the hands of the Council in endeavouring to obtain legislation which will place pharmacy in a better position than is the case at present. It was his desire to see the time come when all men would join the Society on passing the Minor examination, but he was afraid that the present subscription prevents many from joining. He then referred to the question of regulations for the storage, etc., of poison, and was of opinion that some kind of regulations are absolutely necessary, and that it would be much better for pharmacists to draft their own regulations than that it should be left to the authorities, who would certainly do so if pharmacists do not. He next touched upon the question of pharmacists' "daily work and daily bread," and said that although all chemists carried on their business for the sake of making a living, they were as a body desirous of doing their best for their customers. But, with regard to companies trading as pharmacists, he thought their chief desire was to make money without studying the interests of the public at all.

Mr. MARTINDALE, in moving a vote of thanks to the President for his address, remarked that, in discussing the questions to be brought forward that evening, it was of the greatest importance that they should be considered calmly, carefully, and with discretion.

Mr. ANDREWS seconded the vote of thanks, which was carried, Mr. HARRINGTON replying.

Subsequently a discussion took place on the proposals in
The Federation Programme.

Mr. J. C. HYSLOP opened the discussion on the question whether it is desirable in the interests of pharmacy that firms trading under ancient titles should also use the names of the present proprietors in conjunction therewith. He said that although he had been selected to open the discussion on the question before the meeting he entirely disapproved of the resolution submitted by the Federation. It was so loosely worded that he did not think it would effect the purpose it was evidently intended to do. He thought it would tie the hands of some legitimate firms, whilst it would not in any way interfere with company trading.

Mr. G. S. TAYLOR pointed out that at present the Pharmaceutical Society had great difficulty in prosecuting companies, inasmuch as it is almost impossible to find out who is really responsible, and he thought if the regulations proposed were enforced it would greatly assist the Society in getting at the real offenders when the law was broken.

Mr. ANDREWS was of opinion that the public had a right to know by whom pharmacies are conducted, and he thought that such a regulation as proposed by the Federation, if carried into effect, would place many obstacles in the way of company trading. He would therefore move the adoption of the resolution as proposed.

After some considerable discussion, in which Messrs. C. B. Allen, W. Martindale, R. H. Parker, and others took part, and in which the general opinion seemed to be that the public should know who is really responsible for the conduct of pharmacies, and that it would not be detrimental to the interests of ancient firms of good reputation if the names of present proprietors were made known to the public, whilst it would materially help to check the operations of bogus companies trading as pharmacists, it was resolved—

That it is desirable, in the true interests of pharmacy, that the names of present proprietors of a pharmacy should appear in conjunction with the usual title of the firm.

Mr. F. ANDREWS next dealt with the suggestion of the Federation that, in view of the passing of the Pharmacy Acts Amendment Bill, 1898, local pharmaceutical associations should use their best efforts to induce all registered chemists to become members of the Pharmaceutical Society.

It was unanimously agreed that the suggestion of the Federation was a good one and should be adopted by all associations, Mr. Andrews suggesting that all present should use their best endeavours to get their own assistants to join the Pharmaceutical Society.

Mr. R. H. PARKER then read a paper on the question of company trading, as it affects the legitimate interests of registered chemists and the protection of the public safety—aimed at in the Pharmacy Acts, the Federation having suggested that an effort should be made to formulate some definite line of policy on which all registered chemists could agree to act.

It was decided by the meeting to consider the subject in committee, and to send copies of Mr. Parker's paper to all members of the Association, after which the discussion would be resumed on a future occasion, when it is proposed that the question should be fully considered in all its bearings.

OXFORD AND DISTRICT CHEMISTS' ASSOCIATION.

A meeting of this Association was held on Tuesday, December 13, Mr. H. MATTHEWS, President, occupied the chair, and brought forward for discussion the question of

Compulsory Regulations as to Keeping, Dispensing, and Selling Poisons.

The CHAIRMAN said he considered that the recommendations adopted at a general meeting of the Pharmaceutical Society, May, 1871, gave considerable latitude to the chemist, and would not be found irksome in any well-founded pharmacy, and as it appeared to be a matter of such great moment to the Privy Council that these recommendations should become regulations, the Council of the Pharmaceutical Society should be supported in attaining this end. He strongly urged all registered chemists to become members of the Pharmaceutical Society, and by so doing give to it that support which would enable it, with a majority at its back, to obtain from Parliament several much needed reforms. After some discussion, the following resolution was passed:—

That it is the opinion of this meeting that the present recommendations for the storage of poisons, or some modification thereof, become regulations subject to the provisions of the Pharmacy Act, 1868.

PHARMACEUTICAL SOCIETY.

EVENING MEETING IN EDINBURGH.

The second evening meeting of the session was held in the Society's house, 36, York Place, Edinburgh, on Wednesday, December 21, when Mr. J. LAIDLAW EWING took the chair. The minutes of the last meeting were read and approved. Apologies were intimated from Messrs. D. Brown, J. Lothian, Currie, Lunan, Nesbit, Stephenson, Davidson, and Duncan.

In the absence of his father, Mr. D. RAINY BROWN read the first paper,

Notes on Lime as a Preservative for Chloroform,

which is printed in full at p. 669. Mr. Brown pointed out that there is a very general but erroneous belief that chloroform is highly inflammable; it burns when brought in contact with a strong flame. He showed, however, that when he plunged a lighted taper into liquid chloroform, or introduced it into the vapour rising from boiling chloroform, it was instantly extinguished.

Mr. HILL said the appearance of Newman and Ramsay's paper in a medical journal had caused many inquiries to be made by doctors of pharmacists as to the advantages of their method. It was important that such an authority as Mr. Brown had so clearly shown that the method was quite fallacious.

The next paper, printed on page 666, was by Dr. LEONARD DOBBIN on

Criticism of Some Medical Matters in the New Pharmacopœia.

Mr. DOTT said he thought Dr. Dobbin's criticisms were in some respects hypercritical, but they were certainly very interesting.

Dr. SILLARS said there was one point he would like to ask a question about. The Pharmacopœia stated that gallic acid should give no precipitate with tartarated antimony, indicating the absence of tannic acid. He found that every sample of gallic acid he tried gave a greater precipitate with tartarated antimony than tannic acid did.

Mr. COWIE said, as a teacher, he was indebted to Dr. Dobbin, whose paper would clear away many difficulties. The old formulæ should be buried once for all.

Mr. SIMPSON asked how the true formula was determined as $K_3FeC_6N_6$. Was it by the vapour density? If it was correct, how would the graphic formula be written when iron was a pseudo-triad?

Mr. HILL said they were entitled to expect consistency in a national Pharmacopœia produced by experts. Dr. Dobbin had happily struck a new vein of criticism. The discrepancies noted caused no trouble to chemists like Mr. Dott, but they were a source of great trouble and anxiety to students, who could not know that some mysterious meaning was not involved in such variations as the author pointed out.

Dr. DOBBIN, in reply, said he was quite prepared to be called hypercritical. He had simply jotted down points as he turned over the leaves of the book, and he had not read more than fifty pages. His impression was that, taken all over, the compilers might have been more merciful to the student, whose task would have been less difficult if those discrepancies had been eliminated. As to potassium ferricyanide, the formula of such compounds was determined by the method of electric conductivity. All tribasic acids were found to act in the same way, and because hydroferrocyanic acid acted like other known tribasic acids it was classed as such.

Mr. HILL, in the absence of Mr. John Lothian, read his paper on

Volumetric Operations of the New Pharmacopœia,

which is printed full at page 667.

Mr. DOTT said this was a very interesting paper. The matter of indicators was very important. He agreed with the author as to the value of cochineal, especially in the case of ammonia titration. It was superior to litmus in the case of aromatic spirit of ammonia. He had suggested a long time ago the use of phenolphthalein, and then methyl orange, in titrating sodium and potassium hydroxides, as a means of determining the amount of carbonate, but the method had not been adopted with regard to potassium permanaganate. It was almost too delicate, owing to its ready decom-

position. Minute quantities of oxidisable substances affected the result, and led to error more than the more stable potassium bichromate. The official volumetric test for sodium sulphite was almost certain to give erroneous results from the ready oxidising of the sulphite.

Mr. HILL pointed out that some of Mr. Lothian's factors differed from those given by Lucas.

Mr. SIMPSON said the use of decinormal sulphuric acid for determining lead salts was very objectionable, because the fine precipitate would not settle, and filtration became necessary. With oxalic acid filtration was not required.

Mr. COWIE said potassium iodide solution was very useful for determining hydrogen peroxide, especially when determining small quantities. A standard hydrochloric acid would have been useful for determining alkaline carbonate.

Mr. KIDD said the Pharmacopœia stated that liq. calcis sacch. contained about 2 per cent. It only contained 1.73 per cent., and the word "about" did not cover that interval.

CONCLUDING BUSINESS.

Mr. HILL exhibited the fragments of a glass mortar sent by Mr. J. A. Gibson, which had suddenly disrupted with explosive force after being used to triturate a powder and then washed with cold water. It was suggested that those two circumstances induced the molecular disturbance which determined the explosive disruption of a badly annealed mortar.

The ASSISTANT-SECRETARY also directed attention to recent additions to the Library.

On the motion of the CHAIRMAN thanks were awarded to the authors of papers, and the meeting then closed.

NEW REMEDIES.

EUROBIN.—This is an aceto-compound of chrysarobin, which is recommended by Kromayer as a substitute for that body. Solutions of 2 to 3 per cent. are said to be as effective as the usual chrysarobin mixtures. Eurobin is perfectly free from toxic effects, is non-irritant, and does not stain.—*Pharm. Centr.*, xxxix., 476, after *Munich Med. Mod. Woch.*, 795.

OVARADENE.—Ovaradene is the name given by Knoll to an organic therapeutic preparation from ovarian tissue, which is stated to possess the active principle in an unchanged condition. It consists of a tasteless powder and has no smell. It is prepared in the form of powder and tablets; the dose is 1 to 2 grammes daily. According to Dr. Kossier this preparation is suitable in all cases of removal of the ovaries and in climacteric disorders. The remedy is also useful in cases of painful dysmenorrhœa.—*Pharm. Zeit.*, xlii., 828.

SILVER NITRATE IN INFANTILE OPHTHALMIA.—T. Bar believes in the use of iodoform, as recommended by Valude, for the systematic treatment of the eyes of new-born infants. He advocates (*Journ. de Clin. et Therap. Infant.*) the universal employment of the old-time silver nitrate remedy. He finds the instillation of a 1 per cent. solution of silver nitrate to be more successful than any other remedy as a safeguard against ophthalmia, and advocates its universal use.—*Pædiatrics*, vi., 308.

PRASOID.—Under the title "Pasoid Heckel" Dr. Poucel (*Bullet. de Therap.*, cxxxv., 81) employs a solution of globularin and globularetin; 100 drops of this solution contain 0.135 g. globularin and 0.158 g. globularetin. For a single dose Poucel gives 5 to 20 drops three times a day, or 60 drops in 24 hours. The results in gouty and rheumatic pains have been satisfactory.—*Pharm. Central.*, xxxix., 669.

MENTHOLUM VALERIANICUM.—Dr. J. R. Frieser (*Munich. med. Wchschr.*, 1898, 1121) prescribes menthyl valerianate in the form of drops, for migraine, thus: Menthyl valerianate, 5; distilled water, 20; syrup of orange flower, 30. Fifteen minims of this mixture to be taken every two hours between the attacks.—*Pharm. Cent.*, xxxix., 669.

PHENOL AFTER DENTAL EXTRACTIONS.—A Schuer advocates for the relief of pain the direct application of liquid phenol to the cavity after extraction. It is applied by wiping the cavity with a pledget of cotton dipped in the phenol. The author always employs this method to prevent pain after extractions.—*Therap. Monats.*, lē, 532.

LETTERS TO THE EDITOR.

THE USE OF NETTLES AS FOOD.

Sir,—It may interest your correspondent, D. Gair (see p. 633), to know that in Sowerby's 'English Botany' (vol. viii., p. 128, 1868), the following paragraph occurs:—"The leaves of the nettle when young, make a good potherb, and were at one time eaten largely, when green vegetables were less abundant than they now are in our gardens. In Scotland it was the practice to force the nettles for early spring kail, and we are told that nettles dressed like spinach are excellent eating. By earthing up, nettles may be blanched in the same way as seakale, and eaten in a similar manner." Several statements more interesting to agriculturists than to pharmacists are also given in detail. Of these may be briefly mentioned, that "Cattle give more milk when fed on hay containing nettles than when fed on hay alone; that the leaves chopped and mixed with other food are beneficial to young poultry." "The juice of nettles yields a beautiful and permanent green dye, which is used for woollen stuffs in Russia. The roots boiled with alum produce a yellow colour, which dyes yarn well." Campbell, complaining of the little attention paid to it in England, says, "I have eaten nettles, I have slept in nettle sheets, and I have dined off a nettle tablecloth. The stalks of the old nettle are as good as flax for making cloth." The fibre being produced in less quantities than that of flax, and being somewhat difficult to extract accounts, perhaps, for the fact that it is but little used in Britain, though in some countries it is still employed." "Medicinally, it acts as a slight astringent. It was recommended by the old writers on herbs as a styptic, and seems to be useful in arresting bleeding of the nose. With this view, a small piece of lint moistened with the juice may be placed in the nose." The plant so used is *Urtica dioica*, which has a yellow, slender, creeping perennial rhizome. *U. urens* is an annual plant with a tap root only, and is usually only about 12 or 18 inches high. The yellow colouring matter in the roots of *Urtica dioica* is very evident when the plant is pulled up. The plant has an advantage over flax in that it grows in the poorest soil and in the most stony places, whilst flax needs as rich soil as wheat. One use of the nettle that I have not seen mentioned is as a counter irritant. Flagellation with nettles for those who have the courage to use them has been known to relieve lumbago. The Roman nettle *U. pilulifera*, now an extremely rare British plant, is said by Camden to have been brought over to this country for a similar purpose. He says: "When Julius Cæsar landed at Romney the soldiers brought some of the nettle seed with them, and sowed it there for their use to rub and chafe their limbs when—through extreme cold—they should be stiff and benumbed, being told before they came from home that the climate of Britain was so cold that it was not to be endured without some friction to warm their blood." A decoction of the leaves has also been strongly recommended as a hæmostatic in metrorrhagia (*P. J.* [3], xx., p. 343), and *Urtica pilulifera* is used in the East as a galactagogue. The chemistry of this plant still needs investigation, since Reuter obtained a non-nitrogenous glucoside from all three species (*Pharm. Centralh.*, October 17, 1889, p. 609), and Oddi and Lomanaco isolated a crystalline alkaloid, fatal to frogs in the dose of 1 centigramme, but with slight general effect on mammals, but whether either of these is the source of the irritant action of the nettle, or of its galactagogue action, does not appear (*P. J.* [3], xxiii., p. 3, 1892). The peculiarities of nettle fibre have been described in *P. J.* [3], xiv., p. 786, from which it appears that nettle fibre cannot, if treated by the chemical means as yet employed, be made to yield a fibre equal to flax for technical purposes.

London, December 12, 1898.

E. M. HOLMES.

THE PHARMACEUTICAL SOCIETY AND THE TRADE.

Sir,—I regret to see that so much misapprehension exists amongst chemists in regard to the position which the Pharmaceutical Society occupies and the functions it ought to perform. This misapprehension will, unless it is removed, prove a great barrier to progress. There appears to be an idea that the Pharmaceutical Society is a kind of foreign parasite living off the pharmaceutical world; whereas the Pharmaceutical Society and the pharmaceutical world ought to be synonymous terms. The Council is looked upon as a body outside of chemists, against which only such invectives as are begotten in rare moments of inspiration are strong enough to be hurled, and yet every man in the drug trade has a right and a duty to perform in the election of the Council. Nobody

will accuse me of becoming a propagandist, I am sure, and I would not call attention to this were it not for the fact that recent events have proved conclusively that Parliament recognises the Council as the mouth-piece of the Society, and the Society, not merely as the representative of the drug world, but as the drug world-itself. We have not the faintest chance in the House of Commons unless we lay our grievances before it through the recognised official medium. It can serve no good purpose to drag up the short-comings of the Council in the past. Whatever may have been the position in days gone by, it is generally recognised that the present President is energetic and tactful, and chemists will do well to forget the past and take full advantage of the present. I do not mean by this to censure any president of the past. We have all made mistakes in the past, but I think we now see our road pretty clearly and, if we are united, pharmaceutical history ought to be made fast during the next few years. Some of the arguments brought forward against the Society are unreasonable, and others are unjust. For instance, it is unjust for a man to look back upon his student days and count up the sums he disbursed in order that he might become a chemist, and place the whole to the debit of the Pharmaceutical Society. Part may have been paid for tuition with which the Society had nothing whatever to do, part may have been paid for board and lodgings during student days, and some few pounds have been paid in the form of examination fees, but the Society does not know of a method by which it can conduct examinations free of expense. It is unreasonable to suppose that because the Society got a few pounds from a man in the shape of examination fees when he was only upon the threshold of manhood, it will protect him from his enemies, look after his interests in Parliament, and keep a protecting arm around him generally until he has reached his four-score years without further charge. I think it is rather mean for men to say they will join the Society after they see what it can do. Why, it is just in the fight that these men are needed. It is said that Napoleon cursed more at De Grouchy for coming up with fresh forces after Waterloo was lost than he did all his enemies put together. Who wants a fresh accession of strength after a battle is lost, and what would be the use of it after the battle is won? I again say that I am not acting the part of propagandist for the Pharmaceutical Society, but I am quite convinced that this fight, if it is to have any chance of success, must be waged through the medium of the Society, and if the Society is to make a strong impression on Parliament it must be able to show that it is backed up by the whole drug trade. We will do well to forget the grievances of the past, forget petty local animosities, elevate the Society to a position of impregnable strength, and present an unbreakable front to the unqualified enemy. In elevating the Society we are not doing a service to an outside body. The Society is ourselves and the Council is our servant.

Dumfries, December 12, 1898.

JAMES REID.

THE PROPOSED POISON REGULATIONS.

Sir,—As you remark in a note in this week's Journal, it is extremely desirable that the recommendations for the keeping and selling of poisons be thoroughly discussed, and if need be amended, before they become incorporated with the Pharmacy Act of 1868. It was a matter of surprise to me to find no discussion on the subject in this week's Journal, after the very elaborate article by Mr. Barnard Proctor on this subject. Whilst I most cordially agree with the desire at this time to meet our obligations to the Privy Council, and to settle a long standing grievance, I must confess that I am one of those who do not believe there is any evidence of moment to show that chemists have been negligent in this matter, and therefore I would earnestly hope that we shall not be over-regulated. Possibly there may be no inspection, but whether that be so or not, I am sure that every conscientious pharmacist would desire to be in line with the law, and I think it is the duty of the framers of the proposed regulations to bear in mind the minimum of regulation which it will be necessary and convenient to impose upon all classes of chemists for the public safety, and leave ideal regulations such as those suggested by Mr. Barnard Proctor to the free will of the ideal pharmacist. It was very well pointed out the other day by a representative pharmacist that, unless the poisons to be regulated are defined, he might as well shut his shop-door and label it "poison cupboard." In my opinion the regulations as they stand now would, in fifty per cent. of the pharmacies in the United Kingdom, mean a very large refitting order and a source of infinite worry, and in the end perhaps not answer the purpose so well as the

special means the proprietor had himself taken for his own safety. But if the poisons in Part I. of the Schedule, with such additional dangerous poisons as the Society might add, were singled out for special and strict regulations, there would be no difficulty or hardship in submitting to them. Then the minor poisons, from laudanum and nux vomica down to paregoric, surely might be sufficiently provided for in some such terms as these. That they shall be distinctly labelled with the name of the poison, and that no such poison, the maximum dose of which is, say, a drachm, shall be kept in dangerous proximity to weaker preparations. This would provide for the separation of laudanum and such poisons from black draught or tincture of rhubarb. All I plead for is that no machine-made regulations be imposed upon the arrangement of the whole pharmacy, but that very definite regulations be applied to definite and dangerous poisons, and that the remainder with some such regulation as I have suggested be left to the discretion of the qualified man. Regulations for keeping poisons are now, we believe, about to be made for the first time, and as the Society has power to make regulations from time to time should further be needed, I think we should fully meet our obligations to the Privy Council by the course I have described, coupled with further safeguards as to the selling of poisons.

London, December 17, 1898.

W. WARREN.

LIMITED COMPANIES AND MEMBERSHIP OF THE SOCIETY.

Sir,—In reading over the new Bye-Laws of the Pharmaceutical Society, confirmed and approved by the Privy Council, which I received in common with other registered chemists, they suggest to me the following questions, which I consider of vital importance:

(1) Are the registered chemists at present selling their services and qualifications for the benefit of unqualified limited companies eligible for election as members of the Pharmaceutical Society?

(2) If so could these unqualified limited companies, by means of advertisements, handbills, labels, or otherwise, make any use of the title Member of the Pharmaceutical Society in the same manner that such a company, not being a "person" according to present ruling, exhibits the title of chemist and druggist?

(3) In Section 17, Clause 2, we find words to the following effect: That if any report be made by a member of the Society that another member has been guilty of any act or conduct which is contrary to, or subversive of the interests of the Society, or a violation of its laws and regulations, the Council may—in exercise of the power conferred by the Charter—remove such member from the Society. Would the Council deem the covering of unqualified limited companies an act or conduct sufficient for removing such a person from the Register of members of the Society? A definite answer to these questions is most desirable, and if I am wrong in my surmises I feel that it is most important that the trade should know the facts. Let me also take this opportunity of expressing the pleasure afforded me in reading the admirable editorials which have recently appeared in the Journal referring to company trading; they are a distinct advance on what has gone before, are calculated to quicken the energies of the local associations and to point out the way towards which we may look for a remedy. What your carping critic at Bury meant to gain for the benefit of pharmacy by writing such a long-winded letter (*ante* p. 631), I am at a loss to understand. Methinks the energy expended would have been much better employed in appealing to his brethren to become united as members of the Pharmaceutical Society.

Blackburn, December 13, 1898.

WILLIAM HOLT.

MELLIN'S EMULSION OF COD-LIVER OIL.

Sir,—The practice which Messrs. Mellin adopt in a "few exceptional cases" of allowing something extra to their usual terms is one, I fear, too often adopted by other large firms "who cannot see their way" to assist we retailers to obtain a living profit. It is high time the local associations should inquire from such firms as A. J. White, Ltd., W. T. Owbridge, etc., whether they do or do not allow an extra bonus in one way or another to their largest customers. I have, and I know many chemists in this district who do get all their supplies from a cash chemist at the following prices: Seigel's, 11s. 6d. per dozen; Owbridge's, 8s. 6d. per dozen. There must be some inducement offered to these so-called public benefactors (?), or they would not supply the above in dozen lots so freely as they do if they do not get something in return.

December 15, 1898.

A MIDLAND CHEMIST (161/8).

INTERESTING VERSUS INTERESTED JOURNALISM.

Sir,—Just a word in praise of the *Pharmaceutical Journal*—so up-to-date in scientific matter, and withal so very practical and business-like. In fact there is no need for any pharmacist to subscribe to any other trade paper, for it is as complete as any truly progressive pharmacist can wish. The enclosed circular anent a contemporary came to hand a few days ago, and very plainly shows to what depths the reptilian press will sink, stirring up the most villainous effluvia the while. It is quite a noteworthy fact that this trade organ (as it likes to style itself) is never tired of vilifying the Pharmaceutical Society, and, if the truth was known, has been the direct cause of most of the present alienation. It is satisfactory to note, however, that the times are changing, and ere long I feel sure there will be a great influx of new members. As one of the means to this end, I would like to suggest that the papers by Messrs. Young and Squire in last week's *Journal* be printed *in extenso* and circulated to every chemist on the Register. This could easily be done if every present member would circulate, say, a dozen, to known non-members, names and addresses of whom could be got from the Register.

Nuneaton, December 19, 1898.

A. E. SLINN.

* * * Copies of the circular referred to have been sent to us by several correspondents. It is a somewhat hysterical and presumptuous appeal for half sovereigns, issued on the "worth a guinea a box" principle by the proprietors of a weekly publication which has lately distinguished itself by advocating legislative recognition of companies of unqualified persons carrying on business as chemists and druggists. Apart from that, the circular does not differ appreciably from those which tradesmen are accustomed to issue from time to time when they find business slack and their popularity passing. [Ed. P. J.]

IODINE IN THYROID GLAND.

Mr. Swinton's letter in your impression of December 10, p. 633, leaves me little to answer, as he now finds that iodine is present in the residual gland after B.P. treatment. But his statement that in my process of testing for iodine, bromine is set free, must not pass without correction. It is one of the advantages of this simple process that in the ordinary method of testing, nitro-sulphuric acid does not set free the bromine. The process would be useless for kelp testing, for which it is mostly used, if it did. I will only add that it must be difficult to get an organic substance "completely charred" in the presence of potassium nitrate.

Dalmuir, December 19, 1898.

EDW. C. C. STANFORD.

A REASONABLE REQUEST.

Sir,—May I, as an assistant, ask through your paper if the principals of all shops could not close on the Wednesday half-holiday before the Christmas and other holiday seasons, instead of keeping open, and thus making assistants pay back the time which is generally supposed to be a general holiday. It does seem hard that it cannot be given to us. If this was only done, I am sure it would be greatly appreciated by assistants generally.

December 19, 1898.

DURUS (161/30).

RETAIL CHEMISTS AND THE P.A.T.A.

Sir,—Owing to the omission of inverted commas in my letter which you printed last week it would not be clear to your readers how much of Mr. Broadhead's letter I quoted. Allow me to say it was simply the following passage: "The P.A.T.A. is an association which is endeavouring according to its lights to ameliorate the condition of the chemist."

Portsmouth, December 17, 1898.

HERBERT H. BAILEY.

Sir,—The letter of Mr. Bailey in your last week's issue was no doubt calculated by the writer to prejudice chemists against our movement. Mr. Bailey criticises our attitude towards the grocery trade as if it were a new departure on our part. He claims to speak as one having an intimate knowledge of our movement, and ought, therefore, to have information that our policy in reference to the grocers was decided upon nearly two years ago by the governing body of the Association. The subject was well discussed by the trade before. It was recognised that grocers were large distributors of articles in which chemists were interested. Indeed, they are possibly the largest distributors of such articles as meat extracts and foods. No movement could possibly have the required weight with proprietors which ignored so large a section of the distributors of their articles, hence the necessity for securing the co-operation of all traders handling these articles. It was

considered wiser rather than to court opposition from so large an interest as that represented by the grocery trade to form a basis for mutual effort in the direction of securing better profits upon articles in which both grocers and chemists are interested. It was therefore decided to form a grocery section, to control such proprietary articles as cocoas, starches, mustards, blues, and the various other peculiarly grocery proprietaries. Mr. Bailey says he hears that grocery retailers have thought a profit of 12½ per cent. on proprietary articles sufficient, but he does not go on to say that the proprietary articles referred to are of the class above-named, and not patent medicines. There are some 30,000 patent medicine licences issued; there are only 9000 chemists in business, and whilst these 9000 chemists were being kept constantly notified of the protected prices of P.A.T.A. articles through the medium of the "Anti-Cutting Record," it became absolutely necessary that those outside the drug trade, who sell these articles, should be informed as to the protected prices. Complaints were reaching the Association that grocers were cutting, and on communicating with the offenders we were invariably informed that they were ignorant of the protected prices. It became necessary, therefore, to send such grocers a list of protected articles, in which they were more or less interested, and it was found that the best means of doing that was by sending them an abridged edition of the "Record" dealing with such articles. Mr. Bailey maintains that the P.A.T.A. have made a present of half the articles to the Grocery Section. The Association has never attempted to regulate the class of traders who are to deal in certain goods. It has simply to recognise facts as they stand. Mr. Bailey will surely not deny that the list of goods he refers to is a list of articles which are not patent medicines, but are goods which are being sold by thousands of grocers, and I take it he will also admit that having protected these articles, it is our duty to inform all sellers of the protected prices. It is significant in the face of Mr. Bailey's statement, that "the only places in which the P.A.T.A. can claim that it has been able to maintain fixed prices are towns where there is no cutter," we have no information that any firm at Portsmouth is cutting P.A.T.A. articles. We have a large number of members in the town, and if there had been cutting there we should undoubtedly have heard something about it. Portsmouth can hardly be said to be a town where there is no cutter.

London, December 20, 1898.

W. S. GLYN-JONES.

ANSWERS TO QUERIES.

Special Notice.—Scientific, technical, legal, and general information required by readers of the *Pharmaceutical Journal* will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on different slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms, and the registered number added in each instance should be quoted in any subsequent communication on the same subject.

APOTHECARIES' SOCIETY.—You should address your inquiry to the Secretary of the Society, Apothecaries' Hall, Blackfriars, E.C. [Reply to APEX.—20/17.]

MIST. BISMUTH ET PEPSIN.—If the pepsin is soluble without the hydrochloric acid, omit the latter. Many samples are not soluble without acid. [Reply to W. W.—20/24.]

FIRST EXAMINATION.—The reduced fee is payable whenever a person who has failed to pass re-enters for examination. [Reply to SECUNDUS.—21/1.]

NEURALGIA POWDERS.—Exalgine, 1 grain; ammonium chloride, 10 grains. Exalgine in this dose is perfectly safe, and the small dose is stated to be as efficacious for the purpose as a larger one. [Reply to W. W.—20/24.]

APPLICATION FOR PROTECTING STONE.—The substance you send appears to be an acid fluoride of sodium. We cannot say whether alum would serve the purpose. [Reply to FLUATE.—20/27.]

RED MARROW EXTRACT.—Take the heads of young bones, disintegrate the tissue by thorough trituration, then macerate for twenty-four hours, with occasional shaking, in an equal weight of a menstruum composed of equal volumes of glycerin and chloroform water; finally express the clear red liquid.

[Reply to C. L. T.—19/29.]

COUGH MIXTURE.—Probably the following will suit you:—Fluid extract of ipecacuanha, 8 minims; fluid extract of opium, 16 minims; fluid extract of liquorice, 2 drachms; oil of aniseed, 2 minims; oxymel of squills to make 1 fluid ounce. Dose, for adults, one teaspoonful.

[Reply to W. W.—20/24.]

DYNAMICS.—You had better get an elementary text-book of mechanics, such as that published by Collins at 1s., or those issued by the University Correspondence College at 2s. per volume. If possible, also, you should join an elementary class in the subject, such as are conducted in connection with the Science and Art Department.

[Reply to S. H. E.—21/2.]

BLEACHING BROWN HOGSKIN.—This is a matter for experiment, as it all depends on the nature of the dye. Possibly a weak solution of sulphurous acid will do what you require, or salt of sorrel may answer. Try a little on an inconspicuous part of the article. It is doubtful if hydrogen peroxide will answer in this particular case.

[Reply to LEATHER.—20/2.]

PERFECT DEVELOPER.—There are a great many formulæ which would answer your purpose. Here are three: (1) Water, 1000 C.c.; sodium sulphite, 300 Gm.; hydroquinone, 7.5 Gm.; potassium carbonate, 40 Gm.; metol, 5 Gm. Dissolve in the order given. (2) Water, 1000 C.c.; glycin, 5 Gm.; metol, 1 Gm.; sodium sulphite, 300 Gm.; potassium carbonate, 125 Gm. (3) Water, 1000 C.c.; ortol, 7.5 Gm.; potassium metabisulphite, 7.5 Gm.; sodium sulphite, 150 Gm.; potassium carbonate, 30 Gm. You should be able to sell 8 ozs. for a shilling.

[Reply to STEREO.—20/25.]

VIOLETTE DE PARME PERFUME.—Try some experiments on the following lines, modifying the ingredients to suit your special requirements:—Ionone, 2 drachms; oil of bergamot, 2 drachms; anethol, 2 minims; oil of sweet orange, 10 minims; oil of neroli, 10 minims; otto of rose, 5 minims; extract of orris, 10 fl. oz.; extract of jasmín, 15 fl. oz.; extract of violet, 10 fl. oz.; extract of cassia, 3 fl. oz.; extract of abelmoschus, 3 fl. oz.; extract of rose, 5 fl. oz.; extract of musk, 2 fl. drachms; glycerin, 2 fl. drachms. You should vary the proportions until you obtain a satisfactory product.

[Reply to APPRENTICE.—19/24.]

TOILET VINEGAR.—(a) Extract of cassia, 1; extract of jasmín, 1; extract of orange, 1; dilute acetic acid, 4. Mix. Filter bright through kieselguhr. (b) Oil of neroli, 10 m; oil of ylang-ylang, 20 m; oil of rose-geranium, 10 m; oil of bergamot, 20 m; oil of sweet orange, 2 minims; glacial acetic acid, 1 oz.; alcohol (90 per cent.), 2 ozs.; distilled water, to make 10 ozs. Mix the oils with the acid, add the spirit, then the water. After standing for twenty-four hours, filter bright through kieselguhr.

[Reply to W. W.—20/24.]

ATOMIC WEIGHTS.—For all practical purposes you will find it more advantageous to use a table in which the atomic weights are given, as far as possible, in round numbers. Examiners are usually sensible men and not likely to be impressed with the pretence of absolute accuracy involved in the statement of the atomic weight of oxygen as 15.88, and that of zinc as 64.91, as given in the new Pharmacopœia.

[Reply to S. H. E.—21/3.]

PYROCATECHINE DEVELOPER.—The following formula for this developer was given in our issue for October 22, p. 446a, and it will be found quite satisfactory:—

A.	
Pyrocatechine	20 g.
Sodium Sulphite	100 g.
Water	1000 C.c.
B.	
Sodium Phosphate	188 g.
Sodium Hydrate	20 g.
Water	1000 C.c.

To make B dissolve the phosphate in 750 C.c. and the hydrate in 250 C.c. of water, and then mix. For use, mix 1 part of A, 1 part of B, and 1 part of water.

[Reply to C. J. R.—21/4.]

BOTANICAL CASES AND LABELS.—Write to Watkins and Doncaster, 36, Strand, London, W.C., stating your requirements, and asking for one of their price-lists. [Reply to J. D.—21/13.]

RESTORING PARTLY OBLITERATED PENCIL MARKS.—We are unable to help you in this matter, such experiments as we have tried having proved unsuccessful. Possibly some photographic process might give satisfactory results. [Reply to SPERO.—20/26.]

DISPENSING PROBLEMS AND NOTES.

PERCENTAGES IN PRESCRIPTIONS.

Sir,—Mr. J. C. Umney, in his excellent 'Guide' to the 1898 B.P., makes the following remark under Acid Carbolie Liquefactum:—"This acid is directed to be made by the addition of 10 parts of distilled water to 100 parts by weight of phenol, and differs (*sic*), therefore, from that of the 1885 Pharmacopœia, the monograph for which has been always understood to be 90 parts of carbolie acid and 10 parts of water." How such a misconstruction of the "monograph" could occur I cannot understand, as it distinctly states that "liquefied carbolie acid" is "carbolie acid liquefied by the addition of 10 per cent. of water"; and if any doubt existed as to what that meant reference to "carbolie acid" settles the question, as under it, it says, "At 60° F., 100 parts of the acid are liquefied by the addition of 5 to 10 parts of water." This being ancient history, I would not have referred to it had it not been that in the Journal of November 26 (p. 582), under "Dispensing Problems and Notes," in reply to a correspondent, it is said that "Adde cocain. hydrochlor., 10 per cent., implies that the finished ointment shall contain 10 per cent. of the alkaloidal salt." The reading of "liquefied carbolie acid" (1885) monograph is my conception of added percentage as against contained percentage. If I am wrong I will be glad to receive proof that added and contained percentages are synonymous expressions. Had I dispensed the recipe I would have added 96 (not 106 $\frac{2}{3}$) grains of cocain. hydrochlor. This is not a correction, it is a query, because I am anxious to have any misconception (?) I may have removed, and if I am correct (?) that others may not be misled by a wrong rendering of a term which, to my mind, has a definite meaning of its own.

PERCENTAGE (159/2).

NOTE.—"Percentage" is not labouring under any misconception. His letter shows that he appreciates the difficulty which frequently occurs in dealing with prescriptions like the one under discussion. The reply referred to was framed to comply with what was conceived to be the actual intention of the prescriber, viz., that the ointment should contain 10 per cent. of cocaine hydrochloride, and not 9 $\frac{1}{11}$ per cent. It should hardly be necessary for anyone to require to be convinced that added and contained percentages are not synonymous expressions: the ambiguity in the present case depends upon the difficulty of reconciling what appears to be the intention of the prescriber with the sense conveyed by the abbreviated form in which the prescription is written.

ICHTHYOL IN A LOTION.

Sir,—Please inform me of the best method of dispensing the following prescription:—

R Ichthyol..... 3iiss.
Zinc Oxide }
Ol. Olivæ }aa ʒi.
Aq. Calcis }
M. ft. Pasta. M. d. applic.

KILO (20/28).

NOTE.—A thick creamy product can be obtained, which shows little tendency to separate, by mixing the ichthyol with the olive oil in a mortar, adding the zinc oxide, and rubbing to a smooth paste. Finally, pour in the lime water in small portions, stirring thoroughly after each addition.

CORRECTION.

Mr. RYMER YOUNG'S PAPER.—On page 639, the sentence commencing at line 13 of column 1, should read as follows:—"That Committee, though in favour of legislating on some of the lines that had been suggested, was averse to restricting the dispensing of medicines to registered persons, and in the end its deliberations resulted in little beyond a suggestion that another Bill should be brought in by the Government." Mr. Young's letter, notifying the alterations in the sentence as printed, was not received until after the Journal had gone to press last week.

Pharmacy and the Allied Sciences.

A REVIEW OF CURRENT WORK.

Iodine in the Blood. In a communication to the Société de Biologie, M. Gley states that iodine is found in the blood of all adult animals, and that this is the source of the iodine present in the thyroid gland, to which attention was first called by Baumann. According to Gley, the red corpuscles are the seat of the iodine compound. It is not found in the blood of new-born animals.—*Nouv. Rem.*, xiv., 418.

Reproduction in Dictyota. J. Lloyd Williams, University College, Bangor, has investigated the reproduction of *Dictyota dichotoma*, an annual which germinates during the summer, remains small during the winter, and grows rapidly in June, beginning to form reproductive cells in July. The tetraspores are produced throughout the season; the sexual cells, however, show a remarkable periodicity. The formation, maturation and liberation of each crop occupies a fortnight, the interval between two spring tides. The oospheres on liberation have no walls, attract antherozoids, become fertilised and at once start germinating. If not fertilised the eggs lose the power of attracting antherozoids and form walls, but after a few divisions the process stops and the plantlets die. At the close of the season, and in cloudy and cold summers, some sori fail to mature, and certain of the sexual cells become sterile. The author concludes that the amount of illumination probably determines the maturation and liberation of the sexual cells, and the fertilisation of the oospheres.—*Annals of Botany*, xlviii., 559.

Carbohydrates in the Yeast-cell. L. Errera, after confirming his former researches on the structure of the cells of *Saccharomyces cerevisiae*, asserts that carbohydrates are stored up in yeast in the form of glycogen, which accumulates or disappears from the vacuoles very rapidly, according to conditions of nutrition and growth.—*Annals of Botany*, xlviii., 567.

Collecting and Preserving Diatoms. F. R. Rowley gives directions for collecting and preserving diatoms. In collecting, a spoon attached to a stick may be used for skimming the brown diatomaceous ooze off the surface of the mud; a drag-net serves this purpose in the case of forms occurring at greater depths, e.g., *Surirella*. The latter should then be placed with water in shallow glass vessels sheltered from direct sunlight; after resting for about twelve hours the diatoms appear in masses on the surface of the mud, whence they are transferred by means of a pipette to the fixing fluid. Among fixing reagents, Flemming's chromo-aceto-osmic acid, and sublimate in aqueous or alcoholic solution, demonstrate the most delicate structural features of the nucleus and cytoplasm during division. Picro-sulphuric acid followed by hæmatoxylin shows up the chromatic elements of the nucleus. A 1 per cent. osmic acid solution serves, in unstained preparations, to bring out the arrangement of the cytoplasm, the chromatophores, and other inclusions in the cell. A 45 per cent. solution of iodic alcohol is recommended for the study of the so-called "red granules" of Bütschli, which stain well after fixing by the foregoing

method. Large forms are removed individually under the dissecting microscope by means of a capillary tube, and the smallest are transferred with a pipette to the fixing solution. After fifteen minutes the latter is decanted off and the preparation passed through water and alcohols of increasing strength into absolute alcohol, which extracts oil and the colouring matter of the chromatophores; a few drops of ether and moderate heat facilitate their extraction. The material is then passed through alcohols of decreasing strength into distilled water and stained. A weak solution of Delafield's hæmatoxylin is a useful stain when controlled under the microscope; alum and borax-carmin are less useful. The specimens are passed successively through 35, 70, 95 per cent., and absolute alcohol into clove oil, to clear them, and mounted in dammar. The alcohol baths must be gradually changed to avoid distortion of the protoplasm. Living diatoms live for days when stained with methylene blue solution (1 in 100,000), but the vitality of the cell wanes from the moment the nucleus takes up the stain.—*Natural Science*, xiii, 406.

Purity of Lithium Carbonate. Lyman F. Kebler has communicated the results of his researches on medicinal lithium carbonate to the Research Committee of the U.S. Pharmacopœia Revision. After reviewing the sources and various commercial methods of preparing the salt, the author compares the tests in the U.S.P. with results obtained by himself, working on eight samples. As a result he recommends the following monograph in place of that official in the U.S.P., and comparison will show how more detailed it is than that of the British Pharmacopœia: "Lithium carbonate is a light, white powder, with occasional crystalline grains, odourless, and having an alkaline taste; permanent in the air. Soluble in not less than 75 parts, and should not require more than 80 parts of water at 15° C., and in 140 parts of boiling water; much more stable in water impregnated with carbon dioxide, insoluble in alcohol. Soluble in dilute nitric, sulphuric, hydrochloric, and acetic acids, with active effervescence; fuses at a low red heat; loses carbon dioxide at a higher temperature, and is partially converted into the oxide. It imparts a crimson colour to a non-luminous flame. Its aqueous solution has an alkaline reaction upon litmus paper. One gramme dissolved in 50 C.c. of dilute acetic acid should at most leave only a trace of insoluble matter (limit of mechanical impurities). Separate portions of this solution should not be affected by hydrogen sulphide T.S. (absence of arsenic, lead, etc.); ammonium oxalate T.S. (absence of calcium); or sodium cobaltic nitrite T.S. (limit of potassium); or produce more than a faint opalescence with silver nitrate T.S. (limit of chloride); barium chloride T.S. (limit of sulphate); or more than a slight coloration with ammonium sulphide T.S. (limit of iron, manganese, etc.). If 0.5 gramme of lithium carbonate be dissolved in 2 C.c. of hydrochloric acid, and the clear solution evaporated to dryness, the dry residue should dissolve completely in 3 C.c. of absolute alcohol, and 3 C.c. of ether added to this solution should not render it turbid (limit of other alkalis). If 1 gramme of the dry salt be mixed with 25 C.c. of water, to which have been added a few drops of methyl-orange solution, it should require not less than 26.7 C.c. of normal sulphuric acid, corresponding to at least 98.61 per cent. of the pure salt." The author prefers the volumetric to the gravimetric method. He found sulphates present in six samples, chlorides in five, calcium in three, iron in two, and aluminium in one. Owing to the presence of impurities in all samples examined, he considers that the volumetric requirement of the present U.S.P. (98.98 p. c. of lithium carbonate) is too high.—*Am. Journ. Pharm.*, lxx., 600.

VISUAL OPTICS IN THEORY AND PRACTICE.—II.

BY LIONEL LAURANCE,

Instructor of Visual Optics at the Official Classes of the Worshipful Company of Spectacle Makers.

The appliances needed by the optician are not numerous, but no greater mistake can be made than that of buying inferior articles such as render the work that is to be done more difficult, longer to achieve, and not so perfect when achieved. Moreover, it should be considered, that appliances are bought for a lifetime, and, therefore, any small extra outlay on them is spread over the long number of years during which they are in use and the means of making profit for the optician. Time is almost equivalent to money, and if time be saved and errors avoided the profit on optical work is increased.

Chief and foremost is, of course, the trial case, which if complete contains almost everything that is needed. There must be in it a full range of lenses, convex and concave sphericals from 0.25 to 20° and convex and concave cylinders from 0.25 to 6°. These must all be in pairs, and should be mounted with rings and handles so that, when in use, they are kept clean and do not require constant wiping. The frequent cleaning of trial lenses when handled occupies quite a considerable time, and time that is spent uselessly, besides which, this frequent rubbing of their surfaces tends to scratch the lenses and causes them to soon lose their high polish. Unmounted lenses, moreover, are very liable to become chipped. The handles facilitate the taking of the lenses out from the case and inserting them into the trial frame, or *vice versa*, and renders easy the necessary rotation of cylinders.

The rims themselves should be made so that the lenses can be inserted into the trial frame with either face to the front, and not as some are made, so that they can only be inserted one way. They should also be made so that the lenses be secured by screws in order that if one be broken it can be easily replaced. This is not the case when the lenses are retained by bending the rims over their edges. Both rims and lenses should be as light as possible. It is also advisable to have the convexes and concaves mounted in rings which are of different colour, say, the one lot white and the other yellow, so that a mistake cannot be made between them.

The case should contain a sufficiency of prisms, the lower numbers, say from 1 to 4°, being in pairs, and in addition to these and the sphericals and cylinders, all necessary discs, such as the opaque and black disc for occluding the eye not under test, the stenopaics for testing astigmatism, the pin-hole disc for deciding as to whether a case be correctable by lenses, the Maddox rod, the double prism, etc., for testing the motor muscles, and some coloured glasses, one each red and green and others smoke and blue of different shades.

The lenses must be ground on dioptric tools, and not on those of the inch system, and numbered in diopters only, and the numbering should not be scratched on the lenses themselves, but be stamped on the handles, also the numbers should be quite distinctly marked on the divisions of the case pertaining to each lens. It goes without saying, that each lens must be true as to the power marked and which it is supposed to be, also it must be accurately centred if spherical. The axes of the cylinders must be clearly and exactly indicated. The base apex line of the prisms must be the same, in fact, everything in connection with the glasses should be of the highest grade of workmanship and as perfect as such workmanship alone can make it.

The trial frame is, perhaps, the most important part of the case,

for it is to be used on every customer, and as it is to be so used on every customer the dimensions of the faces of whom vary so very much, it is clear that, in order to fulfil what it is needed to do it must possess the many and various qualities of an ideal working tool. No non-adjustable trial frame can serve for small and big faces for adults and children. Lightness is required, and so also is perfect rigidity and strength, and it is desirable that it be made of a metal that does not easily rust. Consequently, there is nothing to compare with finely tempered steel nicked as the material from which it should be made. It must be adjustable as to interpupillary distance, as to the height of the nose, as to the set of the bridge, and as to the length of the arms, the latter being curled so as to pass over the backs of the ears, and keep the frame firmly in place. Without these qualities all the work is rendered more difficult, as the frame constantly shifts and slides forward if straight sides be on it. If the frame has no means of being advanced and retarded, lenses become smudged by contact with the lashes, and the power of the lenses is actually changed by too great a distance between them and the eyes. Accurate testing is impossible when the axes of the lenses themselves are not exactly in the lines of vision, but decentred from them as occurs when there is no adjustability for pupillary distance. Adjustability as to height is needed so as to avoid decentring, and so as to allow of the lenses being lowered for close work.

As all the adjustabilities of the frame need to be done when it is on the face they should be, therefore, achievable by means of thumbscrews, and these thumbscrews must be so placed and sufficiently large to allow of easy manipulation. Each eye-piece should have carriers for three lenses, the one for the spherical, the other for the cylinder, and the third for an extra spherical or for the opaque disc. The front carrier, which is intended for the cylinder, must be capable of revolution, so that the axis of a cylinder can be easily got into any desired meridian. The frame must be scaled for angle notation indicating the various meridians, and the numbering should be large enough and clear enough to be easily seen by the optician at a fair distance. The insertion of the lenses into the frame should be sideways and not from the top, otherwise it is necessary for a lady to remove her hat and veil, a thing not always convenient, besides which, inserting them thus relieves pressure on the nose instead of increasing it. The lenses should be retained in the carriers by means of springs, so that they cannot shake about, otherwise a cylinder after being fitted may become shifted. If the frame be also scaled for pupillary distance, height, and set of bridge, and length of arm, it is somewhat of an advantage, as it gives the optician a rough idea of what sized frame is required by the customer. The lighter the frame is, and the more securely it sets on the customer's face, thanks to the length of the arms being adjustable, the less discomfort it causes. Lightness, however, must not be sacrificed to strength and rigidity. These points about the trial frame and lenses render the optician's work easier, quicker, and more accurate.

Test types for distance should be in clear black block letters printed on white cardboard; they must be graded down to a line lower than that which represents the normal visual acuteness for the distance at which the testing is done. If the tests be made at 6 metres (20 feet), then the type must be as small as No. 4.5, or one lower than No. 6. If 4 or 5 metres (15 feet or so) only be available, there must be No. 3 type on the card. Black cards with white block letters are also good for testing purposes.

Hand-cards for testing the sight at the reading distance are better than folding books, as they can be conveniently held in one hand. All cards must be left uncovered by glass, the latter reflecting too much light, and they must be always perfectly clean.

The trial case, the test types, and a tape line scaled in centimetres or, better, a near point measure, are the only real necessities for sight testing as done by the optician.

There are a few adjuncts which are of great utility, such as a set of trial spectacles and eyeglass frames for finding that which best suits a customer; a lens measure to quickly find the power and nature of glasses previously used by customers, or to try a prescription or stock glass; a record book for entering data pertaining to each case; frame measuring cards for taking the dimensions of frames; small screwdrivers of two or three different sizes, and flat and hollow chop pliers for manipulating frames.

The distance test-card used for measuring the visual acuity and testing the refraction of the eye should be fastened to the wall six metres distant from the client and beneath it, as nearly as possible in a direct line with the eyes under test, the astigmatic chart should be placed. Six metres is considered to be the proper distance for sight testing, but, if not available, 5 or 4½ metres can serve, but no shorter distance.

Diffused sun or artificial light should fall on the test-cards but not on the client's eyes, so if artificial light be employed as the illuminant, it should be screened on the side towards the client, and this is best done by a concave reflector, which serves the double purpose of a screen and of a condenser of the light on to the cards. A light is also required behind the client for illuminating cards used for reading. It is better that this be an artificial light on an adjustable bracket, so that it can be moved into any desired position to either side, above the head or in front of it, for various purposes. Altogether, if the natural light obtainable be not good, and on account of its variability in this climate, it is preferable to depend on artificial light entirely, it being uniform and constant.

HISTORICAL POISONS, POTIONS, PRESCRIPTIONS, ETC.

BY "PHARMACIST."

The King of Korea and the leader of the Filipinos have recently had their lives attempted. The former had his coffee drugged and he and the Crown Prince nearly succumbed. There was a packet of potassium oxalate put into Aguinaldo's soup, but the cook detected it before it reached his master's table. If Shakespeare or Hamlet's father's ghost is to be believed these things were done more easily in ancient days.

(He came) "With juice of cursed hebenon in a vial,
And in the porches of my ears did pour
The leperous distilment,
And with a sudden vigour it did curd
The thin and wholesome blood."

This can only be allowed on the grounds of poetical licence or that the ghost was a deceiver, for succus hyoscyami is harmless in the ears. Perhaps the earliest recorded instance of poisoning is that which occurred when Elisha fed a host of hungry students in B.C. 891. By mistake a quantity of the cucumis colocynthus or *Momordica elaterium*, the former most likely, known as the wild gourd or bitter apple, was mixed with the pottage. The cry was raised that "death or poison was in the pot." Meal was then shed amongst the olla podrida, probably to correct the strong acrid and purgative quality of the mess. Anyhow, it rendered it innocuous.

A most deliberate and wholesale scheme of poisoning was perpetrated at the instance of Bonaparte, when he ordered all the French sick at Jaffa to be given a fatal dose of opium.

Robert Dudley, Earl of Leicester (ob. 1588), attempted through his agents to get his wife poisoned that he might thereby become a suitor for the hand of Queen Elizabeth. This was frustrated through the caution of Dr. Bailey, whom they sought to persuade

to make a medicine for her, when she was in perfect health, intending to add a deadly drug to the prescription.

Sir Francis Walsingham (ob. 1590) is said by Camden to have died "owing to the violence of the medicines administered to him." A striking testimony to the paucity of pharmaceutical preparations in that age.

Lady Frances Howard, who became the wife of Robert Earl of Essex, in the reign of James I., compassed the death of her husband and the poet Overbury. The seraphic-featured Countess was as callous and wicked in crime as Lady Macbeth. She allied herself with one Ann Turner, who supplied her with philtres, she also gave a diamond ring to Mary Wood, a Norfolk witch, for a poison warranted to kill in three days. Poisoned tarts and jellies were forwarded to Overbury, but their nature was easily discovered. These tedious intrigues having failed, Lady Frances resorted to James Franklin, an apothecary in a small shop on Tower Hill, who prepared a phial of stuff like water, which the Lieutenant of the Tower spilled. Then a French apothecary, Lobel, was called in and the poet was ultimately drugged to death.

Napoleon the Great, when he had been driven from Leipzig in defeat and disaster, culminating in his abdication at Fontainebleau, attempted to end his life by means of opium. It would appear that in the retreat from Moscow the Emperor requested his physician to provide him with the means of preventing his falling into the hands of the enemy alive. The drug was carried in a small bag slung round his neck. It is said, however, that either from the poison losing its vigour or the adamantine constitution of Bonaparte, it simply threw him into a deep slumber, from which he awakened in spasms.

That remarkable man Hannibal likewise sought retirement from his implacable enemies, the Romans; in the hollow of a ring he had long preserved some poison for the purpose. It is natural to desire that warriors should die fighting; in lieu of that we agree with old Tony Weller, "pison's the best, hangin's vulgar," when a violent exit is necessitated.

Cleopatra permitted herself to be bitten by a small serpent of the asp kind.

Socrates (who does not know it?) and Phocion drank from the hemlock cup, and Demosthenes poisoned himself in the temple of Poseidon.

Machiavelli, the acute and subtle statesman, hastened his end with his own pills, and it is of record that Oliver Goldsmith was a martyr to his own medicines.

Another author, the famous De Quincey, the "English opium-eater," suffering from neuralgia, resorted to the drug to which the present enervation of China is attributed. The dose increased until he drank 8000 drops of laudanum per diem, equal to 60 or 70 times the B.P. dose of morphia.

Cæsar tells us that Cativulus, the King of the Eburones, resolving not to survive the liberty of his country, "drank the juice of yew and so died."

Rosamond, wife of Helmichis, King of Lombardy, in 575, offered her husband poisoned wine, when he complained of thirst coming from the bath. Having drunk part of it and suspecting its nature from the unusual sensation it occasioned, he compelled her to drink the remainder, and in a few hours they both died.

Carmignola, a distinguished Italian warrior of the fifteenth century, was brought to the point of death by poison put in his food by the Duke of Milan.

King John of England, being refused as a lover by Maud Fitz-walter (Maud the Fair), whom he had imprisoned in the Tower, despatched her by means of a poisoned egg.

It is rather curious that the famous Lorenzo de Medici, who was

stabbed with a weapon said to be poisoned, recovered, while it is authoritatively asserted that the great Florentine's death was hastened by the unskillful prescriptions of his physician. "The mixture of amalgamated pearls and jewels with the most expensive potions might indeed serve to astonish the attendants and to screen the ignorance of the physician, but were not likely to be attended with any beneficial effect on the patient." In other words, it was magnificent but it was not medicine.

The above recalls the cases cited by Josephus concerning Herod, son of Antipater, "that having great pain in the back of his head, the remedies used did him no good at all, but proved contrary to the case." It is notable that when the Oriental physicians ceased their potions and "committed the disease to fortune" that Herod recovered.

The fame which attaches to the Mediæval Italians as acute and subtle discoverers of secret and deadly poisons is not perhaps based upon a very reliable foundation.

What strikes one as peculiar is that their researches in the art of medical curatives is not in the least comparable with their advances in other arts and sciences.

Princes and popes resorted to poison without a qualm when an enemy was to be removed. But so far from it being done *en camera*, Cæsar Borgia exclaimed once, "What has failed at dinner-time will succeed at supper-time." This, of a truth, was highly artistic! And surely the grossest kind of homicide appears less horrible than the overt determination and preparation of Pope Alexander VI. to poison the richest of his cardinals with a confect. It came about, however, that the Pope ate his own sweetmeat and died in great agony.

The Italian women who to-day secretly drug their husbands' food with arsenic during some time and then suddenly withdraw it, causing the victim to pine away, are but following the traditions of those who "wore the purple."

Where then is the stealthy and serpentine Italian who touches a hand, sends a gift, who strikes without fear of detection? He does not exist and never did except in the glamorous and delusive pages of the fictionist.

The "poison ring" was driven home with the effect and force of a rusty nail. It was very obliging, to be sure, of the person who was jagged not to mention it. In the novel it is an elf-like beauty who lets her fairy hand fall like a leaf into that of the victim; the tiny capillaries act, etc.

The "gloves" were gauntlets ribbed with iron and filled with a glutinous cement. The strange thing is that it should be necessary to anyone's plans to "remove" an individual who would be so idiotic as to clothe his hand in such a mess without a protest.

The ancient Arabian women were said to be expert in the preparation of love-potions which concealed a poison. The subtlety of these poisons, however, are entirely discounted by the fact that it was necessary to smuggle the powder into the food of the victim.

Naples, when it was a kingdom, had the great fortune of being ruled by a fisherman for nine days. Tyrannous taxation had driven the sea-faring population into revolt. With a fisher king at their head they demanded alleviations. The Naples rulers being deficient in strength excelled in strategy. They invited the bold usurper to a conference and a banquet, especially the latter. They drugged his wine and doctored his viands. The poison (so we are told) produced a fever in blood and brain, the unfortunate "king" went mad, plunged into the sea and was drowned. His followers dispersed and resumed their former servitude.

Thus it is seen how vast interests are affected by a prescription. Drugs are a trenchant power in the world, indeed it occurred to Mr. Perceval during the Napoleonic wars to bring the French to

their knees by prohibiting the importation to the Continent of Jesuit bark and other medicaments. This highly imaginative scheme produced the following humorous sally from the "witty Canon":—"Such a project is well worthy this statesman—to bring the French to reason by keeping them without rhubarb, and exhibit to mankind the awful spectacle of a nation deprived of neutral salts! This is not the dream of a wild apothecary indulging in his own opium, nor is it the distempered fancy of a pounder of drugs delirious from smallness of profits. What a sublime thought that no purge can be taken between the Weser and the Garonne; that the bustling pestle is still; the canorous mortar mute; and the bowels of mankind locked up for fourteen degrees of latitude!

"Without castor oil they might for some months, to be sure, have carried on a lingering war! But can they do without bark? Will the people live under a government where antimonial powders cannot be procured? Will they bear the loss of mercury? 'There's the rub.' Depend upon it, the absence of the materia medica will soon bring them to their senses, and the cry of Bourbon and Bolus burst forth from the Baltic to the Mediterranean."

Whilst in the Tower, Sir Walter Raleigh was tireless in his quest after the hidden things of science. He had an apartment, known as the still-room, fitted up with every chemical convenience. He was surrounded with vases, jars, phials, strange drugs, and potions.

It was here he pondered over the possibility of producing some specific for the cure of all diseases to which flesh is heir, the result being "the marvellous and world-famed medicine known as Raleigh's Great Cordial."

It is a blending of pearl, musk, hartshorn, benzoar stone, mint, borragé, gentian, mace, red rose, aloes, sugar, sassafras, spirits of wine, and many other ingredients. It was in high repute amongst the sovereigns of Europe, and learned physicians of that day were adulatory of its qualities.

"In ancient times (says Burke) and in all countries the profession of physic was annexed to the priesthood. . . . Medicine was always joined with magic. The use of plants and herbs in both practices was early and general. The virtues of the mistletoe may have been soon discovered. It has been fully proved against the opinion of Celsus that internal remedies were of very early use. By some modern authors the mistletoe is said to be of signal service in the cure of convulsive distempers, which have been ever considered as supernatural. The epilepsy was by the Romans called *morbus sacer*. The Druids also looked upon vervain and other plants as holy for a similar reason."

It has been asserted, however, that the art of medicine in the East chiefly consisted in external applications. Being ignorant of the manner of making decoctions and potions and of the proper doses, they trusted to oils, plasters, ointments, etc.

In the excavations at Pompeii, the chemist and his drugs were in evidence. One curious find was a large glass vase capable of holding two gallons, in which was one and a half of a reddish liquid, said to be balsam. On being opened the contents evaporated so rapidly that it had to be hermetically sealed. One inch in depth of the liquid was lost, leaving behind a sediment upon the sides of the vase. What is this ether-like balm?

Sir Gerald Portal, in his mission to Uganda in 1893, beheld abdominal pains and general soreness of the muscles removed by walking and jumping on the back, wrenching the arms, and tying the ankles of the patient tightly in a rude sort of tourniquet. Fever was cured similarly, except that the calves of the legs were gashed with knives. He thought it was murder; but it was only native medicine and massage.

PHOTO-MICROGRAPHY.—X. (*Concluded*).

BY EDMUND J. SPITTA, L.R.C.P. LOND., M.B.C.S. ENG., F.R.A.S.

Photographing Bacteria.

Bacteria in their natural unstained state are exceedingly small, and for the most part colourless and structureless bodies of protoplasmoidal matter assuming all manner of shapes and having such a high refractive index as to be most difficult to see—even with a magnification of 1000 diameters, and still more difficult to photograph. Although these little organisms can be artificially stained by solutions of many substances, still, each variety seems to have a more or less well-marked selective power of absorbing the colouring matter of one or two special dyes in preference to that of any other. Hence, as the photo-micrographer meets with this type of work he must expect not only all varieties of shape, but all varieties of colour also.

The difficulty noticed by all photographers in obtaining a well-contrasted print of these little bodies depends solely upon the fact that the dyes with which the organisms are stained do not affect the photographic plate in the same manner and to the same extent as they do the eye. For example, a slide may be a very excellent one from a bacteriological point of view, and owing to the selective colouring of the organism as compared with that of the background, may be of a most impressive nature, yet it will not yield an equally contrasted print. On consideration, the reason for this apparent anomaly is not far to seek. Contrast visually was obtained by differentiation of colour rendering between the bacillus and the background, whereas in the photograph it must depend upon what effect each colour can cause on the plate. Put another way, contrast visually is due to duality of colour rendering, whereas in the print it alone depends upon what amount of differentiation in terms of black and white the colours employed as stains have been able chemically to produce—by deposition of silver—in the emulsion which covers the plate.

The aim, then, of the operator must be to increase the difference in these deposit rations as far as he possibly can. To understand how this can be effected, the attention of the reader must be directed to the following:—

1. Colour sensation to the eye is dependent upon the wave length of the light employed. The longest wave gives rise to the red sensation, and the shortest to the violet; intermediate lengths being productive of sensations we call yellow, yellow-green, green, greenish blue, blue and blue-violet.

2. The ordinary photograph is taken by the violet ray, because the usual emulsion is most sensitive to that particular wave length. Plates, however, can be stained so as to be extra sensitive in any one or more colours, but even then with this extra sensitiveness, the action of the violet is always the strongest, *i.e.*, more precipitation of silver—time for time—is produced with violet light than any other colour.

3. Ordinary white light consists of a blending in certain proportions of lights of all wave lengths.

4. An ideally perfect monochromatic screen is one that intercepts all other wave lengths save the one it passes. A red screen, therefore, cuts off (really converts into heat) all other rays, save the red ones; blue cuts off all but the blue, and so on. It is difficult to obtain a really monochromatic screen, and impossible to obtain a glass ideally perfect, save perhaps in the case of red glass. It must also be noted that perfection of monochromatism also depends on the strength of the illuminant, that is to say, a screen may be almost perfect with a weak light, but far from perfect with a strong one.

5. The effect of placing two monochromatic screens each ideally

perfect, and of the same intensity over one another would be to cause blackness, such blackness being the more perfect the more intense the screens or the feebler the white light—screens of differing intensity vary in their effect according to such variation, by which is meant an intense red and a feeble green will allow a residuum of red—a strong green and a thin red, a residuum of green, and so on.

6. As ideally perfect monochromatic screens are obtainable with such difficulty, so with ordinary ones another residuum may be left. Red filters often pass a little yellow; blue ones often a little red; green ones occasionally a little blue, and often red; whilst yellow ones are rarely pure at all, permitting red and green rays to pass to some considerable amount. If, now, a blue passing red be placed over a good green, but one passing a modicum of red, and provided the light be intense enough, a dark, deep red residuum is noticed instead of blackness. This is obviously caused by the green and violet causing darkness, but not sufficient to annihilate the reds from each glass. More green or more violet will often effect the production of complete darkness. In practice, owing, of course, to impurities, it is found that some colours are more antithetical than others. Red and green, for example, usually produce greater blackness than red and orange, a fact which we shall presently explain is made use of at times.

Now with these six precepts before us I hope to be able to show how the photographer can increase the contrast in his negative, and so, of course, in the print which is taken from it. Let it be assumed that he has taken an ordinary photograph of a red bacillus on a white ground, with blue-stained nuclei of cells interspersed about. He finds a flat result, a negative that produces a wretchedly poor print lacking all contrast. Now let him place a fairly strong green screen over the illuminant and use a green stained plate to shorten exposure. The resulting negative will show clear patches of glass corresponding to the red bacilli, a fairly clear deposit for the blue nuclei and an intensely black one for the background. If the bacilli are too clear, so much so that any little alteration of structure, such as segregation, seems lost, then let him use a fainter green or employ a brighter light, and the result may be good. If still not satisfactory let him try an orange screen, for as that colour is not so antithetical as green is to red, it will allow a little more light to pass. The resulting print will give of course a black bacillus, a well-defined appearance of the scattered nuclei, while both bodies are seen lying on a clear white background. The whole picture is full of contrast and pluck.

As a matter of fact pure monochromatic screens for photo-micrographing bacteria are not required, good pot glasses are amply sufficient, for be it understood it is only increase of contrast that is required, and not entire annihilation of structural details, or the rendering of minute lines visible, as in the case of diatoms. To be practical, then, in photographing bacteria, glasses of all colours must be procured, and also it is convenient to get several shades and several densities. For what may give rise to sufficient contrast to the eye with the ordinary lamp may not be sufficient, or, on the other hand, which is much more frequent, may be too great, when the photograph is taken. It would have been thought the intense limelight should always demand still greater thickness of colour, but it is usually just the reverse, for the light is reduced considerably, as seen on the ground-glass screen, when compared with that visually viewed at the eye end. The very fact that a virtual image is seen by the eye and an actual image viewed on the plate entails a loss of initial light, as the rays have to again cross. This crossing is obvious, as the image is upside down to the eye, but the right way up on the plate in the camera.

Screens may be used to increase definition when taking photographs of fine lines in diatoms, and the best method is to make these by mixing aniline or other colours with a specially-made collodion, formed by dissolving pure celloidine in equal parts of ether and alcohol. Float the collodion over very thin glass plates—cover-glass type of glass preferable, especially flat ones—allow to dry, and cover with another protective glass, as when covering ordinary lantern slides. Malachite green, methyl green, blue and violet aniline, fuchsine, naphthol yellow, chrysoidine, all of differing quantities and densities, may be made; they may be of service. There is no special difficulty otherwise than to obtain sufficient contrast in taking photo-micrographs of bacteria when they are stained. Hydroquinone produces dense pictures which are always necessary, especially when lantern slides are required, for no background, unless it be of some specific nature, is needed, and the bacteria on clear glass look much better on the screen than when they are shown on a dirty white background.

When taking a photograph of living bacteria, such as the clumping of the typhoid germs in Widal's method of diagnosis, much difficulty may be experienced in getting a photograph at all. It is best then to take advantage of diffraction effects and to close the iris, which would be otherwise considered an undue amount. By this means a faint "standing-out" effect is produced which enables the bacteria to show sufficiently for the purpose, provided the exposure be short enough to prevent choking effects, and yet long enough to give a sufficiently dense background. I have found about ten seconds sufficient with a subdued light and using a 1/6th-inch apochromatic objective. A vertical apparatus must be used. It should be distinctly remembered that when photographing bacteria at any time the iris diaphragm should never be closed, and a full-sized cone of light always employed, otherwise white diffraction lines will appear around the organisms. At times I have thought that a 1.35 substage condenser gave better results, especially when photographing bacteria with flagella.

Photographing Opaque Objects.

The next step is to explain the method of taking a photo-micrograph of an opaque object. It is obvious that transmitted light will be of no service, so the only available source of illumination is by placing the limelight in such a position that it may shine obliquely upon the object. To make the illumination equal, one light should be placed on each side, hence this double form of obliquely illuminating an object has been termed photographing by "double oblique light," a name which it is a mistake to use, as it might lead anyone not well versed in the subject to think it a modification of the "oblique light" which has been already explained, and with which of course it has nothing whatever to do.

As the form of illumination by reflection is of such a feeble nature, so the strongest limelight mixed jet must be utilised, and each should be augmented by the use of a condenser, and the safety of the specimen secured by the addition of a water-bath. The great difficulty in employing double oblique light is to prevent the objective getting in the way of the rays coming from the limes, and so casting a shadow in one or more directions. With the planar or Dallmeyer lenses this is not so apparent, on account of their long focal distance from the specimen, but, when employing a half-inch apochromatic, to avoid such a fault becomes exceedingly difficult, and with some specimens a positive impossibility. With a planar lens of 50 Mm. focus the exposure is usually about three to five minutes at F/22.

Zeiss and other manufacturers, notably the old-established firm of Powell and Lealand, whose instruments are so nearly brought to absolute perfection, make a special form of illuminator which fits onto the objective between it and the nose-piece of the

microscope, and which by reflection throws a light from an illuminant on one side of the microscope down the objective onto the specimen, the rays passing back again onto the lens and so onto the photographic plate. I must confess that I have experienced much difficulty in using the arrangement, just as much as I have also experienced when employing a Lieberkuhn, which is a parabolic reflector placed on the nose of the objective itself. This latter plan, however, answers well with some specimens, but not by any means always. It is designed to reflect back on to the specimen all the rays that pass outside the opaque object (transmitted light being used) and so back again into the objective. This frequent reflection, however, adds considerably to the exposure.

Dark Ground Illumination.

Dark ground illumination is yet another conventional term, by which is meant that although the object is mounted transparently, yet it is supplied in the resulting photograph with a dark ground produced by optical means entirely. There are two methods: one is by placing a piece of black paper as a central stop in the centre of the condenser, and by a suitable movement of it up and down to produce the required effect. The field is black and the object brilliantly illuminated. As to how this is optically formed the reader must refer to books on the microscope, and the photographer may find the information at times useful. The arrangement is often called the spot lens method of dark ground illumination. A "central" diaphragm or stop on an ordinary condenser may also be used. I have had but little experience with the spot lens, always preferring the second method, that of employing what is called a Wenham's paraboloid.

The paraboloid is practically another form of substage condenser which is placed in the substage in the usual manner. It is supplied with a central black disc of metal capable of being moved up or down independently of the condenser, that is to say, nearer to or farther from the specimen without the position of the condenser itself being disturbed. This is of great importance. Considerable experience is required before a complete mastery is obtained in the use of this arrangement, but it is worth the time, as it is an instrument of great optical elegance and produces effects which are of exceeding beauty. The theory of its action will be found in all text-books on the microscope. The photographer will find the darkness of the field is more easily obtained when the Davis diaphragm is slightly closed, and old-fashioned objectives were always supplied with a special stop to be placed over the objective, between it and the eye-piece, for this reason. Too great darkness in the field is not desirable when a lantern slide is to be produced, but in a print one cannot have it too pronounced. Some difficulty may be experienced in obtaining a thoroughly uniform dark field with ordinary lantern plates—it often appears brown and flat, so I prefer to use an Edwards' isochromatic medium-plate, with an exposure at a foot from the gas burner of one second, and developed in the ordinary way. The exposure when using a paraboloid requires to be increased about one-third. Plenty of bromide is a necessity we have mostly found to keep the background as near as possible to clear glass.

The Upright Apparatus.

There are certain specimens, notably such as cultures and living typhoid germs, that necessitate the use of an upright apparatus. Of these there are several forms, which may be seen in any of the opticians' catalogues, but the best is either that designed by Dr. van Heurck or that lately brought out by Zeiss. The former is like a camera on legs, and is placed over the microscope, the gap between the eye-piece of the microscope and the camera front being filled by a velvet bag. The head is placed

inside the camera to focus with primarily, and this being done the door is closed and the image viewed on the ground glass placed on the top of the apparatus. Final focussing is then made, the operator having to stand on a stool to gain sufficient height. The objection I find to this vertical apparatus is that all magnification of a high order must be effected by the use of eye-pieces, or by subsequent enlargement of the negative, to both of which with some specimens there is an objection. Then, again, stooping over the machine to focus is much more fatiguing than when sitting in a chair to perform the same operation, as usual with the horizontal form. I say this, notwithstanding the opinion of Dr. van Heurck, who thinks his own plan is so much more convenient that he has entirely dispensed with the horizontal form, and all his high-power work, which is the admiration of all photo-micrographers, has been done in the manner described.

The second form of apparatus is that adopted by many firms, a camera suitably suspended by one or more pillars being made to slide from above downwards on to the microscope. The intervening gap between microscope and camera is filled by a velvet bag, into which the eye-end of the microscope as well as the tube from the camera front fit, and the camera can be extended several inches. Zeiss has lately brought out a magnificent form of this arrangement which enables the photographer to use the apparatus vertically, horizontally, and at an angle of 45° to the vertical. I can recommend this arrangement with all possible confidence, and think it has a great future before it. It is needless to state, however, that the same objection as above holds good when this apparatus is used vertically, namely, that it is more fatiguing, and that eye-pieces must be employed for extremes of amplification, not in this case, because the camera will not extend, for it does so to an immense length, but because the operator cannot reach the fine adjustment screw to focus if it be drawn up vertically beyond a limited extent to gain magnification.

Another objection to all forms of upright apparatus is that a mirror must be used with the microscope. At times this is very inconvenient, and especially so if the glass of the mirror be thick, when double images of the illuminant may arise which spoil the finest of definition. In conclusion, I am led by experience to the belief that it is far better to employ, whenever possible, one of the horizontal forms of camera—in which camera extension to any amount may be resorted to, provided the "long arm" in the shape of the focussing rod is sufficiently long—but that, when necessity demands, the upright arrangement may be used in its stead without great disadvantage.

STRUCTURE OF STARCH-GRAINS.—According to J. H. Salter the starch-grain is, in all stages of its growth, sharply differentiated from the plastid in which it is formed. Its substance is excreted, and is not formed by gradual transformation of successive layers of protoplasm. Staining experiments show that the stratified appearance of starch-grains is the result of variations in density, that is, in the capacity of different layers for absorbing water. All growing starch-grains appear to have a denser margin, which is not stratified. The lamellæ attain their final differentiation only when they are covered by others formed later. A progressive, but not a uniform, decrease in density may be detected, advancing from the margin to the nucleus of the grain. Observation of starch-grains in the process of solution renders it probable that changes may in some cases take place in the surface of the grain from the action of a ferment. As regards the inner structure of starch-grains, all the phenomena lead to the conclusion that each lamella, or at least each watery lamella, consists of a series of elements deposited radially.—*Pringsheim's Jahrbücher*, vol. xxxii.

BRITISH PHARMACOPŒIA, 1898.

THE PROPOSED INDIAN AND COLONIAL ADDENDUM.

The following is the list, with descriptions—concluded from page 675—of drugs already proposed by Indian and Colonial Authorities for official recognition in the British Pharmacopœia, and suggestions for pharmaceutical preparations. Further suggestions are invited by the Pharmacopœia Committee of the General Medical Council from any British Dependency where the drugs of the British Pharmacopœia of 1898 are insufficient for local requirements, and comments are invited from readers of the Journal in India and the Colonies.

GUMMI INDICUM.

Indian Gum.

A gummy exudation from *Anogeissus latifolia*, *Wall.* []

CHARACTERS AND TESTS.—In vermiform or rounded tears of varying size, pale amber or yellowish white in colour, translucent, with a rather dull surface and breaking with a bright glassy fracture. It has a faint odour; taste insipid and mucilaginous. Entirely soluble in water, forming a viscid, adhesive mucilage. Insoluble in alcohol (90 per cent.). The aqueous solution is gelatinised by the addition of alcohol (90 per cent.), solution of borax, or solution of lead subacetate; but it is unaffected by the addition of test solution of ferric chloride (distinction from Amrad and other gums (or of solution of lead acetate. It is not coloured blue or brown by a small quantity of solution of iodine (absence of starch or commercial dextrin). On incineration it should not yield more than 4 per cent. of ash.

PREPARATION.

MUCILAGO GUMMI INDICI.

Mucilage of Indian Gum.

(Formula as that of Mucilago Acaciæ, British Pharmacopœia, 1898, using twice the quantity of water.) Half the quantity of Indian Gum may be used in other preparations, in India, instead of Acaciæ Gummi.

ISPAGHULA.

Ispaghula.

The seeds of *Plantago ovata*, *Forsk.* (*Plantago Ispaghula*, *Roxb.*) [Bentl. and Trim. 'Med. Pl.,' plate 211].

CHARACTERS.—The seeds are boat shaped and rather acute at one end, from one-tenth to one-eighth of an inch (two to three millimetres) long; from one-twenty fifth to one-sixteenth of an inch (one to one and a half millimetres) wide. They are pale pinkish grey in colour, with a darker elongated spot on the convex side; the concave side contains the hilum covered with the remains of a thin white membrane. When placed in water the testa swells and produces a viscous mucilage. They possess neither odour nor taste.

[The Indian Government Committee recommended official recognition of the seeds of *Plantago ovata* for use, in India, in making demulcent drinks equivalent to the (now unofficial) *Infusum Lini* and *Decoctum Hordei*.]

JASMINUM.

Jasmine.

Synonym.—Mogra.

The flowers of *Jasminum Sambac*, *Ait.* [

[Proposed by the Indian Government Committee for use in India. A description of the flowers should be supplied from India. It appears to be well recognised in India as a lactifuge.]

KINO EUCALYPTI.

Eucalyptus Kino.

The varieties of Eucalyptus Gum which have the characters and respond to the tests of Kino may be used in the Australasian parts of the Empire.

MUDAR.

Mudar.

The root bark of *Calotropis procera*, *R. Brown* (*Calotropis Hamiltonii*, *Wight*) [Bentl. and Trim., 'Med. Pl.,' plate 176], and of *Calotropis gigantea*, *R. Brown* (*Asclepias gigantea*, *Willd.*) [Wight, 'Illustr.,' plate 155].

CHARACTERS AND TEST.—In more or less quilled pieces having a thickness of from one-tenth to one-fifth of an inch (two to five

millimetres), and attaining a width of one and a half inches (thirty-seven millimetres). It is covered with a soft, greyish buff, strongly furrowed and reticulated periderm, having a thickness of from one-twentyfifth to one-twelfth of an inch (one to two millimetres); the periderm is easily separable from the underlying yellowish-white tissues. The inner liber portion exhibits, on transverse section, narrow pale brown indistinct phloem rays. The inner surface of the bark is rather granular and of a pale brown colour. It has a short farinaceous fracture, a slightly disagreeable odour, and a mucilaginous bitter acrid taste. A cooled decoction gives the characteristic reaction for starch with *solution of iodine*.

[Recommended by the Indian Government Committee as remedy, in India, in place of *Ipecacuanha*. Is the name "Mudar" satisfactory? What preparations are desired?]

MYLABRIS.

Mylabris.

The dried beetle *Mylabris phalerata*, Pallas [Brandt and Ratz., 'Med. Zool.,' vol. ii., tab. xviii., fig. 18].

CHARACTERS.—About an inch or rather more (twenty-five millimetres) long and three-eighths of an inch (nine millimetres) broad; with two long elytra, each three times as long as broad, black with two broad wavy transverse orange-coloured bands and a large orange-coloured spot at the base of each; one pair of brown membranous wings. Odour rather disagreeable.

[The Indian Government Committee recommend the *Mylabris Cichorii* for recognition. Commercial specimens of *Mylabris* contain both *M. Cichorii* and *M. phalerata*; the latter being the larger is selected for recognition. It is not well to have two species recognised if one is sufficient. A preparation of *Mylabris* should not be called by the name of *Cantharides*.]

PREPARATIONS.

Unguentum Mylabridis. (Formula as Unguentum Cantharidis, 1898.)

Emplastrum Mylabridis. (Formula as Emplastrum Cantharidis, 1898.)

Tinctura Mylabridis. (Formula as Tinctura Cantharidis, 1898.)

Acetum Mylabridis. (Formula as Acetum Cantharidis, 1898.)

This beetle might also replace *Cantharides* in the preparation of *Liquor Epispasticus* and *Emplastrum Calefaciens*, in India.

MYROBALANUM.

Myrobalans.

The immature fruits of *Terminalia Chebula*, Retz. [Roxb., 'Coroman. Pl.,' plate 197].

CHARACTERS.—Ovoid or fusiform fruits from one-third to three-quarters of an inch (eight to eighteen millimetres) long and attaining a width of three-eighths of an inch (nine millimetres); strongly shrivelled longitudinally, black, solid, brittle, having a somewhat shining fracture, which is a little paler than the exterior of the fruit. No odour; taste very astringent.

[The Indian Government Committee recommend *Myrobalans* for use in India instead of *Galls*.]

PREPARATIONS.

Unguentum Myrobalani. (Formula as Unguentum Gallæ, 1898.)

Unguentum Myrobalani cum Opio. (Formula as Unguentum Gallæ cum Opio, 1898.)

OLEUM AJOWAN.

Ajowan Oil.

The oil distilled from the fruit of *Carum Copticum*, Benth. and Hook. [Bentl. and Trim., 'Med. Pl.,' plate 120].

CHARACTERS.—Colourless, with an odour and taste resembling thyme. Specific gravity 0.917 to 0.930. It turns a ray of polarised light to the right from 1.0° to 1.5°. If a portion of the oil be cooled to 32° F. (0° C.) it should yield from 30 to 36 per cent. of crystalline thymol.

[Recommended by the Indian Government Committee for use in India instead of *Olea Carui*, *Anethi*, *Anisi*, and *Mentha Piperita*. It should be noted that the constituents of *Oleum Ajowan* (Thymol and Cymol) are quite unlike the constituents of *Oleum Carui* (Carvone and Limonene). It is very desirable that specimens of Indian drawn oil should be forwarded from India for comparison, as the authentic specimens of the Indian oil in this country are old and useless for the purpose.]

OLEUM ARACHIDIS.

Earth-nut Oil.

The oil expressed from the seeds of *Arachis hypogæa*, Linn. [Bentl. and Trim., 'Med. Pl.,' plate 75].

CHARACTERS AND TESTS.—Pale yellow or greenish yellow in colour, with a faint nutlike odour and a bland nutty taste. Specific gravity 0.916 to 0.918. It becomes turbid at 37.4° F. (3° C.) and solidifies at 23° F. (5° C.).

Arachis oil may be employed in Indian Pharmacy whenever olive oil is ordered in official preparations.

[Information is wanted as to whether the substitution of Earth-nut Oil for Olive Oil has been found, in India, to require any modification in the quantity of oil employed in order to produce preparations practically identical with those made with Olive Oil.]

OLEUM GRAMINIS CITRATI.

Oil of Lemon Grass.

Synonym.—Indian Oil of Verbena.

The oil distilled from *Andropogon citratus*, DC. [Wallich, 'Plant. Asiat. Rar.,' plate 280].

CHARACTERS.—A dark yellow oil having an odour resembling that of verbena. Specific gravity 0.895 to 0.905. It should not rotate the plane of polarised light more than 3° in either direction. Soluble in alcohol (70 per cent.). If 10 cubic centimetres be well shaken with 50 cubic centimetres of a boiling 30 per cent. solution of sodium hydrogen sulphite, an oily layer separates, which, when cooled to 60° F. (15.5° C.), should not measure more than 3.5 cubic centimetres (absence of more than 35 per cent. of constituents other than aldehydes).

[The Indian Government Committee recommend the use of this oil in India instead of Oil of Cajuput in *Linimentum Crotonis* and instead of Oil of Lavender in *Linimentum Camphoræ Compositum*. It seems doubtful if such substitution should be officially recognised, since the oil of verbena differs notably from the oils for which it is proposed to substitute it. The oil might, however, be recognised for its own sake.]

OLEUM SESAMI.

Sesame Oil.

The oil expressed from the seeds of *Sesamum indicum*, DC. [Bentl. and Trim., 'Med. Pl.,' plate 198].

CHARACTERS AND TESTS.—A limpid oil of a pale yellow colour, with a faint odour and a bland taste. Specific gravity 0.921 to 0.924. It congeals at a temperature of 23° F. (−5° C.). If 10 cubic centimetres be treated with 10 cubic centimetres of hydrochloric acid containing 0.6 grammes of pyrogallol and the mixture be shaken vigorously and then set aside for one minute, two layers will be formed. The upper oily layer is to be carefully removed by means of a pipette; the lower acid layer is to be boiled for five minutes, when it will gradually assume a colour purple by transmitted light and blue by reflected light.

[The Indian Government Committee recommend this oil as a substitute for Olive Oil in *Linimenta Ammoniac* and *Calcis*, and in *Unguenta Cantharidis*, *Hydrargyri Compositum*, and *Hydrargyri Nitratis*. It does not appear to be as useful as *Oleum Arachidis* for the preparation of the *Emplastra*. For *Linimentum Ammoniac* it seems to be well suited.]

SAMADERA.

Samadera.

The wood and bark of *Samadera indica*, Gärtn. [Wight, 'Icones,' plate 68.]

CHARACTERS.—The wood is of a pale yellow colour, tough and dense. On transverse section it shows, when viewed with a lens, numerous very faint narrow concentric rings traversed by faint narrow medullary rays. It is inodorous, but has an intensely bitter taste. The bark is in quills attaining an inch (twenty-five millimetres) in width and a twelfth of an inch (two millimetres) in thickness. It is of a dull brown colour marked with numerous patches of silvery grey lichen; the periderm is minutely reticulated. Internally it varies in colour from pale yellow to reddish brown. On section it exhibits the dark brown periderm surrounding the yellow cortical tissues which sometimes become slightly darker in the inner portions. It is inodorous, and has an intensely bitter taste.

[Recommended for official recognition by the Indian Government Committee to take the place of *Quassia*, in India. Is it desirable that preparations should be made indifferently from the wood and the bark? It should be noted that the preparation of the one will be of a different colour from that of the other. Reports on these preparations are desired.]

SAPPAN.**Sappan.**

The heartwood of *Cæsalpinia Sappan*, *Linn.* [Roxburgh, 'Coroman. Pl.,' i., 17, plate 16].

CHARACTERS AND TEST.—In hard, heavy sections of variable size, or in the form of chips, of a fine orange-red colour. A transverse section exhibits well-marked concentric rings, numerous narrow medullary rays, and large vessels which are readily seen with a pocket-lens. It is cut with difficulty transversely, but is easily split longitudinally, showing distinctly the grain due to the medullary rays. The wood has no odour, and only a slightly astringent taste. It communicates a red colour to alcohol (90 per cent.) and water, which becomes a carmine red, and not purple, upon the addition of solution of potassium hydroxide.

[Recommended by the Indian Government Committee for use in India instead of *Logwood*.]

PREPARATION.

Decoctum Sappan. (Formula as Decoctum *Hæmatoxyli*, 1898.)

WERTIA.**Swertia.**

The dried plants of *Swertia affinis*, *Clarke* [Wight, 'Icones,' plate 1331], and *Swertia corymbosa*, *Wight* [Wight, 'Icones,' plate 1329].

CHARACTERS.—*Swertia affinis* has a quadrangular stem; leaves lanceolate-acuminate three-veined, the upper narrower, one and three-quarter inches long (four and a half centimetres) and one-third of an inch (eight millimetres) broad. The corolla is white with bluish veins; petals a quarter of an inch (six millimetres) long and an eighth of an inch (three millimetres) broad; cymes forming an elongated panicle. Taste very bitter. *Swertia corymbosa* has a quadrangular stem; leaves oblanceolate, obtuse, slightly mucronate, the lower three-quarters of an inch (eighteen millimetres) long and one-third of an inch (eight millimetres) wide. The corolla is white with bluish veins; petals half an inch (twelve millimetres) long and one-third of an inch (eight millimetres) wide. The cymes form a level-topped corymb. Taste very bitter.

[Recommended by the Indian Government Committee for use in India as the equivalent of *Chiritta*. Should the preparations be similar to those of *Andrographis*?]

THUS INDICUM.**Indian Frankincense.**

The semi-solid oleo-resin of *Pinus longifolia*, *Roeb.* [Royle's 'Illustr.,' plate 85].

CHARACTERS.—A dirty white opaque semi-solid substance which separates upon standing into a larger dense opaque layer and an upper opalescent essential oil. It has a strong aromatic terebinthinate odour, in some degree recalling that of fennel.

[Suggested by the Indian Government Committee for use in India instead of the official (American) *Frankincense*. An Indian *Frankincense* appears to be softer than the official *Frankincense*, the formula for *Emplastrum Pieis* would probably need readjustment.]

TINOSPORA.**Tinospora.**

The stem of *Tinospora cordifolia*, *Miers* (*Cocculus cordifolius* DC.) [Bentl. and Trim., 'Med. Pl.,' plate 12].

CHARACTERS AND TEST.—In cylindrical straight or twisted pieces or in transverse sections, having a diameter of from a quarter of an inch to two inches (six to fifty millimetres), covered with a strongly shrunken bark with deep longitudinal furrows and bearing numerous round elevated scars. The bark is somewhat smooth and wax-like and is of a greenish-brown or brown colour; it is easily separable from the very porous woody cylinder, which is of a pale yellowish-grey colour. The transverse section exhibits one

loose ring of xylem bundles containing large vessels; the bundles are separated by distinct starchy medullary rays. Fracture is tough and fibrous. There is no marked odour; taste bitter. The cooled decoction gives the characteristic reaction for starch with solution of iodine.

PREPARATIONS.

Infusum *Tinosporæ*. (Formula as Infusum *Calumbæ*, 1898.)

Liquor *Tinosporæ* Concentratus. (Formula as Liquor *Calumbæ* Concentratus, 1898.)

Tinctura *Tinosporæ*. (Formula as Tinctura *Calumbæ*, 1898.)

[Recommended by the Indian Government Committee for use in India instead of *Calumba*.]

TODDALIA.**Toddalia.**

The root bark of *Toddalia aculeata*, *Pers.* [Bentl. and Trim., 'Med. Pl.,' plate 49].

CHARACTERS AND TEST.—In quilled pieces having a thickness of from one-twelfth to one-ninth of an inch (two to three millimetres), covered with a soft yellowish periderm fissured longitudinally and exhibiting a subjacent bright yellow layer and a deeper brown layer. The transverse section shows an outer yellowish periderm, a narrow bright yellow intermediate layer, and an inner broad radiate layer of brown phloem in which are situated numerous oleo-resin receptacles. The inner surface of the bark is somewhat granular and brown in colour. It has a short, close fracture, a faint aromatic odour, and an aromatic pungent bitter taste. The cooled decoction does not give the characteristic reaction for starch with solution of iodine.

PREPARATIONS.

Infusum *Toddaliæ*. (Formula as Infusum *Cuspariæ*, 1898.)

Liquor *Toddaliæ* Concentratus. (Formula as Liquor *Cuspariæ* Concentratus, 1898.)

[Recommended by the Indian Government Committee for use in India instead of *Cortex Cuspariæ*.]

TYLOPHORÆ FOLIA.**Tylophora Leaves.**

The leaves of *Tylophora asthmatica*, *Wight et Arnott* [Bentl. and Trim. 'Med. Pl.,' plate 177].

CHARACTERS.—Petiolate, entire, from two to five inches (five to twelve and a half centimetres) long and from three-quarters of an inch to two and a half inches (eighteen to sixty-five millimetres) broad, lanceolate-ovate, ovate or sub-rotund in outline, somewhat cordate at the base, abruptly acuminate; rather leathery in texture, glabrous on the upper surface and finely downy on the lower one; brownish-green colour, which is paler on the lower surface. Odour slightly aromatic; almost devoid of taste.

[Recommended by the Indian Government Committee for use in India instead of *Ipecacuanha*. As the leaves appear to be more certain in their action than the root, and are more easily obtainable, there seems no reason for making the root official also. What preparations are desired?]

VALERIANÆ RHIZOMA INDICUM.**Indian Valerian.**

[The Indian Government Committee recommend that the rhizome and rootlets of *Valeriana Leschenaultii*, DC., var. *Brunoviana*, *Wight and Arn.*, should be made official in India. Specimens of this are not in the museums in Great Britain. A description, therefore, should be furnished. Is an ammoniated tincture, or other preparation, desired?]

MAMMARY GLAND FOR UTERINE FIBROIDS.—J. B. Shober confirms the facts recorded by Bell, indicating the value of extract of mammary gland in the treatment of fibroid tumours of the uterus. Since 1897 he has employed the remedy in four cases, in the form of extract or of dry powder, and in all marked benefit has been shown. Without the aid of any other form of treatment, the tumours are decreasing in size and the general health improving. Even if after prolonged treatment the tumours do not entirely disappear, the necessity for surgical intervention has, at least, been delayed.—*Med. Chron.*, x., 53.

THE STUDENTS' PAGE.

EXPLANATORY NOTES ON THE B.P. 1898.

Jalapæ Resina.—This is composed of two resins in the proportion of about 1:10. The one constituting the main portion is insoluble in ether, which is somewhat exceptional for bodies of this class. The ether-soluble portion is identical with the resin obtained from Tampico jalap, and very closely allied, if not identical, with scammony resin.

Linimenta.—Only one liniment has been omitted from the list official in the 1885 Pharmacopœia, viz., Linimentum Iodi. A preparation of almost the same composition has been introduced under the name of Liquor Iodi Fortis. The other changes in this group may be summarised as follows:—

Linimentum Ammonia.—Olive oil has been partly replaced by almond oil, the resulting creamy emulsion, formed by the addition of ammonia, being less apt to solidify than when it is made with olive oil alone.

Linimentum Belladonna.—Now made by diluting the standardised liquid extract to twice its volume with a mixture of water and 90 per cent. alcohol. It will contain, therefore, 0.375 part of belladonna alkaloids in 100 fluid parts.

Linimentum Camphoræ Ammoniatum.—This is the name for the preparation known formerly as Linimentum Camphoræ Compositum. The proportions of camphor, oil of lavender, and strong solution of ammonia remain unaltered, but the official formula is now made to measure exactly 20 fluid ounces instead of a little over a pint.

Linimentum Terebinthinæ.—The proportion of soft soap has been reduced and the water increased, both changes tending to make the preparation thinner. It is now a thick creamy fluid instead of a gelatinous solid as heretofore.

Liquores.—This important group of preparations has undergone numerous alterations. The changes comprise the omission of seventeen liquors official in the 1885 Pharmacopœia, the addition of formulæ for nineteen new liquors, and alteration in name, strength, details of manufacture, or some other point of minor importance for the greater number of the remaining members of the group, which now contains fifty-three preparations.

Omissions.

Liquor Calcii Chloridi.
 „ Chlori.
 „ Sodæ.
 „ Iodi.

These four liquors have been relegated to, or replaced by solutions in Appendix II. They are used chiefly for testing, and are hardly ever required for direct use in medicine.

Liquor Ferri Dialysatus.
 „ Magnesii Citratis.
 „ Morphina Bimeconatis.
 „ Morphina Sulphatis.

These liquors are found to be seldom used, and have been omitted for this reason.

Liquor Gutta Percha.
 „ Cocainæ Hydrochloratis.

The first of these has been replaced by a solution of india-rubber, and the second has been transferred to another part of the Pharmacopœia under the name of Injectio Cocainæ Hypodermica.

Liquor Ammonii Acetatis Fortior.
 „ „ Citratis „
 „ Ferri Acetatis Fortior.

The weaker liquors of these substances, in which form they are always prescribed, are now directed to be made from the necessary materials instead of by the dilution of a stronger liquor. Formulæ for these latter are, therefore, no longer required.

Liquor Lithiæ Effervescens.
 „ Potassæ „
 „ Sodæ „

Lithia, potash, and soda water are used chiefly as beverages, and the formulæ under the above names in the 1885 Pharmacopœia were too strong to be agreeable to most persons.

Liquor Antimonii Chloridi.

This was only included for the purpose of making antimony oxide. Since the present Pharmacopœia only describes the origin of the oxide in general terms there is no need for the inclusion of a definite solution of the chloride.

Additions.

Of the nineteen new "liquors," ten are prepared from vegetable drugs, and are intended to provide uniform preparations to replace the so-called concentrated infusions and decoctions found in trade. In the absence of official formulæ, these have hitherto been prepared by each manufacturer according to his own formulæ, and the resulting preparations obtained from different sources have been found to be very variable in physical characters and potency. As a remedy for this undesirable state of affairs, and in deference to the demand which undoubtedly exists for preparations of this nature, the official formulæ have been introduced. The name "concentrated liquor," as applied to them, is open to criticism, since the official liquors have hitherto included (with the exception of Liquor Epispasticus) only solutions of definite chemical substances, and not complex and variable fluids obtained by the selective solvent action of menstrua upon crude vegetable drugs. Unofficially, however, the extension of the term to include such vegetable preparations has been recognised, and it is difficult to see into which other of the existing official classes of galenic preparations they could have been introduced. The term concentrated infusion is not applicable, because preparations obtained by actually concentrating the official infusions are lacking in the aroma and other distinctive physical characters associated with preparations of this class. For this reason quite different processes have been adopted for the new concentrated liquors—in most cases slow percolation with dilute alcohol. Another course open to the compilers of the Pharmacopœia would have been to coin a new title for them, but apparently this has not been deemed desirable.

Liquor Chirata Concentratus	} These are prepared by slowly percolating the powdered drug with 20 per cent. alcohol until two fluid parts of percolate have been collected from one part by weight of drug.
„ Cusparia „	
„ Krameria „	
„ Rhei „	
„ Serpentaria „	

Liquor Senegæ Concentratus	... } Prepared in the same manner as the foregoing, but with slightly stronger alcohol (about 28 per cent.)
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Liquor Quassia Concentratus	... } Prepared like the first group, with 20 per cent. alcohol, but ten parts of percolate are collected from one part of drug.
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Liquor Sennæ Concentratus } Prepared with water in place of dilute alcohol, senna (1 in 1) by repercolation, and calumbæ (1 in 2) by two successive macerations, followed by expression. The finished fluids are preserved by the addition of alcohol to calumba, and alcohol and tincture of ginger to senna.
„ Calumbæ „ }

Liquor Sarsæ Compositus Concentratus } This contains the same constituents as the old compound decoction. The sarsaparilla is infused and the other constituents boiled with water. The infusion and decoction are concentrated by evaporation, mixed, and preserved by addition of alcohol.
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The drugs are used in No. 40 powder, with the exception of calumba, rhubarb, and senna in No. 5 powder, and the constituents of the sarsaparilla. In all cases except the last-mentioned cold processes are employed, hence it is desirable to facilitate the exhaustion by using a fine powder. The three drugs mentioned as being used in No. 5 powder form, however, when used in finer powder, thick mucilaginous fluids with water or weak alcoholic menstrua, which are percolated and filtered with extreme difficulty. The practicability of several of these formulæ is questionable, but it is rather early to offer a definite opinion. It is somewhat curious that no concentrated liquor representing the most frequently used "concentrated infusion," viz., compound infusion of gentian, should have been provided for,

PHARMACEUTICAL JOURNAL.

THE "WIDOW'S CLAUSE."

THAT legislative regulations relating to the practice of pharmacy should comprise provision for the continuance of a business after the death of the proprietor, appears to be such a natural necessity as to require little argument in its favour. Even in the case of there being no successor to the business, having the necessary qualification for carrying it on, an abrupt termination does not appear to be requisite in the public interest, or indeed on any other account. As regards the relatives of a deceased chemist and druggist, on the other hand, it may be a matter of considerable importance that opportunity should be afforded for continuing the business, at least for a time that would allow for the qualification of a son or other intended successor, or admit of the business being disposed of without incurring the disadvantage of a forced sale. It was probably from that point of view the provision was made in the 16th Section of the Pharmacy Act, 1868, that upon the decease of a chemist and druggist, actually in business at the time of his death, it shall be lawful for any executor, administrator, or trustee of the estate of such chemist and druggist to continue such business if and so long as such business shall be *bonâ fide* conducted by a duly qualified assistant. This provision is consistent with the general principle of the Act that persons selling poisons or keeping open shop for retailing, dispensing, or compounding poison under the designation of chemists and druggists or any equivalent title, should possess a legal qualification affording evidence that they have a competent practical knowledge of their business. That is really the case, whether it be held that the legal qualification established as necessary in the public interest is to be understood as a qualification requisite for the proprietor of a business, or for the person who actually keeps the shop, in the sense of being there and attending to the business, though not the real proprietor. That is also shown by the subsequent provision that the duly qualified assistant referred to in the 16th Section of the Act as being competent, in the position of assistant or manager, to continue the business of a deceased chemist and druggist shall be a person possessing the same legal qualification that would be required for keeping open shop on his own account. So far as concerns the object of the Act—the safety of the public—and the condition deemed to be expedient on that account, viz., competent practical knowledge of the business, every requirement would thus be satisfied by the duly qualified assistant acting as manager, as much as if he were carrying on business as a chemist and druggist on his own account.

Reasonable as the provision above mentioned may appear in principle, and unobjectionable as its application in the interest of a widow might be under appropriate conditions, it has certainly been much abused in practice. It has also had the mischievous effect of being regarded as evidence that legal qualification of the proprietor or proprietors of a chemist and druggist's business was not intended by the framers of the Pharmacy Act, 1868, to be indispensably necessary, provided that there was in the business a person duly qualified within the meaning of the Act, acting as manager or assistant. In the case of the London and Provincial Supply Association that view contributed to influence the House of Lords in its decision that the meaning and application of the word

"person" in the Act should not be extended so as to include a corporation. But it must be remembered that the so-called "widow's clause" was not alone the means of bringing about that result. The consideration that the actual seller, whether master or servant, would, in either case, be liable for infringement of the Act, had by far the greatest influence in leading to the conclusion that the object of the Act did not require the larger construction which would exclude a company of unqualified persons. Hence the assumption that, for the public purpose of the Act, qualification of the person actually selling—whether he be the ultimate vendor or not—is of more importance than qualification of the proprietor of a business. As to the meaning of the word "person" counsel for the appellants argued that since a corporation could not be examined, therefore it could not lawfully perform the acts prohibited to any but duly qualified persons; while the other side argued that, for the same reason, a corporation was free to do what individual persons were prohibited from doing. But this latter argument was not accepted by the judges any more than the opposite argument. On the contrary, Lord WATSON was inclined to think considerations of policy rather preponderated in favour of the appellant's argument. Lord BLACKBURN distinctly held that a corporation is not entirely out of the Act, and Lord SELBORNE expressed himself still more decidedly of that opinion by stating in his judgment that he thought "the argument against a company being permitted to carry on the business of a chemist and druggist would have been extremely strong" if there were not—besides the qualification of the proprietor of such a business—"other safeguards against the sale of poisonous drugs in a manner contrary to the provisions of the Act." Having regard to the mischief which the Act was intended to prevent, the liability of the person who conducts a sale was thought to be such a safeguard as would suffice, in the interest of the public, without extending the application of the word "person" beyond its natural meaning.

The decision of the House of Lords in the case of the London and Provincial Association—going no further than the "act of selling"—may be attributed partly to the provision of the Pharmacy Act, 1868, making the minor qualification required for an assistant under the Act of 1852, the qualification entitling a person to sell poison, also partly to the provision for continuing the business of a deceased chemist and druggist. But even in so far as the latter provision may be taken as affording evidence that the Act—either in wording or intention—admits of the keeping open shop by persons who are not qualified, there are still good reasons for maintaining that there is a very great difference between continuing the business of a deceased chemist and druggist, under the management of a duly qualified assistant, and a drug department attached to a general store carried on by a limited liability company. In the one case the arrangements for carrying on the practice of pharmacy being the chief object to consider, they would have been provided for accordingly by the principal, so that the continuation of the business after his death would be a mere matter of routine work. In the case of the store drug department, on the contrary, pharmaceutical work would be of minor importance as compared with general trade operations, and in the absence of a principal skilled in pharmacy it might be expected that even with legally qualified assistants the pharmaceutical business would not command such care and attention as in a shop directed by a qualified proprietor.

ANNOTATIONS.

THE YEAR JUST EXPIRING will be remarkable in the annals of pharmacy as one in which the value of organisation was more clearly recognised by registered chemists than at any former period in their history. The stress of circumstances has caused local associations to spring into existence on every hand, and it is hard to say whether the newer or older associations have been most active in promoting the cause of pharmaceutical reform. The success of the Pharmacy Acts Amendment Bill and the defeat of the Poisonous Substances Bill served to show that chemists are capable of making their influence felt in Parliament and, better still, those two important events emphasised the necessity of a permanent union of the craft rather than a merely temporary combination to meet some pressing danger. The opportunity for such a permanent union, upon the best possible terms, is now afforded by the Pharmacy Act of 1898, and it seems extremely probable that the fulfilment of the dreams of the founders of the Pharmaceutical Society and the accomplishment of the reasonable desires of the chemist and druggist of to-day may be secured almost at one and the same time. Strenuous efforts to perpetuate the existing disunion amongst registered chemists have been made, and continue to be made, by parties who appear always to have acted as though their private interests would best be served by the continuance of the unfortunate conditions that have prevailed so long, but there are signs that chemists throughout Great Britain are awaking to the fact that their future is in their own hands and not dependent upon the vagaries of those who would sacrifice the future of the craft to their own selfish ends. That such may prove to be the case every true friend of pharmacy must cordially wish.

THE ADOPTION OF POISON REGULATIONS is arousing but languid interest, probably because of the fact that matters of the most serious importance fail to receive the attention they deserve at holiday times and particularly at the great festival of the year. Nevertheless, a few communications on the subject have come to hand and are printed in the present issue of the Journal. Mr. Richard Reynolds, who was one of the most influential opponents of the proposed regulations in 1871, returns to the charge again, and states many reasons why the matter should not be decided without the most careful consideration. Briefly, his view appears to be that there is no pressing necessity for the hasty adoption of regulations at the present moment, and that it would be wiser to have the matter dealt with in a new Act of Parliament. In other words, he contends that no imposition of penal regulations, such as are suggested, will be satisfactory to the persons most concerned, unless those regulations form part of a general revision of legislation for pharmacy. Mr. Morrison and Mr. Taplin also suggest food for thought in this connection, and the views put forward by an anonymous correspondent are perhaps none the less weighty because they appear to be written in a spirit of sarcasm. We must reiterate that the subject is one of the gravest importance, not to be dealt with lightly or from the view of personal convenience only, but with a due sense of responsibility and proper regard for the position the registered chemist occupies in relation to the State.

THE BRITISH PHARMACEUTICAL CONFERENCE, as briefly announced in last week's Journal, will have its headquarters at Plymouth during the week commencing Monday, July 24, next year, and already newspapers in the West of England are beginning to devote space to anticipations of the meeting. A

Bristol paper, which begins by falling into the old error of assuming identity between the Pharmaceutical Society and the Conference, prints the not very relevant remark that "there will no doubt be a very pleasant gathering, but whether there will be any permanent benefit to pharmacists is very doubtful." It must not, of course, be inferred from this that Bristol newspaper men think pharmacists hold conferences for the good of their health. A vague clue to what the writer means to convey may be gleaned from his subsequent statement, that for some years now chemists have passed the good old days (if they ever existed) when they could sell a bottle of medicine for half-a-crown, though the medicine did not cost them quite so much as did the bottle containing it. The Limited Liability Acts, it is quite correctly remarked, have brought "company pharmacy," and that has brought about a revolution in the trade. But it will be news to our readers to learn that the Council of the Pharmaceutical Society has been struggling to get an amendment of the law in the hope that it will help chemists against companies, though many wish that the Council would do so.

A WILFUL MISREPRESENTATION of facts appears in the *Sporting Express*, a Liverpool paper, of the 17th inst., where it is alleged that the Pharmaceutical Society discriminates unfairly between registered and unregistered persons in its administration of the Pharmacy Act of 1868. The writer of the notes referred to asserts that, whereas a well-known local photographic dealer was heavily fined some time ago for illegally selling a scheduled poison, a case has recently come under his notice of a chemist having three shops, one of which is being conducted by an unqualified assistant, while another is often left in charge of an apprentice. Both the unqualified assistant and the apprentice are said to sell poisons, and it is urged that it is an anomaly that the Pharmaceutical Society does not prosecute the proprietor. In reply we can only say that it is the duty of any person who knows the law is being broken in the manner suggested to report the facts to the Registrar of the Society. If the facts be confirmed on inquiry the informant may depend upon proceedings being taken against the offenders in due course, whether the proprietor of the shop be a registered chemist or not. The suggestion in the Liverpool paper, that the Pharmaceutical Society does not take action when offences against the Pharmacy Act are committed on the premises of registered chemists, because it is supported by the voluntary contributions of those chemists and the college and examination fees of their assistants is, of course, as baseless as it is malicious.

POISONING CASES reported of late have varied greatly in their details, though carelessness continues to be the chief characteristic of most accidental cases, and suicides show, as they have ever done, how difficult it is to prevent a man bent on terminating his existence from accomplishing his purpose. At Lancaster a child has found death before its time as the result of neglect to shake the bottle containing its medicine. The mixture contained bromoform suspended by the aid of mucilage, but as the bottle was not regularly shaken, most of the bromoform was administered in the last dose, with a fatal result. At Camberwell, liquid ammonia contained in a bottle labelled "Children's Cough Syrup," has been administered to an infant under the impression that it was aniseed water. Death from suffocation was the result. At Blackheath, a chemist's assistant has died from the effects of an overdose of prussic acid, with which he had been treating himself, and at Walworth a tailor's cutter has found a dose of three ounces or more of chlorodyne incompatible with continued existence on this mundane sphere. This last-mentioned case was also attributed

by a coroner's jury to misadventure. The coroner, by the way, commented on the fact that the label on the bottle stated that the chlorodyne was "perfectly safe but poison." A fatality at Flushing, resulting from an overdose of cocaine, taken to relieve pain, presents no remarkable features; neither do cases of poisoning by overdoses of laudanum at Bury and Canning Town. Suicides by carbolic and sulphuric acids are also reported, and the moral to be drawn from the week's record is the old and well-established one, that the restriction of the sale of all poisonous substances to properly trained and duly registered persons is the best safeguard the State can adopt.

THE PREVENTION OF TUBERCULOSIS is now known to be well within the bounds of possibility, and as mentioned in the Journal a few weeks ago (see p. 495) an influential association has been formed to deal with the subject in this country as effectually as it has been dealt with abroad. The existence of that Association may fairly be attributed to the efforts made by the editor of the *Practitioner* to bring public opinion to bear on the question, and he is to be congratulated on the speedy success that has crowned his efforts, for the Association includes the leading medical practitioners of the day as members, and its operations are supported by the Prince of Wales and other prominent persons. At a meeting held at Marlborough House last week, in furtherance of the objects of the recently-formed Association, the Prince presided, and Sir William Broadbent explained the nature and means of prevention of tuberculous disease. The objects of the Association, as defined by him, are to educate the public as to the means of preventing the spread of consumption from those already suffering from the disease; to extinguish tuberculosis in cattle; and to promote the erection of sanatoria for the open-air treatment of tuberculous disease. Subsequently, on the motion of Lord Salisbury, the meeting expressed its approval of the effort which is being made to check the spread of diseases due to tubercle, and to promote the recovery of those suffering from consumption and tuberculous disease generally. It also commended the method adopted by the Association of instructing public opinion and stimulating public interest rather than the advocacy of measures of compulsion. An interesting announcement was made at the meeting, to the effect that the London partners of Messrs. Werner and Beit have undertaken to erect and equip a sanatorium for tuberculous patients at an estimated expense of twenty thousand pounds. The construction and management of the sanatorium will be under the guidance of the Association, branches of which are being formed at York, Norwich, Ipswich, Huddersfield, and other towns.

IN GERMANY, a central committee was constituted three years ago with the object of promoting the establishment of a sufficient number of sanatoria for consumptives throughout the German Empire. The *Times*, quoting a few days ago from the official organ of the Prussian Ministry of the Interior, in which an account is given of the work accomplished during the existence of the Committee, states that the efforts made have been most successful, owing to the co-operation of wide circles of the public and more particularly owing to the measures taken by the Imperial German Working People's Insurance Office in providing hospitals and convalescent homes for those of the insured who are attacked by illness and prevented from earning their living. A large number of sanatoria, which are already receiving patients, have demonstrated that Germans who suffer from tuberculous diseases do not require to go abroad in search of health, but can secure the best medical treatment in the immediate neighbourhood

of the places where they have to live and work. Before long there will be some fifty sanatoria in Germany for persons in straitened circumstances. The central committee has co-operated in various degrees in the development of those institutions by placing at their disposal information and, where requisite, by making grants for their support. It has thus been found possible, while consulting in every case the special nature of local necessities, to establish the institution of sanatoria for consumptives in Germany on a sound and permanent basis.

THE LONDON UNIVERSITY MUDDLE is not being allowed freedom from attack during the holidays, the *Daily News* referring to the curious fact that, though the Government has appointed a Commission to deal with the university problem, it has also announced that it is prepared to make the financial arrangements necessary to enable the Imperial Institute to become the headquarters of the organisation of the new university. According to *Nature*, a very considerable discussion of an informal character is going on among many interested in the various institutions which may form part of the new university, and regret is expressed at the evident probability of the work of the Commission being hampered by the fact that many of the suggestions now being made are more inspired by the local interests concerned than by the desire to help on the educational question in the abstract. The Commission has to deal with an area defined by a radius of thirty miles, a population which may be roughly estimated at seven millions, and a large number of existing institutions. The amount of good the Commission will ultimately produce along new lines may be expected to be capable of measurement by the success it will achieve in co-ordinating the old forces which are already at work, by working on the principle of organic growth and regarding what exists from the most general standpoint. It is from this point of view that *Nature* deprecates some of the suggestions now being made, "because, if accepted, they will harm existing institutions, because the new university must not commence by localising itself, however high any local bid may be, and because again no good work will be achieved if any new suggestions be accepted before the actual condition is fairly grappled with, mastered and legislated for."

OBJECTION IS TAKEN in the *Times*, by the Surgeon of St. Mary's Hospital, to the idea of University College becoming the future home of the new university of London. No bait, he thinks, of buildings or endowments, however large, could overcome the objections of many of the constituent colleges to such a scheme. It is pointed out that there are a dozen medical schools in London, all in varying degrees equipped for the work of medical education with hospitals of their own, and each in equal degree looking forward to affiliation with the university. Were the University of London to be planted in Gower Street, Dr. Page feels that University College, having a new hospital—the best in construction and in arrangements for teaching, as it may be expected to be, in the kingdom—would attract medical students in such large numbers that some of the other medical schools less favourably situated "would inevitably be starved to death, unless, indeed, a happy despatch should reveal that it was thought hardly worth while to continue the unequal contest." Dr. Page does not especially advocate the claims of the Imperial Institute—although he is of opinion that, on the whole, it is the best site to be found—but he is anxious to show how essential it is for the peaceful progress of the new university that impartiality shall govern the choice of a site for its academic home. The university spirit, he urges, as distinguished from the collegiate

spirit, has hitherto had no existence in London; many, indeed, have had no notion what it is. "The birth, development, and continued vitality of such a spirit will depend in no small degree on the place of habitation of the university itself, where the several institutions, corporations, and schools, with their diverse interests and healthy rivalries, may flourish under the common and equal care of one *Alma Mater*, which is over and above them all."

THE TYPHOID BACILLUS has been shown by Dr. Sidney Martin to be capable of maintaining its existence for four hundred and fifty-six days in soil that has been sterilised and subsequently polluted with organic matter. Towards the end of that period a "soil culture" of the bacillus was dried and powdered, but it still yielded the microbe in viable condition and, presumably, in virulent phase. The record of Dr. Martin's experiments is published in a supplement to the latest annual report of the Local Government Board. His more difficult task of testing the ability of the typhoid bacillus to maintain itself in soil in which it is brought in competition with other bacteria is as yet in its initial stages, but the investigation has yielded an interesting result in one instance, in which the typhoid bacillus survived for fifty days in competition with other micro-organisms, though it had not multiplied.

SIR RICHARD THORNE THORNE, in the same supplementary report, states that there is no doubt bacteriology affords a ready means of detecting contaminating matters in waters which, from the point of view of the chemist, would be classed as "of high degree of purity." Examples are given of the delicacy of bacterioscopic tests, as compared with chemical tests, in detecting undesirable, if not dangerous, organisms in water, the facts being derived from a paper recording certain joint experiments by Drs. Klein and Houston. Those observers added to a number of separate samples of sterile distilled water various "minimal" quantities of raw sewage, obtaining thereby sewage dilutions ranging between one in a hundred and one in twenty thousand, which they proceeded to test severally, both chemically and bacterioscopically. As a result they ascertained that while the majority of their sewage dilutions would be classed chemically as at least organically safe drinking water, they had no difficulty in detecting in each and all of them certain objectionable bacilli. They were able to identify one particular organism in liquid made up of only one part of crude sewage in each half million parts of distilled water. Similarly, they succeeded in obtaining the same objectionable bacilli from a sample of Thames water collected below Staines.

POSTAL REFORMS are coming thick and fast this holiday time. It is now possible to send a letter to most British Colonies and Dependencies at a cost of one penny; on and after January 1, the postal rates will be reduced to one simple classification for parcels sent to any of the following places:—Antigua, Ascension, Bahamas, Barbados, British East Africa, British Honduras, Beyrout, Ceylon, Constantinople (by direct steamer), Cyprus, Dominica, Falkland Islands, Gambia, Gibraltar, Gold Coast Colony, Grenada, Johore (*via* Singapore), Lagos (Africa), Malta (by direct steamer), Montserrat, Nevis, Newfoundland, Niger Coast Protectorate, Niger Territory, St. Helena, St. Kitts, St. Lucia, St. Vincent (West Indies), Sarawak, Seychelles, Sierra Leone, Smyrna (by direct steamer), Straits Settlements, Tobago, Tortola, Trinidad. If the weight of the parcel does not exceed 3 lb. the postage will be 1s.; over 3 lb. but not over 7 lb., the cost will be 2s.; over 7 lb. but not over 11 lb., it will be 3s. Another order

of the Postmaster-General provides for the insurance of letters to and from places abroad. The places covered by those important regulations are nearly fifty in number, including all other European countries and many of their colonies. Letters thus insured—at fees which range from 5*d.* in respect to £12 compensation up to 2*s.* 3½*d.* in respect to £120—will have all the safeguards of the registration system.

CO-OPERATION IN SCIENCE was the burden of Professor Michael Foster's recent address to the members of the Yorkshire Naturalist Union at Scarborough, in which he endeavoured to impress upon his hearers the great necessity of co-operation in science. He also pointed out that all the earlier naturalists sought to solve the problems which every form of life possessed; that Nature is the naturalist's teacher, and the field his laboratory. The method of teaching science in schools was described as being open to serious objection, and the examinations often held as prejudicial to the development of science, the minds of students being very often pushed on by compulsion and drawn on by rewards, without any encouragement being given to study Nature in the fields and receive from her lips the catholic teaching which she alone can give. Naturalists, properly so-called, must be reared apart from the schools.

IN TABLES OF ATOMIC WEIGHTS hydrogen (=1.00) is usually taken as the standard, though many chemists have contended that it would be more convenient to take oxygen (=16.00) as the standard, and it is worthy of note that a commission consisting of Professors Landolt, Ostwald and Seubert—appointed by the Council of the German Chemical Society to draw up a table of atomic weights for use in calculations incident to the practice of analytical chemistry—has decided to take oxygen as 16.00, and to select atomic weights for other elements in direct or indirect comparison with that value. In the table as printed in the *Berichte* the atomic weights are not given beyond the last trustworthy figure, and in no case beyond the second decimal place. The table is practically the same as that issued in America by Professor F. W. Clarke on behalf of the Atomic Weight Commission of the United States. Hydrogen becomes 1.01, carbon 12.00, chlorine 35.45, sodium 23.05, potassium 39.15, and so forth, the figures not differing appreciably from those to which practical chemists have been accustomed for many years past. It is proposed to print the table annually in the *Berichte*, with any revision that may be found necessary, and the wish is expressed by the Commission that there should be some international understanding on the subject of the atomic weights used in analytical chemistry.

A NOVEL PRODUCTION OF VORTEX MOTION is described by C. S. Stanford Webster in the *Chemical News*. When the freshly-gathered leaves of *Eucalyptus globulus*, produced at San Remo, were ignited, they projected vortex rings in considerable numbers in succession, accompanied by a spluttering noise. The best results were obtained by holding the scythe-shaped leaf vertically and igniting the apex—that being the part where the greatest number of translations were obtained. It is suggested that possibly in the production of the vortex rings blisters are first formed by the extrusion of the cuticular tissues and, on the blisters bursting, air or aqueous vapour is spontaneously liberated, the rings being rendered visible on their contact with the smoke from the burning external portion of the leaf. The leaves of the small English variety of *Eucalyptus* are said to possess similar properties but in a lesser degree, the rings projected being insignificant in size, comparatively speaking.

NOTICES OF BOOKS AND OTHER PUBLICATIONS.

'THE TREATMENT OF DISEASE BY PHYSICAL METHODS,' by Dr. T. S. Dowse (Bristol: J. Wright and Co. Pp. 412. Price 7s. 6d. net), is a new edition of that author's 'Lectures on Massage and Electricity in the Treatment of Disease' under a new name. Though the general style of the book has not undergone any material change, new and important matter has been added to bring it up to date, and the work remains an authoritative one on the subjects of which it treats. The greater portion of it deals with massage—its principles, method of application, and detailed particulars regarding its use in special cases. The Nauheim or Schott treatment, electro-physics, and electro-therapeutics are also fully described, and the book is illustrated throughout.

'THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC, 1899' (London: Greenwood and Co. Pp. 1508. Price 1s. net.), is a wonderful production, in which the scientific, practical, and trade aspects of photography—as they present themselves at the present moment—are satisfactorily summarised. The principal literary contents include an exhaustive article on "Colour Photography," by the editor—Thomas Bedding, F.R.P.S.; a large number of contributions on practical subjects by prominent photographers; a series of "Practical Notes and Suggestions of the Year"; an "Epitome of Progress during 1898"; miscellaneous information, and "the completest collection of photographic formulæ and recipes ever gathered together in one volume," thus constituting the Almanac of the greatest possible use to all photographers. In addition there can be but few manufacturers and large dealers in photographic specialties who do not advertise their wares in the book, so that it is a veritable trade compendium of the greatest possible use to all chemists who do a photographic trade.

'ROUSE'S SYNONYMS FOR THE USE OF CHEMISTS, THEIR ASSISTANTS AND APPRENTICES' (London: Rouse Bros. Pp. 218. Price 1s.), is a work of modest appearance, but it ought to be found on the bookshelf in every pharmacy in English-speaking countries. It contains between four and five thousand references, and covers a wider area, beside being more complete, than any similar collection of synonymous terms yet published. An enormous amount of labour must have been involved in preparing this compilation. Amongst other points of interest are many useful criticisms of, or comments on, statements in the British Pharmacopœia, 1898. Every registered chemist, every assistant, and every apprentice should hasten to procure a copy forthwith.

THE 'FORMULAIRE DES MÉDICAMENTS NOUVEAUX POUR 1899,' by H. BOUQUILLON-LIMOUSIN (Paris: J. B. Baillière et fils. Pp. 332. Price 3 francs), has come to hand as promptly as its predecessors, and like each of those includes particulars of a number of novel medicaments, amongst others being benzeucaine, cearin, eigon, erythrol, ingestol, protargol, quinochloral, salitannol, thiocol, validol, and others too numerous to mention here. As usual, a separate monograph is devoted to each substance, and the name of each is followed by the synonym, description, composition, therapeutic properties, method of use and dose. For those who can read French there is no handier little guide to the therapeutics, etc., of mushroom-like synthetics.

THE 'DIGEST OF CRITICISMS ON THE UNITED STATES PHARMACOPŒIA, Part II. (New York Committee of Revision and Publication of the U.S.P. Pp. 146), is a continuation of the first part, which brought the record up to the end of June, 1896, and

contains abstracts from all accessible sources from that date down to the end of December, 1897. The idea underlying the issue of this publication is, of course, that of arranging systematically every suggestion and criticism of the U.S.P. which seems worthy of note, and the Committee of Revision is to be congratulated upon the thoroughness with which the work has been done.

'HOW TO MAKE LANTERN SLIDES,' by S. L. Coulthurst (London: Dawbarn and Ward, Ltd. Price 1s), is a practical little book, in which the gelatino-bromide and gelatino-chloride processes are given special prominence. The formulæ given are few but well-tried ones, and beginners at lantern slide making should find here all they require in the way of information.

'FALLOWFIELD'S PHOTOGRAPHIC ANNUAL FOR 1898-9' (London: Jonathan Fallowfield. Pp. 852. Price 1s. 6d., post free) is another bulky production, containing particulars—usually with illustrations—of nearly every form of apparatus and accessory used by professional and amateur photographers. If only as a guide to what is on the market, all retail photographic dealers should possess copies of this book, which is now issued for the fortieth year.

'VITALITY: AN APPEAL, AN APOLOGY, AND A CHALLENGE,' by Professor Lionel S. Beale (London: J. and A. Churchill. Pp. 75. Price 6d. post free) is a reprint from the *Lancet* of a series of papers in which the author considers the part played by vitality in various departures from the healthy state in some of the most important tissues and organs. Thus, he treats of the living matter of man, physical and chemical doctrines, the nature of growth, and a variety of other more or less controversial topics.

'PRESCRIPTION READING: A TEXT-BOOK FOR PHARMACEUTICAL STUDENTS,' by William Watson Will (London: Metropolitan College of Pharmacy. Pp. 139. Price 12s. 6d. net.) is a collection of materials to be used for instructing the student in the technicalities and conventionalities associated with physicians' prescriptions. It is to be regretted that the conditions under which pharmacy is now carried on renders necessary the academic study of a subject which under more favourable circumstances should be learnt as part of the routine duties of the student during his apprenticeship. For it cannot be doubted that the supply of materials, in the form of prescriptions actually dispensed, available for the instruction of the apprentice, in many cases falls far below the amount and variety necessary for his education in prescription reading. Hence, in order to meet the requirements of the examining Board and to equip himself with the knowledge necessary for his possible position as a principal in keeping a pharmacy, the aspirant for the diploma of a chemist and druggist is often obliged to supply the deficiencies of his apprenticeship training by resorting to a compilation of prescriptions prepared for him. The book which Mr. Will has produced contains a copious collection of abbreviated prescriptions for all manner of medicinal preparations, with a dictionary and tables of terms and abbreviations employed. The student is directed to look out for incompatibilities, excessive doses, mistakes in construction, etc., but no notes or explanations are supplied to indicate where those occur, and that omission distinctly limits the utility of the book for those students who are unable to refer continually to a coach or teacher. The employment of different type or asterisks at those places where errors or ambiguities occur, even if full explanations were not supplied,

would have prevented the student missing many useful points. As it is there is a danger that the beginner using the book may perpetuate many of the errors which he is unable to detect. Posological tables and extracts from the Pharmacy Act complete the volume, which is printed on quarto pages with very open type, making cross reference very easy. The book contains abundance of material representative of modern prescribing as well as the old prescriptions written in former times, when the physician was accustomed to write his directions for the patient almost entirely in Latin.

NOTES OF PHOTOGRAPHIC NOVELTIES.

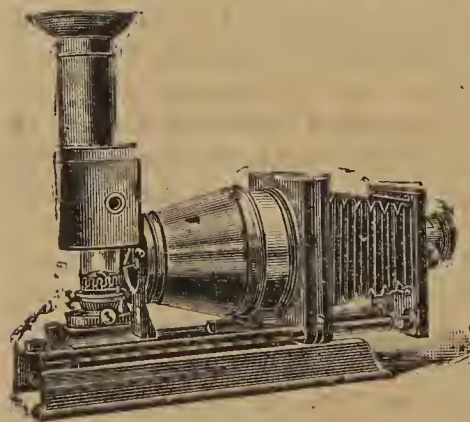
"Busch" Photographic Lenses.

MR. HENRY F. PURSER, of 33, Hatton Garden, E.C., the wholesale London agent of the Rathenow Optical Manufacturing Company, late Emil Busch, has placed in our hands for trial some specimens of the productions of the firm he represents and their catalogue. From the latter we find that they make a specialty of rapid, portrait, and detective aplanats, but also supply wide-angle lenses giving an angle of from 100° to 110° . Portrait lenses of the Petzval form and Projection lenses. The lens to which we applied the practical test of making a negative with it was the No. 2 of the "Rapid Aplanat" series, working at F/8. The lens was 8 inches focus, and at the full aperture it covered a half-plate well. Owing to the unusual shortness of the tube for this type of lens, which is claimed as one of the good points of the series, the circle of illumination was found to be a large one, and, employing a smaller stop, an $8\frac{1}{2} \times 6\frac{1}{2}$ plate was well covered, and a considerable rise of the camera front was possible. The field of the lens just covered a 10×8 plate. With a plate of this size, of course, it was working at quite a wide angle, and in buying a lens this power is worth considering. The lenses are priced very moderately for good instruments. The retail price of that we have referred to, with iris diaphragm, being quoted at £1 13s. All lenses for the English market are fitted with stops according to the Royal Photographic Society's standard.



Ross Enlarging Lantern.

This lantern, made by Ross, Ltd., 111, New Bond Street, W., bears a general resemblance to other instruments for the same purpose. Improvements have, however, been introduced in



matters of detail which make it worthy of notice. A special feature is the fitting for the illuminant. This may be an oil lamp, or, where gas is available, an incandescent gas-burner may be used, or a limelight jet may be employed. Any or all these forms of illuminant can be supplied, and may be used with the same lantern at discretion. The body of the lantern is another feature. This, as shown in the illustration, is capable of being raised and fixed in its raised position, so that the light may be got at at any time. The

slide for the insertion of the negative to be enlarged is open on three sides, so that there is no difficulty in adjusting the negative in any desired position, and, if required, a portion of a larger negative may be arranged before the condenser, a clamping screw holding the negative in position. When a smaller negative or a part of a negative smaller than the full size the apparatus is constructed to enlarge is used, the condenser may be drawn backwards, as it is mounted on a sliding base, and a metal disc inserted of the same diameter as the condenser, but having a 3 or 4 inch opening eccentrically placed, so that it is not necessary when part of a large negative is to be used that the part required should be placed centrally in front of the condenser. All the sliding parts are of metal and work with extreme smoothness. The bellows may be removed, and the lantern is then available for any purpose to which an optical lantern of the kind can be applied. The workmanship is admirable, and the price reasonable for a first-class instrument. With $5\frac{1}{2}$ inch condenser, for $4\frac{1}{2}$ by $3\frac{1}{2}$ negative, £6 10s. With 6 inch condenser, £7 10s. With 8 inch condenser £9 10s. The apparatus is made to 16 inches.

Lumière's Rigid Vitrose Films.

These films are the manufacture of Messrs. A. Lumière et ses fils, of Lyons. It is claimed that the Vitrose composition, upon which the emulsion is coated, is superior to celluloid, both in transparency and rigidity, and that it is free from any volatile or odorous matter likely to have an injurious effect upon the emulsion. The film is about $\frac{2}{10}$ th Mm. in thickness, and the weight is approximately $\frac{1}{12}$ th that of a glass-plate of the same size. It is absolutely waterproof, and does not expand. The cut films are sold packed in the usual way. They are also sold with film inserted in a neat and ingeniously-made sheath ready for insertion in the dark slide, and requiring no further backing. The sheath consists of a black cardboard, surrounded with a metal rim, with an opening at one end for the insertion of the film. The metal rim, besides fulfilling the purpose of holding the films to the backing, also serves to stiffen the whole, and it is perhaps as neat and efficient a film carrier as any we have seen. The sheaths are of course charged for, but they are moderate in price, $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$ plate sheaths being respectively 10d., 1s. 10d., and 2s. 8d. a dozen. The sheaths can, of course, be used over and over again. The Vitrose composition is also made in the thin and flexible form, and coated for rollable and kinematograph films. The emulsion with which the films are coated is, unless specially ordered, an extremely rapid one of the ordinary kind, but films coated with ortho-chromatic or colour-sensitive emulsions of three kinds are also supplied. A is sensitive to yellow and green, B to yellow and red, and C to yellow, red, and green. The price of the films per dozen is: $\frac{1}{4}$ -plate, extra rapid, 2s. 6d.; ortho-chromatic, A, B, or C, 2s. 9d.; $\frac{1}{2}$ -plate, extra rapid, 4s. 10d.; ortho-chromatic, 5s. 4d.; $\frac{3}{4}$ -plate, extra rapid, 8s. 10d.; ortho-chromatic, 9s. 9d.

"Albuminate" Emulsion Paper.

We have some samples of this paper from C. A. Rudowsky, of 22, Coleman Street, E.C., who is the London agent for it. We understand that it is claimed for it that it has all the good qualities of albuminised paper, sensitised in the ordinary way upon a silver bath, but being manufactured by an emulsion process it may be relied upon as being all alike, and not liable to the various ills which arise from the variation of the bath and its deterioration as successive sheets of paper are sensitised on it. From the directions for use we gather that the procedure is practically the same as for ordinary albuminised paper, and formulæ are given for an acetate and gold bath, a sulphocyanide and gold bath for separate toning and fixing, and a combined toning and fixing bath. We have only had opportunity to make a hurried and, therefore, unfair experiment on a couple of prints, and we must say the results we obtained were admirable, and better than we should have expected from gelatino-chloride paper under the same circumstances. The price is rather high, 18s. a quire. If that could be reduced to meet the present demand for cheapness it would probably come into extensive use. We should recommend those who study quality rather than price to try it. It is also made up in packets of the usual plate sizes.

BRITISH PHARMACEUTICAL CONFERENCE.

A meeting of the Executive Committee was held at 16, Bloomsbury Square, on Thursday, December 22. Present:—Mr. WALTER HILLS (Vice-President) in the chair, Mr. J. C. Umney (Hon. Treasurer), Prof. Greenish, Messrs. Bird, Collier, Druce and White; Messrs. Naylor and Ransom (Hon. Gen. Secs.) and Mr. J. C. Nightingale (Asst. Sec.).

Letters were read from Mr. J. C. C. Payne (President) and Messrs. Atkins, Atkinson, Downes, Martin, McKnight, Moss, Park, Symes, and Wright regretting their inability to be present.

The minutes of the previous meeting were read and confirmed.

Mr. Louis Siebold, F.I.C., F.C.S., was unanimously appointed editor of the Year-Book for 1899.

After some discussion the following gentlemen were appointed as a Sub-Committee to inquire as to the best method of increasing the membership of the Conference, and to report to a future meeting of the Executive—Professor Greenish, Messrs. Bird, White, Wright, J. C. Umney, Naylor, and Ransom.

It was unanimously resolved to request the following gentlemen to allow their names to be added to the list of honorary members of the Conference—Dr. Charles Rice (New York), Mr. A. Petit (Paris), and Professor A. Tschirch (Bern).

On the recommendation of the Local Committee it was resolved that the sessions of the Plymouth meeting should commence on July 25, 1899, the reception being held the previous evening.

Sixteen gentlemen having been duly nominated were elected to membership.

EXTRACTS FROM CONSULAR REPORTS.

THE QUANTITY OF SULPHUR EXPORTED from Licata (Sicily) to foreign countries during 1897 was 85,741 tons, and to Italy 9106 tons, making a total of 94,847 tons, value £331,964; an increase of 20,808 tons, and £124,875 on the preceding year. Of the 85,741 tons shipped for foreign countries France took 31,813 tons; the United States of America, 30,828; Norway and Sweden, 4085 tons; Spain, 2367 tons; Austria, 2339 tons; the United Kingdom, 2232 tons; Germany, 1983 tons, and to other countries 10,094 tons. The quantity of sulphur exported from Catania was 90,590 tons as against 95,678 tons in 1896. The operations of the "Anglo-Sicilian Sulphur Company, Ltd.," Vice-Consul Elford reports, have been a boon to the mine proprietors who are now able to earn a good profit on their industry, with the result that several millions of lire remain in the island to their and the miner's benefit, whilst before the advent of the company the industry was at the mercy of speculators.

THE BRITISH IMPORT TRADE in chemicals, dye-stuffs, and tanning substances for the month of November this year compares very favourably with that of the same period in 1897, there being an increase in value of £21,994, the total figures being £372,609 for November, 1897, and £394,603 last month. There is a decrease of £500,524, however, on the value of imports for the eleven months ending November 30, £5,591,546 representing the value for that period in 1897, as against £5,091,022 in 1898. The exports of manufactured chemicals and chemical and medicinal preparations also show a decrease for both periods; goods to the value of £753,840 having been exported in November last year, and £690,973 this year, a reduction of £62,867. For the longer period the figures are £7,959,214 in 1897, compared with £7,678,009 in 1898, showing a decrease of £281,205.

THE PRODUCTION AND EXPORT OF BEER at Hamburg is the subject of a report by Consul-General Ward, in which he gives some very interesting figures. At present there are fifteen large breweries in and near Hamburg, the aggregate capital of which amounts to about £1,000,000. It has been estimated that these breweries together produce annually something over 22,000,000 gallons of beer, which if required could be increased by eight or nine million gallons per annum. The larger portion of the beer is consumed in the district itself, only a comparatively small proportion of the Hamburg beer being exported to foreign countries by sea, or by land to the interior of Germany. All the Hamburg breweries are said to be fitted with the newest and best brewing machinery, the beer, which is of a light colour and medium strength, being brewed upon the same principles as other good German beers. That made for exportation is of a stronger quality

than that consumed on the spot, and when destined for hot climates is subjected to "Pasteurisation."

THE QUANTITY OF BEER annually exported, by land and by sea, from all parts of Germany has been gradually diminishing during recent years. In 1897 the total value of exportations was about £950,000, whilst in 1885 their value is stated to have largely exceeded that figure. The value of the Hamburg exportations by sea alone fell from £748,061 in the year 1889 to £498,310 in 1897. This decline is attributed, amongst other causes, partly to the gradual falling off of the demand in France, which has always been and still is the best customer for German beer. But during the last ten years its own production has been largely increased by the introduction of improved brewing methods. With regard to the United Kingdom, the quantity of beer shipped from Hamburg to this country in 1880 was no less than 1,100,000 gallons, whilst in 1897 only 120,824 gallons were received here. The development of direct steam communication between Hamburg and the various oversea countries of the world is held to be responsible, in great measure, for the falling off of the exports to Great Britain, as the beer was and is mostly transhipped from here to other countries.

NEW REMEDIES.

IODOLMENTHOL.—This is a mixture of iodol with one per cent. of menthol, an addition which covers the odour of the iodol, while the mixture is stated to be even more active than iodol alone.—*Pharm. Zeit.*, xliii., 668.

PULVIS CUTICULOR.—This term is applied by Unna (*Monats. fur Derm.*) to the following powder, used for scborrhoea:—Zinc oxide, 2; magnesium carbonate, 3; white bole, 3; Armenian bole, 2; rice starch, 10.—*Pharm. Zeit.*, xliii., 668.

ANALGENE IN CHOREA.—Moncorvo has found antipyrine, exalgine, asaprol, and analgene all valuable remedies in the treatment of chorea in young children, and of these drugs analgene gave the best results. Several cases are recorded which were cured by treatment with this remedy. The initial dose was generally 2 grammes in twenty-four hours, gradually increased. In many cases improvement was noted in a few days after commencing the treatment, and, in some, a cure was effected in less than a month.—*Pediatrics*, vi., 353.

JELLOIDS OF LYMPH GLAND EXTRACT IN THE TREATMENT OF CANCER.—Dr. Herbert Snow calls attention to the possible value of lymph gland extract in the treatment of cancer. He records a case which was much ameliorated by the administration of the extract in the form of jelloids, each containing 4 grains of the extract. Of these from one to three were taken twice or thrice daily after meals. There was marked improvement in the general health, and it is considered that the extract added at least three months to the patient's life. The treatment included the administration of opium and cocaine, as well as lymph gland extract. Other cases are now under observation.—*Med. Press*, new ser., lxvi., 482.

CHINOSOL AS AN ANTISEPTIC IN VETERINARY SURGERY.—In the *Veterinary Record*, xi., 187, E. R. Edwards publishes a case which illustrates the value of chinisol as an antiseptic in veterinary practice. A horse, in attempting to jump a fence, became impaled upon a stake and received a severe abdominal wound, from which the bowel protruded. This stake was covered with filth, and the horse when first seen was lying in a very ill-drained, dirty stable; yet, after thoroughly washing the wound and protruding intestines—which were in a filthy condition—with chinisol solution, 1 in 600, the necessary surgical operations were performed and a satisfactory recovery obtained, without a trace of peritonitis or septic symptoms.

HEXAMETHYLENETETRAMINE IN GOUTY DIATHESIS.—Walter recommends the use of hexamethylenetetramine (termed urotropine by Nicolaiew, or aminoform by Lederer) as a prophylactic in gouty diathesis in doses of a teaspoonful every morning, taken in a glass of water. Taken in this manner it will ward off an attack of gout.—*Nouv. Rem.*, xiv., 456, after *Munich. Med. Woch.*

LETTERS TO THE EDITOR.

THE PROPOSED POISON REGULATIONS.

Sir,—If the special general meeting of the Society convened for January 11, 1899, is to produce results beneficial to the members it is very desirable that it should avoid the attitude historically described by “’Ang hargiment; let’s ’ave a show of ’ands.” The tribunal of such a meeting is not ideal, and if it were suggested that the governing body of the Society should be so elected, provincial members would find their allegiance seriously weakened. I might, from personal knowledge, claim to say something of what occurred in 1871, but ancient history will help us little towards a solution of present difficulties. We ought, however, to bear in mind that the alleged private bargain dates back to the “unreformed” period of the Society’s history, when reporters were not admitted to meetings of the Council, and neither by information vouchsafed to the members nor by the minutes of the Council has any confirmation of a bargain been produced. On one occasion the irony of the situation was manifested by the party for the exclusion of reporters, issuing by post an *ex parte* statement of its case. We know enough from the past history of legislation for pharmacy to appreciate that we should carefully forecast the effects of any enactments. If not doing so, we shall still further confound a condition which at present is one of absolute topsy-turvydom, there being several hundreds of drug shops where the only legal qualification is held by servants. I have, therefore, put to the highest pharmaceutical authority the question, “How will any regulations for the storage, etc., of poisons affect ‘stores’ and ‘cash chemists’?” The answer I have received is, “I am unable to tell you.” Any need for penal regulations for the storage, etc., of poisons has diminished steadily during the thirty years that have elapsed since the Pharmacy Act was passed, now that registered chemists have generally proved their qualification by examination. On the other hand, time has produced, outside the legitimate body, the mongrel traders having no scrap of qualification, whose right to defy the Pharmacy Act is about to be challenged. Are these men to be permitted to steal the horse whilst we are arranging the penalties upon any legitimate chemist who looks over a fence? We shall probably be told that the moral effect of our self-imposed mortification would be so grand that we might get friends who would be useful when the larger question comes up. Have we amongst our rulers no public men accustomed to negotiate delicate questions for municipalities, county councils, and the like? Would they give away the interests of their constituents, as a preliminary act, in the hope that such generous actions would meet their reward, or would they make these interests a part of the whole question? It is unfortunate that this subject has ever been the special field for “intellectual insincerity.” The promise that regulations would carry no inspection used to be freely made, but there can hardly be anyone unwise enough to believe this now. Unfortunately, the despairing mood of our members gives too much justification for readiness to catch at any straw. But it is safe to say that salvation will not be found by this road. To some of us it is inexplicable why our Council has made no communication on the subject to Sir John Gorst, M.P., the Vice-President of the Committee of Council. His department is supposed to have “views” as to our past engagements and to hold an I.O.U. given thirty years ago. We also have “views,” and, as citizens of a free state, have the right to state those to the existing authorities. Recently, our elected chiefs have acted as Le Bon described the Latin races “who feel the incurable need of being governed.” Last year our reticence would have done a great injustice to the Duke of Devonshire, had we been previously aware of the course he would take, for his lamentable ignorance of the question was too apparent. If our Council is dissatisfied with the consequent manifestation of our Parliamentary strength for defence, it must be difficult to please. The fact of ranging Ireland in line with us on this question has removed all real danger. Surely someone will put before the general meeting an amendment declaring the opinion that no imposition upon registered chemists and druggists of penal regulations for the keeping, selling, etc., of poisons will be satisfactory unless forming part of a general revision of legislation for pharmacy.

Leeds, December 27, 1898.

RICHARD REYNOLDS.

Sir,—I am pleased to see from this day’s issue that at least one member of the Council views the notice of motion to be discussed at the special general meeting on the 11th prox. from a practical and common-sense position, and doubtless many chemists will do likewise. The worthy members of that admirable debating Society, the Western Chemists’ Association, seem to have been carried away by the flow of oratory that permeates their periodic reunions. What does this motion mean? To my mind this, “that although we have been examined by a board of examiners who have found and declared us qualified to act as chemists and druggists, the Western Chemists’ Association in solemn conclave has discovered that the examiners are wrong, and we are not qualified to manage our own pharmacies.” This is a serious matter, and what individual member of that Association would accept this statement as applied to himself? Poisons, I take it, are those defined by the Poisons Schedule, and if this motion became law it would be necessary for a chemist to have two establishments, one for dealing in poisons and the other for non-poisons. Nostrums containing poisons which can only be sold by chemists must be kept in one and those that do not in the other. Homœopathic tincture of aconite, 3^x is either a preparation of aconite (Schedule I.) or it is not. If it is it must be kept and sold as a poison, if it is not, the seller is liable to prosecution under the Sale of Food and Drugs Act. Tincture of rhubarb and crude carbolic acid (not a poison within the meaning of the Act) may stand side by side and be accidentally transposed by a chemist whose olfactory organs are deficient. Is it not necessary to be cautious with non-poisons as well as poisons? Or does it not matter whether we give a patient ext. cascara liquid. or tincture of catechu? I hope before the Society agrees to any hard and fast motherly care of its “unqualified qualified members” it will quietly consider the advisability of trammelling the liberty of the subject with impracticable fetters, and thereby rendering itself unpopular.

Tring, Herts, December 24, 1898.

JOHN W. T. MORRISON.

Sir,—At the special general meeting of the Pharmaceutical Society, on January 11 next, a topic of great moment will be discussed. In the interim all chemists should bestow their serious attention upon this measure. In all probability a chain will be forged wherewith to bind us, and it behoves everyone to see that all the links are so fashioned that the least galling takes place. The second clause of recommendations directs that poisons be kept on one of three systems—A, B, or C. I would suggest a combination of the three. It would render the storage of poisons much more amenable and be equally safe and a more convenient plan than to adopt one only of the three systems, especially as pharmacies exist. I would like a fourth clause added, somewhat as follows: “That in the sale of scheduled and unscheduled poisons, liquid poisons, except medicines for internal use, be sent out in the aforesaid distinguishable bottles, mentioned in Clause 3, with labels attached, as directed in Part II. of the Poisons Schedule.” As to what an unscheduled poison is, it would have to be left to the discretion of the seller, but there could be no two opinions as to the poisonous nature of the corrosive acids in their concentrated state and several other potent poisons not in the Schedule. It would be in these cases that I would make it compulsory the poison bottle only should be used.

Harlesden, N. W., December 26, 1898.

J. W. TAPLIN.

Sir,—It is a source of great satisfaction to a conscienceless person to find little or nothing which could in the most remote degree be considered to indicate any anxiety regarding the public safety in all that has recently been said or written by registered chemists on the question of poison regulations. Rather more than twenty-seven years ago we declined to adopt compulsory poison regulations, because it was felt that hard and fast rules would be less in the interest of the public safety than the fact of the registered chemist being a properly trained individual with a due sense of his own responsibility in the matter of keeping and dispensing poisons. Doubtless it would also have been most inconvenient to many of us to have our business arrangements regulated in any way at that time, but there is no occasion to talk much about that. Why should we give ourselves away unnecessarily? Because, as we are told, the Privy Council regards our non-adoption of regulations as a breach of faith, and the permanent officials who speak in the name of that august body have been careful to remind us of the fact from time to time, whilst also interposing obstacles in the way of extending the list of scheduled poisons

and even threatening to seek powers to draft and enforce regulations themselves. More than that, the Privy Council actually drafted a Bill on the subject last session, and though we promptly blocked that, there is not the least doubt that we are somewhat in a hole, the more especially as the company pharmacy difficulty tends to increase rather than diminish. It is a happy thought, therefore, that has occurred to some of us—to adopt poison regulations forthwith, so as to secure the benevolent neutrality, if not the active sympathy, of the Privy Council, with the possibility in the background of Government support for a Bill dealing with the company pharmacy difficulty. The more especially is the idea a brilliant one, since the regulations adopted need not bind us to anything new or compel us to make any difference in our present practice. The object is simply to persuade the Privy Council that we are carrying out the intentions of the Pharmacy Act of 1868, according to the Government official's view of the matter, and whilst carefully avoiding the appearance of hoodwinking the Society's mentors, we must be equally careful not to incommode ourselves in the least. For it must be borne in mind that it is within our power to draft and adopt really effective regulations bearing on the keeping of poisons, such in fact as might prove exceedingly inconvenient to ourselves, though the Privy Council, acting in the public interest, would willingly confirm and approve of them. There is an opinion prevalent, for example, that there is no power under the Act to appoint inspectors, whose duty should be to see that any regulations adopted are properly conformed to. But, as a matter of fact, all we have to do is to adopt a regulation stipulating that the arrangements for keeping poisons shall at all times be open for inspection by officials appointed by the Privy Council or by the Council of the Pharmaceutical Society, and the trick would be done. Why, however, should we be so foolish as to take steps to bring more trouble and worry on our own heads? Such a regulation might, of course, be to the public interest, but think of the inconvenience of it! The recommendations which we are to be advised to adopt as regulations are free from that drawback, and we have it on the authority of Mr. R. A. Robinson and other prominent individuals that their adoption will involve us in no inconvenience whatever. Some people (say, for example, Privy Council officials) might even consider them absurdly insufficient and not worth the trouble of adopting. We need not even trouble to conform to them, as it is only in the extremely improbable event of an accident occurring that we could be compelled to say whether we had done so or not. And though we may have scruples, on ethical grounds, as to the straightforwardness of such a course, why should we worry if our high-minded leaders say that what is must be right? If the adoption of unobjectionable regulations, say they, will ingratiate us with the Privy Council and possibly gain Government sympathy if not active support for a Bill dealing with the company pharmacy difficulty, let us forget that we think qualification superior to regulations and conclude our bargain with Mephisto forthwith. The position is not free from complications, but by doing as we are shortly to be asked to do we shall "appear" to be caring for the safety of the public whether we actually do care for it or not, and the position is therefore one that thoroughly commends itself to

Christmas, 1898.

A CONSCIENCELESS M.P.S. (162/45).

THE ASSAY OF OPIUM.

Sir,—Referring to the short discussion at a meeting of the Liverpool Chemists' Association, reported in your issue of December 17 (p. 653), as to the best method of separating the ethereal liquid from the aqueous in the official process for the assay of opium, I beg to suggest that the following is less troublesome and more accurate than that mentioned by Messrs. Cowley and Hornblower, especially in the hands of students or of men who have not had considerable practice in the use of a pipette. Instead of filtering the aqueous alkaline liquor into a wide-mouth bottle, I filter direct into a short-stemmed, stoppered glass separator—either pear-shaped or cylindrical, preferably the latter—marked at 52 C.c. or 104 C.c., according to the quantity of crude opium I am operating upon. After the addition of the ether, S.V.R., and ammonium chloride, and subsequent separation of the two layers, I draw off the aqueous one into a 100 C.c. graduated measure. Much of the crystallised alkaloid is removed, and the last drop of aqueous liquid is with ease run out. Now decant the ether upon the double filter papers, return the contents of the measure to the separator, rinsing round the last portion so as to include practically all the

morphine. Wash the measure and the contents of the separator with the second portion of ether and repeat the separation in the same way. Finally, after drying the filter papers in the air in the usual manner, run the liquid from the separator into the filter, wash out any adherent crystals of morphine from the beaker with a few C.c. morphinated water, using the washings to rinse out the separator in turn. Of course, in using a syringe or pipette, any aqueous fluid which may be drawn up with the ether can be easily returned to the bottle, but I have found this trifling deviation from the official directions, just mentioned, to be in every way satisfactory and expeditious.

Newcastle-on-Tyne, December 21, 1898.

GEO. E. F. MERSON.

Sir,—The separation of the ethereal layer in the assay of opium was the subject of a note recently read before the Liverpool Chemists' Association by Mr. R. C. Cowley (*ante* p. 653). The method suggested involves the use of an ordinary male syringe, with an india-rubber band covering the cotton packing so as to fit the bore accurately and prevent the adherence of morphine crystals. In the subsequent discussion Mr. Hornblower recommended an ordinary pipette with an india-rubber teat attached, while Mr. A. C. Abraham got over the difficulty attending the separation of the ethereal layer by a liberal use of ether. A device which will be found to be useful in performing the operation, without possessing the disadvantages of the above-mentioned methods, consists simply of an ordinary wash-bottle, slightly modified. In place of a flask a wide-mouth glass bottle should be taken and fitted with an india-rubber cork perforated with two holes, through one of which passes the usual bent glass tube, slightly drawn out to a point, and having the longer arm of such a length that it may be slid up or down to the required level. The second glass tube, bent like the ordinary mouth-piece tube of a wash-bottle, is provided at the end terminating within the bottle with an ordinary slit rubber valve. In use it is only necessary to slide the exit tube to the bottom of the ethereal layer and blow through the other tube. The increased pressure in the bottle forces the liquid through the exit tube, and it may be caught directly on the filter. By arranging the apparatus on blocks at a suitable height the liquids are not disturbed by shaking; as is often the case when a pipette or other instrument is inserted into the liquid by hand. Among other advantages of this device may be mentioned its cheapness and permanence, as well as the speed and thoroughness with which the ethereal layer is removed.

School of Pharmacy, London,

December 23, 1898.

F. A. UPSHER SMITH.

RETAIL CHEMISTS AND THE P.A.T.A.

Sir,—Mr. Glyn-Jones informs your readers that the P.A.T.A. has been considering for two years how best to gather the grocers into the fold. During that time it is strange it did not occur to the Committee what damage they were doing to the chemists. It is all nonsense his now talking of "peculiarly grocery preparations" when he invited them all to stock half the P.A.T.A. drug list. The mischief is now done, and the grocers have been awakened to the fact that it is a simple matter for them to give space to the most saleable patents. To prove what I say is right, let any chemist get a *Grocery Gazette* of December 10, and read the editorial remarks on "Proprietary Articles," as follows:—

As is well known, the grocer's trade in proprietary articles of the character to which particular attention is now drawn in these columns has been very considerably reduced by the action of the Pharmaceutical Society and the decisions that patent medicines and other articles containing poisons may only be sold by a duly qualified chemist, and in drawing attention to a number of articles which do not come within the legal restrictions mentioned above our readers will doubtless find it to their advantage to make themselves acquainted with, and to stock various of the articles.

In looking through this grocer's paper I thought it in keeping with my argument to find the only pill advertisement was the P.A.T.A. Dr. Scott's. I have no *Anti-Cutting Record* (grocery section) for December, and cannot find anyone who has received a copy, and I am very pleased to hear that the P.A.T.A. does not intend bringing this out again, as the grocers have not been sending in the desired subscriptions. I wonder Mr. Glyn-Jones did not give you this good news last week. I have, however, the *Anti-Cutting Record*, which throws such a wonderfully one-sided light on the P.A.T.A. business, and I notice, in comparing this and last month's protected lists, that although there is no reference to their withdrawal, Hall's Wine and Keystone Brand Beef Wine do not now appear. (Is this pending the arrangement of the

grocery list, which was the reason why Mr. Glyn-Jones advised Liebig's Extract to come off?) In regard to this *Record*, I maintain that any chemist who looks at this matter through the spectacles of its editor can do justice neither to himself nor to the public. Their minds must become warped, as some of your correspondents show. In the whole of the paper any reference to the grocers is carefully avoided. As regards Portsmouth, permit me to complete the paragraph that Mr. Glyn-Jones partly quotes, by adding: "and in such places the profits would still have been about the same without the P.A.T.A." An extreme cutter might start here any day, and then this would be added to "the hundred towns" in which Mr. Glyn-Jones has admitted the P.A.T.A. is a failure.

Portsmouth, December 27, 1898.

HERBERT H. BAILEY.

THE EFFECT OF VISITS TO LOCAL ASSOCIATIONS.

Sir,—Referring to your recent visit to Blackburn, I have been conferring with my fellow-chemists here, and have come to the conclusion that if it could be arranged that members of the Pharmaceutical Council could go out frequently and address the various local associations, it would be the means of bringing more members to the Pharmaceutical Society, for we noticed particularly that your visit here proved an attraction and brought together the chemists (as nothing else would except a dinner). Coming together they have become more friendly to each other, and more disposed to co operate to mutual interest. Your visit has been the means of a large increase of members to the Pharmaceutical Society, not only in Blackburn, but also in the neighbouring towns of North-East Lancashire. I wish to express my own pleasure at seeing you amongst us, and it is needless to say that you (or any member of the Council) will be always a welcome visitor at our meetings.

Blackburn, December 21, 1898.

THOMAS CRITCHLEY,
Local Secretary and President
of the N.E.L. Association.

A WARNING.

Sir,—I wish to warn the trade against an individual who appears to be carrying on a systematic swindle. He applied for a situation as assistant in reply to my advertisement at the end of October, and I engaged him early in November. In a most despicable way he got my confidence and sympathy to the extent of my advancing him £3. Though I wanted an assistant as soon as possible, I waited and kept the situation open for him, first, under excuse of his spraining his ankle, and then, that he had to wait and settle affairs connected with his father's business. He said his father was a chemist and had recently died, but I have since heard that he never had anything to do with this business. I found him out about five days ago through a chemist in Bolton and another in Lincolnshire who he obtained money from. His exceptionally lying letters to them disagreed in everything except that he wanted to borrow money to come to me.

Sidcup, Kent, December 21, 1898.

J. R. ROADNIGHT.

ANSWERS TO QUERIES.

Special Notice.—Scientific, technical, legal, and general information required by readers of the 'Pharmaceutical Journal' will be furnished by the Editor as far as practicable, but he cannot undertake to reply by post. All communications must be addressed "Editor, 17, Bloomsbury Square, London, W.C.," and must also be authenticated by the names and addresses of senders. Questions on different subjects should be written on different slips of paper, each of which must bear the sender's initials or pseudonym. Replies will, in all cases, be referred to such initials or pseudonyms, and the registered number added in each instance should be quoted in any subsequent communication on the same subject.

ETYMOLOGY OF BOTANICAL NAMES.—Hooker's 'Student's Flora' and kindred works give the etymology of such names as you refer to. [Reply to A. A.—21/15.]

WALNUT STAIN.—You will probably get the desired colour by mixing Bismarck brown and spirit-soluble aniline black in suitable proportions, but you can buy a walnut spirit stain more cheaply from Williams Bros., of Hounslow. We do not know of any book on the subject. [Reply to GENTIAN.—21/20.]

JURY SERVICE.—No. The exemption only applies to pharmaceutical chemists. [Reply to GENTIAN.—21/21]

USE OF FIRM'S NAME.—Unless you were bound down by any stipulation to the contrary, there appears to be nothing to prevent you doing as you think proper in the matter, but it hardly seems reasonable so to use the name of a firm with whom you only stayed three months. [Reply to AN ANXIOUS ONE.—21/14]

RED BOTTLE.—This Lancashire liniment is composed of ol. origani, 4 drachms; tinct. lavand. co, 2 drachms; ol. tereb., 5 drachms; rectified spirit, 1 pint. Another form, known as Whitworth bottle, is: Camphor, 6 drachms; ol. origani, 6 drachms; rad. anchusæ, 1 drachm; rectified spirit, 20 fl. oz. Macerate four days and filter. [Reply to SPERO.—20/30.]

VINUM COCÆ FROM THE FLUID EXTRACT.—Probably the troublesome precipitate you find is due to your wine being very astringent. Port is not well suited for making coca wine for this reason. Malaga answers better, since it contains less tannin. You can get rid of the tannin contained in the wine by first macerating it for fourteen days with an ounce of gelatin to each gallon, and then filtering it. [Reply to G. E. F.—21/3.]

LABELLING SEIDLITZ POWDERS.—If you label them "Seidlitz Powders" and do not make it clear to each customer that they are not made according to the formula which custom has established as the recognised one, you will incur the risk of a fine if you should be proceeded against under the Sale of Food and Drugs Act. It matters not that the name is not a B.P. synonym. If your labels read: "Improved Seidlitz Powders; not according to the British Pharmacopœia," you would minimise the risk, but even then you would do well not to supply them when "Seidlitz Powders" are asked for. [Reply to FORTIOR.—162/2.]

TOMATO SAUCE.—Take 2½ lbs. of ripe tomatoes, place them in a covered vessel, and digest in the water bath until quite soft. Meanwhile, heat vinegar, 1 pint, to boiling, and pour it on capsicums, ½ oz. When cold, decant. Mash the tomatoes; add to them the decanted vinegar; shallots, bruised, 1 oz.; garlic, bruised, ½ oz.; sugar, 8 ounces; soy, 2 ounces; one anchovy, and salt to taste. Boil the mixture gently, until the garlic and shallots are quite soft, then pulp through a hair sieve. If too thick, thin down with a little vinegar. Some like the addition of a little tarragon vinegar instead of the plain article, but this is a matter of taste. A sliced lemon cooked with the tomatoes may also be considered an improvement. The sauce is fit for use immediately and will keep indefinitely. [Reply to A. R. J.—21/10.]

GINGER WINE.—Loaf sugar, 28 lbs.; soluble essence of ginger, 1 pint; soluble essence of lemon, 10 fl. ozs.; raisins stoned and bruised, 2 lbs.; compressed yeast, q.s.; water, 12 gallons. Boil the water and dissolve the sugar in it while hot; pour out into an open vessel, and when cooled to about 96° F. add the other ingredients, including the yeast. Let stand 24 hours, then transfer to a clean cask and allow to ferment. Agitate once a day for fourteen days, then bung down and bottle off in about six weeks. Another formula is: Bruised unbleached ginger, 1 lb.; loaf sugar, 28 lbs.; 12 lemons; raisins, 8 lbs.; water, 12 gallons. Peel the lemons, boil the ginger, sugar, and lemon-peel with the water for thirty minutes, and pour the hot liquor on to the raisins previously stoned. When cool, add the juice of the lemons and the yeast, then ferment as above. It may be fined with a little isinglass before bottling, and is improved by the addition of a pint of brandy. [Reply to W. A. S.—21/9.]

INFORMATION WANTED.

CASSARITE.—An article bearing the name of "Cassarite" is made by a firm called Beardall and Metcalf. The address of the firm is required.—(J.A.—21/16.)

STAINS.—Particulars are wanted regarding the composition of Stirling's aniline gentian violet stain and Austin's fuchsine stain. Can any reader oblige?—(X. S.—21/17.)



London Report.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

JUNE 30, 1898.

Business has again been exceedingly quiet during the past week the near approach of the turn of the half-year, combined with continued dulness of trade having tended to reduce transactions to a minimum. The changes in value which have taken place have also been comparatively unimportant. Opium is dearer. Quinine after being active, has again relapsed slightly. Bromides have been reduced in price. Quick-silver and Mercurials, Iodine and Iodides, Bismuth and Salts are firm. Cod-liver Oil very quiet. Glycerin firm. Cocaine rather easier. Acetanilide, Phenacetin, and Sulphonal unchanged. Morphia and Codeia quiet. Borax and Acid Boracic without change. Acid Citric and Acid Tartaric firm. Cream of Tartar steady. The following are prices ruling for articles of chief interest:—

ACETANILIDE.—Second hand sellers appear to be getting cleared out. Makers' price remains at 1s. 2d. to 1s. 3d. per lb.

ACID BORACIC.—Unchanged at 23s. per cwt. for crystals and 25s. per cwt. for powder.

ACID CARBOLIC.—Is steady, the best make being still quoted 7d. per lb., for 35 to 36° C. *ice crystals* in 2½ cwt. drums and overcasks. 39 to 40° C. ditto 7½d., and 39 to 40° C. *detached crystals* 8½d. per lb. *Crude* 60° F. 2s. 1d. per gallon; 75° F. 2s. 6d. per gallon. Liquid 95 per cent. of pale straw colour 1s. 2d. to 1s. 3d. per gallon, in 40 gallon casks.

ACID CITRIC.—Is firm at 1s. 1d. per lb. on the spot for crystals in large bulk.

ACID OXALIC.—Steady at 3½d. per lb. for quantity delivered free in London.

ACID TARTARIC.—Continues firm at 1s. 1d. for *English* crystals on the spot; *foreign*, 12½d. per lb.

AMMONIA COMPOUNDS.—*Bromide* lower at 2s. 1d. per lb. *Iodide* steady at 14s. 6d. per lb. *Oxalate* unchanged at 6d. per lb. *Sulphate*, £9 10s. per ton for grey 24 per cent. *Carbonate*, 3d. to 3½d. per lb., according to package. *Sal Ammoniac*: Sublimed firsts, 35s. per cwt.; seconds, 33s. per cwt. *Muriate*: Refined white, chemically pure, B.P., 30s. per cwt.; 98 per cent., 26s. per cwt.; ditto, large crystals for batteries, 27s. 6d. per cwt. *Sulphocyanide*, 1s. 1d. to 1s. 2d. per lb.

ATROPINE.—Firm at 17s. 10d. per oz. for the *pure*, and 15s. 6d. per oz. for the *Sulphate*.

BALSAM COPAIBÆ.—1s. 7d. to 1s. 9d. per lb. is asked for good *Maracaibo*.

BALSAM PERU.—Holders ask 9s. 3d. to 9s. 6d. per lb.

BALSAM TOLU.—1s. 8d. is the price asked.

BISMUTH.—Without change at 5s. per lb. for the *metal* and 4s. 10d. per lb. for the *Subnitrate* in 5-cwt. lots.

BLEACHING POWDER.—Steady at £7 5s. per ton on the spot.

BORAX.—Is very quiet, and *crystals* can be had at 13s. 6d. per cwt., and *powder* at 14s. per cwt.

BROMIDES.—A rearrangement of European prices has been made in order to equalise the quotations of each country, and from to-day the following will be the new prices: Potass. bromide, 1s. 9½d. per lb. Sodii bromide, 2s. 0½d. per lb. Ammon. bromide, 2s. 1d. per lb. for ordinary small quantities,

with the usual reductions for larger lots. Our readers will note from the odd halfpennies how closely the new quotations have been calculated.

BUCHU LEAVES.—There has been some inquiry this week, but holders are asking long prices, which, for the moment, prevents business. Good green rounds are held for 5½d. to 6d. per lb.; yellowish, 4½d. to 5d. per lb.

CAMPHOR.—Market is very quiet at unchanged prices both for *crude* and *refined*.

CASCARA SAGRADA.—Is quiet but firm at about late prices, the anticipated rise having so far not taken place, owing, it is believed, more or less to the fact that there has been so little business doing in the article during past week or two. For old bark 25s. to 27s. 6d. per cwt. is asked, and even 30s. for fine, but last year's bark could be obtained in limited quantity at 22s. 6d. to 24s. per cwt., according to quality and quantity.

CLOVES.—Privately the market for *Zanzibar* is stronger; spot business done at 3½d., and buyers October to December delivery at 3¾d. At auction 465 bales *Zanzibar* bought in at 3¼d. to 3½d., except 25 bales ordinary mixed, which were sold at 2½d. 6 cases dull *Ceylon* bought in at 5d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol* commercial 1s. 5d.; pure, 3s. per gallon. *Benzole*: 50 per cent., 1s. 2d.; 90 per cent., 1s. 1d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C., 6d. *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 8d.; 90 per cent. at 160° C., 1s. 4d.; 90 per cent. at 190° C., 1s. 3d. per gallon.

COCAINE.—Market is quiet but steady at 9s. 3d. to 9s. 9d. per oz., according to quantity and brand.

CODEIA.—Firm at 11s. 3d. to 11s. 9d. per oz., for *pure*; the *salts* being 1s. per oz. less.

COD-LIVER OIL.—Very quiet, price for best new non-congealing *Norwegian* oil in tin-lined barrels is nominally 82s. 6d. to 90s. per barrel. In *Newfoundland* oil there is nothing doing.

COLOCYNTH.—Further arrivals have taken place, mainly of small *Turkish* apple which are being sold in a retail way at 11d. to 11½d. per lb. Good bold pale apple is held for 1s. 1d. to 1s. 2d. per lb.

CREAM OF TARTAR.—Is fairly steady with, however, but little business passing. First white French *crystals* are quoted 71s. 6d. per cwt.; *powder*, 73s. 6d. to 74s. per cwt. The higher strengths, now in more inquiry in order to comply with the requirements of the new B.P., are firm at 82s. per cwt. for *crystals*, and 82s. 6d. per cwt. for *powder*.

CUTCH.—Holders are firm but business has been on a very small scale. *ACL* held for 24s. 6d. per cwt.

ERGOT OF RYE.—Really good sound Spanish is scarce, and holders ask high prices up to 1s. 4d. per lb., while for sound *Russian* price is 10d. per lb.

ESERINE (PHYSOSTIGMINE).—Price of the *pure* is 4s. per gramme, and of the *Sulphate* and *Salicylate* 3s. per gramme.

GLYCERIN.—Is firm at 53s. to 65s. per cwt. for *German* white double-distilled chemically pure 1260° quality in tins and cases, according to quantity and brand, *English* being obtainable at rather less money.

GINGER.—*Cochin* continues flat, and 566 bags rough were mostly bought in; washed at 22s. to 25s., only 95 bags washed rough being sold at easy rates; ordinary dull, 21s.; fair, 23s. Of cut kinds 17 cases sold; medium and small limed native half-cut at 44s.; 200 bags limed *Japan* sold at 15s. 6d. to 16s.; 1 barrel *Jamaica* sold at 79s.

GOLDEN SEAL ROOT.—The bale reported as being sold at 1s. 3d. per lb. last week "without reserve" should have been stated as heavily sea damaged. Sound root on the spot is worth 2s. per lb.

GUM TRAGACANTH.—The market is firm with, however, but a small trade doing. Such business has been mainly in fourths and lower qualities at £9 10s. per cwt. downwards.

IODIDES—Firm at unchanged prices, viz., 9s. 9d. to 10s. 3d. per lb. for *Potass. Iodide*, 13s. 4d. to 13s. 7d. for *Iodoform*, and 7½d. per oz. for *Iodine*.

IPECACUANHA.—A new arrival of 87 bales from Brazil comes to strong hands, and no reduction in the quotation has taken place. So far nothing can be got under 9s. per lb., and for good bold 9s. 2d. to 9s. 3d. per lb. is asked. *Carthagera* is quiet at about 5s. per lb.

JALAP—Is inquired for. Holders ask 6d. per lb. for fair heavy, but small root.

JAPAN WAX—Continues in very slow demand with a small business in good pale squares at 34s. per cwt.

LITHIA—Is firm at 10s. 8d. per lb. for the *Carbonate* in 2 cwt. lots; 6s. 8d. per lb. for *Citrate crystals*, and 7s. 2d. per lb. for the *Citrate powder*.

MENTHOL—August to September shipment by steamer is held for 6s. 6d. per lb. *c.i.f.* There are buyers at 6s. 3d. Spot price, 6s. 10½d. to 7s. per lb.

MERCURIALS—Firm at 2s. 9d. per lb. for *Calomel* and 2s. 5d. per lb. for *Corrosive sublimate* in quantity.

MORPHIA—Is steady, makers still quoting 4s. 6d. per oz. for the *Hydrochlorate powder* in quantity and in bulk, although in face of the continued rise in value of *Opium* price of *Morphia* should certainly be dearer.

NITRATE OF SILVER.—Price ranges from 1s. 5d. to 1s. 5½d. for *crystals*, according to quantity, the sticks being dearer in proportion.

NITRATE OF SODA—Steady at £7 12s. 6d. to £7 15s. per ton for commercial, and £7 17s. 6d. to £8 per ton for refined.

OILS (ESSENTIAL).—*Star Aniseed*: Very little doing, quotation 6s. 9d. per lb. *Cassia*: For 75 to 80 per cent. cinnamic aldehyde 4s. 7d. per lb. has been paid. *Citronelle*: Quoted 1s. 2d. per lb. *Peppermint*: American slow of sale. HGH has been done at 5s. 6d. per lb. in large lots. Wayne County quoted 3s. 6d. to 3s. 9d. per lb., according to quantity in bulk packing. Japan dull at 3s. per lb. for dementholised and 4s. per lb. for 40 per cent. menthol contents. *Lemongrass* remains quiet but steady.

OILS (FIXED) AND SPIRITS.—*Linseed*: The market has again fallen during the week, but closes steadier at £16 7s. 6d. for spot pipes, and £16 17s. 6d. for barrels, Hull dealer at £16. *Rape*: Dull and rather easier at £22 for ordinary brown on the spot, with refined at £23 10s. *Cotton* dearer, and closes firm at £13 17s. 6d. for London crude spot, and £15 10s. to £16 for refined, according to make. *Olive*: Ordinary green oils steady at £33. *Coconut* quiet at £24 10s. for Ceylon pipes, hogsheads £25 10s. *Cochin*: Spot nominally worth £29 10s. *Palm* lower at £23 *Turpentine* lower at 21s. 3d. per cwt. for American spot, July to December 20s. per cwt. *Petroleum Oil* dull, Russian spot 4½d. per gallon, American 5½d. per gallon. *Petroleum Spirit*: American 5½d.; deodorised 6d. per gallon.

OPIMUM.—Market is very firm, price in *Smyrna* being about 6d. per lb. higher than parity on this side. Here we quote fair *Druggists* 10s. 6d. to 11s. 6d., fair to good *soft shipping* 11s. to 12s. 6d. *Persian* 11s. 3d. to 12s. 3d. per lb., while everything would appear to point in the direction of possible higher prices in the autumn.

PHENACETIN—Quiet at 3s. 9d. to 4s. 3d. per lb., according to make, Bayer's *phenacetin* being still held for the fancy price of 14s. 3d. per lb. in bulk packing.

PERMANGANATE OF POTASH—Continues in demand, price being unchanged at 62s. 6d. per cwt. for *small crystals*, and 67s. 6d. per cwt. for *large crystals*, large lots being obtainable at rather less money.

PILOCARPINE.—Makers still quote 33s. per oz. for 1 oz. lots, price for larger quantity being cheaper.

POTASH COMPOUNDS.—*Chlorate*: Price for early delivery, 3½d. per lb. *Bichromate*: 4d. per lb. *Prussiate*: *Yellow* firm at 6¾d. to 7d. per lb., *Red* 1s. 2d. per lb. *Bicarbonate* unchanged at 30s. per cwt. for crystals or powder. *Bromide* is slightly lower at 1s. 9½d. per lb. *Iodide* steady at 9s. 9d. to 10s. 3d. per lb. according to quantity. *Carbonate*: Pure B.P. 55s. to 60s. per cwt., refined 80 to 82 per cent. 17s. per cwt. *Cyanide* is scarce on the spot at 1s. 2d. per lb. for the 98-100 per cent. cake. *Permanganate* steady at 62s. 6d. to 67s. 6d. per cwt. for small and large crystals respectively.

QUICKSILVER—Is firm at £7 12s. 6d. per bottle from importers and £7 12s. from second hands.

QUININE.—Market, after being somewhat active, 10d. per oz. having been paid for good second-hand *German* brands in 100-oz. tins and cases and for 1000-oz. lots, has since quieted down. There are, however, few sellers below above price. Makers still quote

10d. per oz.; decline, however, to sell to speculators, or, in fact, to anyone except to their regular wholesale customers.

SANTONIN—Unchanged at 4s. 5½d. per lb. in 3 cwt. lots.

SHELLAC.—There is a small but steady demand for spot goods at full rates. For arrival the market is firm, with buyers of *T N* orange, April to June steamer, at 66s. 6d. cwt.

SODA COMPOUNDS—*Crystals* remain firm at 55s. to 57s. 6d. per ton ex ship "Thames." *Ash* is dearer at £5 5s. to £5 15s. per ton according to strength and package. *Bicarbonate*: The commercial 98 per cent. is steady at £7 5s. to £7 10s. per ton, whilst the chemically pure free from mono-carbonate is unchanged at 18s. 6d. per cwt. *Caustic*, 70 per cent., £8 5s. per ton; 60 per cent., £1 per ton less. *Bromide* lower at 2s. 0½d. *Iodide* unchanged at 11s. 7d. per lb. *Sulphide*, for tanners' use, £7 5s. per ton.

SPICES (VARIOUS).—*Black Pepper*: 29 bags Malabar sold at 4½d. to 4¾d. *White Pepper*: Penang bought in at 7¾d., and Siam at 8d. Of Singapore 50 bags sold, fair 7¾d., good bold bright, 8½d. *Chillies*: 5 cases good Japan sold without reserve at 34s. 6d. *Cinnamom Chips*: 16 bags Ceylon sold at 4¾d. *Mace*: 32 cases Penang bought in, pickings 1s. 5d., low middling red 1s. 9d. 7 boxes Singapore bought in at 1s. 9d., 1 box West Indian sold at 1s. 5d. *Nutmegs*: dull, 38 cases Penang bought in, 65's at 2s. 5d., 80's at 1s. 10d., 108's at 1s. 3d.; 84 boxes Singapore sold, 114's at 1s. 2½d., 150's partly shrivelled 9½d., shrivelled 6d.

SUGAR OF LEAD.—*Foreign* is very firm at the late advance to 27s. 6d. per cwt. *English* 30s. to 31s. per cwt.

SULPHATE OF COPPER—Is very dull of sale, and quotations on the spot are easier at £15 to £16 per ton, according to brand.

SULPHONAL—makers continue to supply in limited quantities at 7s. 3d. per lb. for bulk packing.

SULPHUR—Is firm. *Foreign* roll 6s. 6d. per cwt., *Foreign* flowers 7s. per cwt., *English* roll 7s. 6d., per cwt., *English* flowers 9s. per cwt.

TURMERIC.—Whilst business is limited, holders continue very firm, and for *Bengal* finger 17s. 6d. per cwt. has been paid, 23s. per cwt. for fair *Madras* finger, and 19s. 6d. per cwt. for fair pale *Madras* bulb. *Cochin* split bulbs are held for 9s. 6d. to 10s. per cwt.

Newcastle Chemical Report.

JUNE 29, 1898.

Whilst prices are stationary, a shade more business found to be passing, but principally against shipping orders. Soda Crystals for the Channel ports are in more request, and Sulphur moving with a better tone. Prices are:—Soda Crystals: 45s. to 52s. 6d. Bleaching Powder: £6 5s. to £6 10s. Caustic Soda: 70 per cent., basis, £7 5s. to £7 10s. Soda Ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. Sulphur: £5 per ton.

Liverpool Market Report.

JUNE 29, 1898.

During the week large sales of Chilian Honey have taken place at fully recent rates, besides miscellaneous transactions in West African Ginger, Chillies, and South American Beeswax at satisfactory prices. The indication of higher rates for Calcutta Castor Oil mentioned a short time since has been confirmed, and at present a very steady tone characterises the market. Cottonseed Oil and Spirits of Turpentine are both lower in price, but Spanish Olive Oil has advanced 7s. 6d. per tun. The trade in heavy chemicals from Liverpool is very depressed, and prices generally may be regarded as nearly nominal.

AMMONIA SULPHATE—Is a turn firmer; £9 3s. 9d. to £9 5s. per ton.

BEESWAX.—Peruvian has been sold at £7 2s. 6d. to £7 7s. 6d. per cwt.

CANARYSEED.—Turkish is quoted at 25s. to 26s. 6d. per 464 lbs., but the demand is very circumscribed. A parcel of Spanish seed sold at 35s. per 464 lbs.

CHILLIES.—Sierra Leone fruit has found buyers at 40s. per cwt.

CREAM OF TARTAR—Is in quiet demand at 78s. 6d. per cwt. for "finest white."

GINGER.—32 bags of Sierra Leone brought 17s. 6d. per cwt.

HONEY.—Good sales of Chilian are reported—some 200 barrels in all—at 27s. to 28s. per cwt. for Pile X, 24s. for Pile 1, 22s. for Pile 2, and 21s. for Pile 3.

LINSEED.—No sales are reported, though buyers might have Calcutta out of store on easier rates than those obtained of late.

OILS.—*Castor* has commanded a good share of attention, and Calcutta "good seconds" cannot be had here under 3½d. per lb. French 1st pressure is quoted at 3½d. to 3¾d., and Madras at 3½d. per lb. *Olive*: Early in the week Spanish oils ranged from £28 10s. to £29 10s. per tun, but an advance of 7s. 6d. per tun has since taken place. *Linseed*: Liverpool pressed is steady at 18s. to 18s. 6d. per cwt. *Cottonseed* is extremely slow of sale at 15s. 9d. to 16s. 3d. per cwt. *Spirits of Turpentine* has rapidly subsided to 22s. per cwt., owing to recent large arrivals in port.

POTASH AND SODA SALTS—Unchanged since last report.

Manchester Chemical Report.

JUNE 29, 1898.

There is again a poor report concerning heavy chemicals, except perhaps Ammonia, Alkali and Soda Crystals, which are firm. Bleaching Powder is quotably 2s. 6d. lower, and ranges from £5 2s. 6d. to £5 7s. 6d. per ton soft-wood casks on rails. Bicarbonate of Soda is steady. Owing to a reduction in freights, and a better supply, American Brown Acetate is lower at £5 5s. per ton *c.i.f.* Welsh varies from £5 5s. to £5 10s. at station, Manchester, 2s. 6d. less delivered by canal. Benzols are unchanged, but Naphthas are scarce, Miscible being scarcely obtainable at even 4s. 3d. per gallon. Sulphate of Copper is dull at £16 10s. to £16 15s. per ton best brands here. Green Copperas rules firm and is in good inquiry at late rates. Yellow Prussiate scarce at 7d. per lb. for best Lancashire make.

News in Brief.

EDINBURGH DISTRICT CHEMISTS' GOLF CLUB.—The third competition this season for the Gibson Handicap Medal was played last week over the Braids course, with the following results:—1st, A. C. Kirkpatrick, 93 (scratch); 2nd, W. C. Baker, 107 less 12 equals 95; 3rd, Jas. Stott, 95 plus 6 equals 101.

APPLICATIONS are invited from pharmaceutical chemists for the post of Senior Dispenser at University College Hospital. The salary is £150 per annum and half the fees paid by dispensing pupils. Further particulars may be obtained from the advertisement which appears in this issue.

PHOSPHORUS POISONING.—At Gloucester last week Messrs. Moreland & Sons, match manufacturers, were summoned by the local Inspector of Factories for failing to notify a case of necrosis and one of phosphorus poisoning which had occurred at their works. The first summons was dismissed, it being shown that the defendants had not been made aware of the fact. On the second a technical offence was admitted, and a fine of 10s. and costs £2 6s. 6d. was imposed.

THE NEW VOLUME of the Badminton Library on "Rowing," by R. P. P. Rowe and C. M. Pitman, contains an additional chapter on "Punting" by P. W. Squire.

OWENS COLLEGE, MANCHESTER, has now a separate library building and an adequate college hall, two things, which until Wednesday, June 22, it lacked. The Duke of Devonshire opened the new buildings, which have been presented to the college by Mr. R. C. Christie.

MANCHESTER COLLEGE OF PHARMACY.—On Saturday last the students of this College paid a visit to the Botanical Section of the Manchester Museum, where an interesting lecture on the life-history of the principal cryptogams was delivered by Mr. F. Pilkington Sargeant, Ph.C. The party afterwards proceeded to the Royal Botanical Gardens, Old Trafford, where the various medicinal plants were described in detail, and an examination was made of the splendid collection of orchids. The natural order

beds, which abounded with specimens of interest to the pharmacist, were then reviewed, a hearty vote of thanks to Mr. Sargeant concluding a very pleasant and instructive afternoon.

BIRMINGHAM DRUGS TESTED.—The City Analyst for Birmingham has issued a report dealing with the first quarter of the year, in which he states that of nine samples of compound tincture of benzoin submitted, three were found to be adulterated. One was deficient in solid ingredients to the extent of 23 per cent., and the vendor was cautioned. Another was adulterated with 20 per cent. of water and 25 per cent. of glycerin, as well as being deficient in solid ingredients to the extent of 65 per cent. In this case the vendor was fined £1 and 9s. costs. In the third case there was a deficiency of 16 per cent. of solid ingredients, and a caution was administered. Four of five samples of tincture of iodine were of the correct composition. The fifth contained 17 per cent. of iodine in excess of the proper quantity. No action was taken, as the vendor was prosecuted in respect of one of the samples of benzoin already referred to. Of eight samples of tincture of rhubarb analysed, seven were of satisfactory quality. One contained a little suspended vegetable matter, but was otherwise of the correct composition.

IRISH PHARMACY ACT CASES.—On June 23, a Petty Sessions Court, consisting of Mr. H. Turner, R.M., Mr. Chesterton, and Mr. R. Garstin, sat at Castle Bellingham, County Louth, to hear summonses at the suit of Police Sergeant M'Donagh, Inspector of Weights and Measures for the police district of Castle Bellingham, against two traders of the town—Mr. James Gannon and Mr. Stephen Butterly—for "keeping open shop for retailing and dispensing poisonous compounds within the meaning of the Poisons Act of 1870, and selling and retailing and dispensing a poison contrary to the Pharmacy Act (Ireland), 1875, defendants not being properly qualified to do so." The first-named defendant had sold a bottle of "Calvert's carbolic acid" and a bottle of "M'Dougall's sheep dip" to complainant; and Mr. Butterly had sold a tin of "Medcalf's cough syrup and elixir" to a police-constable named David Coughlan. In the first case it was urged for the defence that for twenty-seven years after the passing of the Act carbolic acid was not considered to be a poison under the Act, and it was only last year that it was made so by being scheduled in the *Gazette*, which was never seen by country shopkeepers. As a matter of fact, the sale of the bottle was quite unintentional, as it was only intended for Mrs. Gannon. An assistant in the shop of Mr. Gannon said he had given the bottle to Sergeant M'Donagh by mistake, thinking it was on the premises for sale, while in reality it was for Mrs. Gannon's private use. The Bench imposed a fine of £5 for this offence. The other summons with reference to M'Dougall's sheep dip was withdrawn by Mr. Day. The summons against Mr. Butterly was then gone into in reference to the selling of "Medcalf's cough syrup and elixir," and the offence being held proved, a fine of £5 was inflicted on defendant.

MESSRS. C. J. HEWLETT & SON'S staff and employes held their annual excursion on Saturday, June 25, when a large party went to Eastbourne. Several of the staff in the morning paid a visit to Beachy Head, where lunch was provided. Dinner was served at the Pier Hotel in first-class style; the toast of the firm was proposed by Mr. S. Hale, and responded to by Mr. E. J. Tucker, Chairman. In the afternoon arrangements were made to visit Pevensey Castle. After tea the return journey was safely accomplished and London reached by 11.30. Thanks to the splendid weather and the liberal arrangement, a most enjoyable day was spent.

ACCIDENT TO A BIRMINGHAM CHEMIST.—An unfortunate accident happened on Saturday to Mr. Wm. Adams, chemist, Dudley Road, Birmingham. Whilst engaged in the cellar, Mr. Adams handled a bottle containing spirits of collodion, when it suddenly burst and the contents ignited. Mr. Adams was severely burned about the hands and arms, and the flames quickly got hold of the goods stored in the cellar. A number of policemen were quickly on the spot, and succeeded in extinguishing the flames. Being members of the St. John Ambulance Association, they were also able to render Mr. Adams first aid.

EXCHANGE

Offers & Wants

OFFERED.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

Books.

'Year-Books of Pharmacy,' 1879 to 1897. Nest of 66 Drawers (painted), 13 ft. by 3. Wanted, Safe.—J. E. Allenby, Hemsley.

Two vols. 'History Scotland,' 2s.; 4 vols. Boyle's Works, 15s.; 1 vol. Humfrey Davy's Works, 5s.; 'Billiards' (Captain Hawley), 1s.; Wat Tyler, Pierce Egan, 5s.; 'Guide to Soap-making,' 1s. 6d.; Sykes' 'Hydromotor,' 30s.—Garforth, Chemist, Sheffield.

Miscellaneous.

Magic Lanterns, second-hand; triples and binoculars; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Complete Fittings for Chemists' Shop, new and good, sell whole or part.—Apply, Business, 64, Linthorpe Road, N.

WANTED.

Upright Case for front of desk on counter, about 25 by 25 in.; need not be plate glass; must be cheap. Particulars to—"Chemist," 1, Archer Street, Bayswater.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

Trade Notes.

SOUTHALL BROS. AND BARCLAY, LTD.—We learn that the shares in this company have been applied for several times over, and that letters of allotment and regret will be issued on Monday next.

MESSRS. BARCLAY & SONS, LTD., of Farringdon Street, have introduced, under the name of "The Komphy," a useful appliance for lady cyclists. It consists of two inflated rubber pads, joined by a band, and to be attached to the corset. This appliance, which retails at 7s. 6d., has been devised by a lady cyclist for comfort in riding and to prevent undue pressure.

THE "VALTINE" MEAT GLOBULES, referred to last week, are, it should be stated, the invention of Mr. Charles R. Valentine, who has for some years been connected with the manufacture and handling of extract of meat in bulk from our Australian colonies, and who delivered an important lecture on "The Preparation of Meat Extracts" before the Society of Arts in March last.

MESSRS. BURROUGHS, WELLCOME AND Co. submit specimens of their bismuth subgallate tabloids, each of which contains 35 grains. The internal administration of bismuth subgallate has lately received considerable attention, the compound having been favourably reported on in various forms of diarrhoea and in fermentative dyspepsia. Bismuth subgallate is insoluble in water or alcohol, and it is best administered compressed and in a dry state. The rapid disintegrating property of bismuth subgallate in tabloid form, and its great convenience especially when, as in chronic cases, it is necessary that the doses be taken regularly and for a considerable period, render it a reliable and acceptable form for the administration of the drug.

Receiving Orders in Bankruptcy.

(From the London Gazette.)

Alfred Howell Atkin, physician and surgeon, Theobald House, Rochester, Kent.

Joseph Dallaway, drysalter, 54, Hereford Street, Sheffield.

Owen Mills, drug dealer, 46, High Street, Bethesda, Carnarvonshire.

Advertisement.

(Received too late for Classification.)

NORTH OF ENGLAND HEALTH RESORT.—Light Retail and Dispensing BUSINESS for sale. About 3000 prescriptions yearly at good prices. Corner shop, well fitted and fully stocked. House attached. Satisfactory reason for disposal. Price £800. No reasonable offer refused. Must sell soon. Address, STATIM, "Pharm. Journal" Office, 5, Serle St., London, W.C.

Partnerships Dissolved.

(From the London Gazette.)

Joseph Parkin and Allen Roberts, manufacturing chemists Union Mills, Beck Lane, Heckmondwike (trading as Joseph Parkin & Co.). Debts will be received and paid by Allen Roberts.

Frank Flood and George Robert Fisher, chemists, Leamington (trading as Fisher & Flood). Debts will be received and paid by George Robert Fisher.

Frederic William Skrimshire and Arthur Brumell, surgeons, Morpeth.

Charles Edward Oakeley and Reginald Frederick Tencken, physicians and surgeons, 200, Ivydale Road, Nunhead, London, S.E.

John Senior Boothroyd and Henry Brunton Kitchin, general medical practitioners, Deptford.

Charles Armstrong Sharp and Charles Joseph Allan, trading as chemists and druggists at 36, Newcomen Street, Coatham, Redcar, under style of Sharp and Allan. Debts will be received and paid by C. J. Allan.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Barrett, Baylis, Bott, Brown, Campkin, Chambers, Clarke, Cockburn, Gifford, Goldby, Hacking, Howlett, Hill, Hirst, Hooper, Jackson, Kershaw, Kirkby, Kluge, McKellar, Morgan, Perréds, Pickering, Reynolds, Russell, Suddaby, Thomas, Wavell, Wood, Young.



London Report.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the price quoted and those of the wholesale drug trade.

JULY 7, 1898.

Past week has been characterised by extreme quietness in the Drug and Chemical Trades. Transactions have been limited, while the changes which have taken place are of quite minor importance. Quinine is steady at makers' prices. Quicksilver and Mercurials, Bromine and Bromides, Iodine and Iodides unchanged. Cocaine firmer and expected to be dearer. Acetanilide, Phenacetine and Sulphonal quiet. Eserine (Physostigmine) lower. Borax and Boracic Acid quiet, Acid Citric firm, with higher prices expected. Acid Tartaric and Cream of Tartar steady. Glycerin firm. Cod-liver Oil inactive. Opium firm. Morphia and Codeia steady at unchanged prices, an advance in price being confidently predicted, especially for the former. Cocoa Butter decidedly dearer. Sulphate of Ammonia dull and lower. Following are values of articles of principal interest:—

ACID BORACIC—Steady at 23s. to 24s. per cwt. for *crystals*, and 25s. to 26s. per cwt. for *powder*.

ACETANILIDE.—Makers' price is 1s. 2d. to 1s. 3d. per lb., while there are sellers from second hand at something below these figures.

ACID CARBOLIC.—Best makers still firm at 7d. per lb. for 35-36° C. *ice crystals* in bulk packing, other qualities in proportion. *Crude and Liquid* unchanged from last week.

ACID CITRIC—Very firm at the advance, to 1s. 2d. per lb. for *crystal*.

ACID TARTARIC—Is steady, *English* on the spot 1s. 1d. per lb. for *crystals* and *Foreign crystals* at 12½d.

ACID TANNIC.—Price of the *leviss.* B.P. quality varies from 1s. 7½d. to 1s. 8½d. per lb. in 1-cwt. cases according to quantity and make.

ACID OXALIC—Firm at 3¼d. to 4d. per lb., according to quantity.

AMMONIA COMPOUNDS.—*Bromide* steady at the late reduction to 2s. 1d. per lb. *Iodide* unchanged at 14s. 6d. per lb. *Oxalate* firm at 6d. per lb. *Sulphate* dull and lower at £9 6s. 3d. per ton, for grey prompt 24 per cent. London. *Carbonate* 3¼d. to 4d. per lb., according to package. *Sal ammoniac*: Sublimed firsts 35s. per cwt.; seconds 33s. per cwt. *Muriate*: Refined white chemically pure 30s. per cwt.; 98 per cent. 26s. per cwt.; ditto large crystals for batteries 27s. 6d. per cwt. *Sulphocyanide* 1s. 1d. to 1s. 2d. per lb.

BLEACHING POWDER—Weak at £7 per ton on the spot.

BORAX—Quiet, *lump* at 13s. 6d. to 14s. per cwt., with *powder* 6d. per cwt. more.

BROMIDES—Unchanged from last week at 1s. 9½d. per lb. for *Potass. Bromide*, *Bromine* being still quoted 1s. 11d. per lb. in 20 case lots.

CLOVES.—Privately *Zanzibar* are steady on spot, but rather easier for delivery. Spot business done at 3½d., August to October delivery quoted 3½d., and October to December 3½d.

At auction 309 bales *Zanzibar* bought in at 4d., also 18 cases picked *Penang* at 11d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: Commercial, 1s. 5d.; pure, 2s. 9d. per gallon. *Benzole*: Fifty per cent, 1s. 1d.; 90 per cent, 1s. *Crude Naphtha*: Thirty per cent at 120°C., 5d. *Solvent Naphtha*: Ninety-five per cent. at 160°C., 1s. 8d. per gallon.

COCAINE.—While makers' prices are nominally unchanged at 9s. 3d. to 9s. 6d. for the *Hydrochlorate* in 100-oz. lots, in 25-oz. tins, there is a decided feeling that higher prices will prevail ere long, looking at the actual low price. Buyers will probably do well to cover their future requirements before the anticipated rise takes place.

COCOA BUTTER.—On Tuesday 400 cases (40 tons), Cadbury's sold at an average price of 10½d. per lb, a rise of 1d. per lb. on the June auctions.

CODEIA—Steady at 11s. 3d. to 11s. 9d. per oz. in bulk packing, according to quantity.

COD-LIVER OIL—Is at the moment practically a dead letter, although the time is gradually drawing near when buyers will be thinking of laying in their stock for the coming autumn, winter, and spring. Nominal quotations for the best new non-congealing *Norwegian* oil remain at 85s. to 92s. 6d. per barrel, *f.o.b.*, in 25-gallon, tin-lined barrels.

CREAM OF TARTAR—Is quiet, but very firm at 71s. 6d. per cwt. for *First White crystals* on the spot; *B.P.* quality is strong at 82s. 6d. per cwt. for *crystals*, and 85s. per cwt. for *powder*.

ESERINE (PHYSOSTIGMINE).—The three makers who had agreed amongst themselves to advance the price to 3s. per gramme for the *Sulphate* and *Salicylate*, and 4s. per gramme for the *Pure*, have as suddenly reduced their price to 2s. and 3s. per gramme respectively. No reason is given for this reduction, which may, however, be fairly assumed to be due to the fact that the previous high prices were hardly justified by the cost of the raw material and of manufacture. It remains to be seen how long present prices will be maintained.

GINGER—*Cochin* continues dull, and of rough kinds only 240 bags sold at easier rates; cuttings 12s. 6d., rough ends 15s., common washed rough 19s. 6d., fair washed rough 21s. to 22s. Of cut kinds, 34 cases ordinary B cut sold, without reserve, at 60s. *Jamaica* also sold at lower rates, low middling dull to middling 73s. to 78s., good middling to good 80s. to 84s., fine in half-barrels 92s.

GLYCERIN—Is very firm at 55s. to 65s. per cwt., according to brand. *German* white, double distilled, chemically pure 1260° quality in 2-cwt. cases, 4 by 56-lb. tins in a case. *English* being obtainable at rather less money.

GUM TRAGACANTH.—For medium and lower grades the demand is very good, and fair sales have been made at full values. Quotations range from £13 10s. for firsts down to £7 10s. for yellow.

IODIDE.—Without change at 10s. 3d. per lb. for *Potass. Iodide* and 13s. 7d. per lb. for *Iodoform*. *Iodine* is still quoted 7½d. per oz.

JAPAN WAX—Quiet at 34s. per cwt., but no buyers thereat.

MERCURIALS—Unchanged at prices quoted last week, viz., 2s. 5d. per lb. for *Corrosive Sublimite*, and 2s. 9d. per lb. for *Calomel*.

MORPHIA—Still without change at 4s. 6d. for the *Hydrochlorate salt* in powder.

OILS (ESSENTIAL).—*Peppermint* very quiet, American *H G H* slow of sale at 5s. 6d. to 5s. 7½d. per lb. *Wayne County*, 3s. 8d. to 3s. 9d. per lb. *Star Aniseed* slow of sale, 6s. 9d. per lb. *Cassia*, 4s. 7d. to 4s. 8d. per lb. for 75 to 80 per cent. *Cinnamic Aldehyde*. *Lemongrass* firmer at 4½d. per oz. on the spot. *Citronelle* steady at 1s. 1d. per lb. for drums and 1s. 2d. per lb. for tins,

OILS (FIXED) AND SPIRITS.—*Linsced* quiet and shade easier. On the spot, pipes, London, £16 17s. 6d. ; barrels £16 15s. *Rape* very dull, and rather lower at £21 10s. for ordinary brown on spot ; refined spot, £23. *Cotton* quiet, London crude spot £13 15s. Refined spot £15 10s. to £16, according to make. *Olive* : Green oils unchanged at £33 per ton. Eating oils quiet at 5s. to 6s. 6d. per gallon. *Coconut* lower at £24, for *Ceylon* in pipes on the spot. *Cochin* spot nominal £29. *Palm* again lower at £22 10s. for Lagos on the spot. *Turpentine* lower at 21s. per cwt. on the spot. *Petroleum* : The oil is quiet at 4½d. per gallon for Russian on the spot and 5½d. per gallon for American. *Spirit* : American 5¼d. per gallon.

OPIUM—Market is firm, prices being a shade harder than last week, a further advance being considered not improbable.

PERMANGANATE OF POTASH.—Quiet at 62s. 6d. and 67s. 6d. per cwt. respectively for *small* and *large* crystals in 1-cwt. kegs.

PHENACETIN—Is quiet at 3s. 9d. to 4s. 3d. per lb. for *cryst.* and *powder*.

PHENAZONE.—Is again being offered at very low prices, down to 14s. per lb. in quantity and bulk for both *powder* and *crystal*. *Antipyrine Knorr* is still firmly held by makers at 2s. 1½d. per oz. in 1-oz. tins.

POTASH COMPOUNDS.—*Chlorate* is steady at 3½d. per lb. on the spot. *Bichromate* : 4d. to 4½d. per lb. *Prussiate* : Yellow dearer at 7d. to 7½d. per lb. ; red 1s. 2d. per lb. *Bromide* firm at 1s. 9½d. per lb. *Iodide* unchanged at 9s. 9d. to 10s. 3d. per lb. *Cyanide* continues scarce on the spot at 1s. 2d. per lb. for the 98 to 100 per cent. cake. *Permanganate* quiet at 62s. 6d. for small and 67s. 6d. for large crystals. *Bicarbonate* : 30s. per cwt. for crystals or powder.

QUICKSILVER.—First hands continue firm at £7 12s. 6d., second hands taking orders at 6d. less.

QUININE—Is quiet with, however, a firm undertone. Makers' price remains nominally 10d. per oz., for the *Sulphate* in 100 oz. tins for 1000 lots, while second-hand holders are firm at this figure, very little being obtainable below 10d., and that not of brands most in favour.

SARSAPARILLA.—*Mexican* is scarce on the spot, but further arrivals are expected ; 5d. to 6d. per lb. is asked on the spot.

SHELLAC.—Demand has not improved since our last ; holders, however, are very firm and prices are well maintained. At the fortnightly sales on Tuesday out of the 281 cases offered only 86 cases sold. *TN* remains unchanged at 64s. per cwt.

SODA COMPOUNDS.—*Crystals* firm at 57s. 6d. per ton ex ship London. *Ash* firm at £5 5s. to £5 15s. per ton, according to strength and package. *Bicarbonate* firm at £7 10s. per ton for the commercial 98 per cent. ; the chemically pure, free from monocarbonate, 18s. 6d. per cwt. *Bromide*, 2s. 0½d. per lb. *Iodide*, 11s. 7d. per lb. *Sulphide* : £7 10s. per ton.

SPICES (VARIOUS).—*Black Pepper* : Lampong bought in at 4¼d., and Tellicherry at 4½d. ; 55 bags good clean Wynaad sold at 4½d. *White Pepper* : 58 bags Penang sold at 7½d. *Chillies* : 20 bales second-class damaged Zanzibar sold at 27s. *Mace* : 7 cases Penang pickings bought in at 1s. 5d. ; 15 packages West India sold at 1s. 4d. to 1s. 6d. *Nutmegs* firm at about previous rates. *Pimento* : 71 bags sold, ordinary grey to fair at 4¼d. to 4½d.

SUGAR OF LEAD.—*Foreign* is very firm at 27s. 6d. per cwt. *English*, 30s. to 31s. per cwt.

SULPHATE OF COPPER—Firm at £15 10s. to £16 10s. per ton, according to brand and quantity.

SULPHUR—Firm. *Foreign* roll, 6s. 6d. per cwt. ; *flowers*, 7s. per cwt. *English* roll, 7s. 6d. per cwt. ; *flowers*, 9s. per cwt.

SULPHONAL—Is still obtainable in limited quantity at 7s. 3d. per lb. in bulk packing.

To DAY'S drug auctions passed off extremely quiet, a very considerable number of the lots offered being bought in, while the changes in price which took place were of practically very little importance, although some were chiefly rather in a downward direction.

AMBERGRIS—Is in good demand, and fine quality is becoming scarce. In the auctions 5 tins together, about 24 ozs., sold subject to owner's approval at 5s. per oz. for black heavy, with sandy coat and of very weak flavour.

ANTIMONY.—40 cases crude *Japan* held for 24s. per cwt.

ANATTO SEED.—3 bags dark sold very cheaply at 1d. per lb.

ASAFETIDA.—29 cases of nicer quality than seen for some time past sold in part at 70s. per cwt. for fine soft pinky almondly block, part loose, being a very cheap lot.

BALSAM COPAIBA.—3 cases fair *Maranham* but rather cloudy were held for 1s. 11d. per lb.

BALSAM TOLU.—7 cases held for 1s. 7d. for good flavour but rather softish.

BIRD LIME.—8 cases *Japanese* sold at 3½d. per lb.

BUCHU LEAVES.—18 bales of good green sold at 4½d. per lb., marking no alteration in value.

CARDAMOMS.—About 250 cases were offered, and sold at irregular but, on the whole, steady prices. Fine bold pale *Mysore* sold at 3s. 10d. per lb. ; good ditto, 3s. 1d. to 3s. 4d. per lb. ; small, 2s. 5d. to 2s. 9d. per lb. ; decorticated, 2s. 8d. to 2s. 10d. per lb.

CASTORUM.—2 small boxes sold at 21s. per lb. for fair thirds.

CINCHONA BARK.—32 bales cultivated flat *yellow bark* sold at 8d. per lb. for sound, down to 3½d. for badly damaged ; 3 bales *Mara-caibo*, small to medium, bought in at 7d. per lb. ; 5 bales, fair, bright chips, *Ceylon Cinchona*, sold at 2d. to 2½d. per lb.

COLOCYNTH.—6 cases Turkish, fair apple, part small and broken, and slightly brownish held for 1s. per lb.

COLOMBO ROOT.—19 bags bought in at 50s. per cwt. for good bold picked washed, 191 bags dark stalky, slightly mouldy, part sold at 16s. per cwt.

COCA LEAVES—4 bales fair green *Truxillo* sold cheaply without reserve at 4d. per lb.

CROTON SEEDS.—1 bag bought in at 75s. per cwt.

CUBEBS—62 bags fair quality, slightly dark, bought in at 30s. per cwt.

CUTTLEFISH.—3 cases sold at 1¼d. per lb. for medium, slightly dark, part small, and 2½d. for fair bold, part broken.

DILL SEED.—56 bags fair quality sold cheaply without reserve at 15s. per cwt.

DRAGON'S BLOOD.—Stocks of this article have fallen very low, and in auction only 1 case dark slabs rather damp was offered, but no one wanted it, at £5—the price asked. *Reed* has been sold privately at £9.

ESSENTIAL OILS.—6 cases *Nutmeg* bought in at 3d. per oz. 14 cases *Cajeput* held for 3s. 7½d. per bottle, part having been sold previously at price which did not transpire. 2 cases *James B. Horner's Oil of Wintergreen* bought in at 5s. 6d. per lb.

GAMBOGE—Is in demand, and privately sales have been made at full rates. In the auctions 10 cases ricey Saigon was held for £5 10s. Good bright broken pipe, but soft and slightly drossy, being held for £8 per cwt.

GENTIAN ROOT.—15 bales held for 19s. 6d. per cwt. for fair small dry part rather dark root.

GUM ARABIC.—Good white grain was bought in at £6 10s. to £7 per cwt. ; fair white picked at £14. 12 bags and 2 cases low *East Indian* gum held for 25s. per cwt.

GUM ELEMI—25 cases fair pale sold at 25s. 6d. per cwt.

GUM BENJAMIN—32 cases low to medium seconds *Sumatra*, bought in at £5 5s. to £6 10s. ; 11 cases *Siam*, sold at 57s. 6d. per cwt. for common blocky siftings.

GUM AMMONIACUM—8 cases good clean blocky, part loose, held for 50s. per cwt.

GUM MYRRH.—Medium to fair sorts held for 50s. to 65s. per cwt., down to 20s. for low and inferior.

HONEY—45 packages *Jamaica*, part sold at 19s. to 20s. per cwt. for a medium quality ; fair *New Zealand* realised 25s. per cwt. ; and fair *Queensland* 21s. per cwt.

IPECACUANHA.—Notwithstanding late arrivals holders of *Rio* continue to demand full prices, seeing which a certain amount of buying took place—6 bales sold at 9s. per lb., and 5 bales at 8s. 11d., being very slightly lower than last auctions. *Carthage* : 11 bales sold at 4s. 9d., 1 bale 4s. 10d. per lb., being slightly easier. Other lots held for 5s. per lb.

KAMALA.—4 cases fair bright bought in at 7d. per lb.

KOLA NUTS.—24 bags bought in at 3d. per lb.

LIQUORICE ROOT.—5 bags each nett about 1 cwt. good cut decorticated bought in at 40s. per cwt.

MENTHOL.—2 cases good white dry crystals, *Kobayashi* brand, were taken out at 7s. per lb.

MUSK.—2 caddies, good pile 3, thin skin, blue, and grey and brown *Tonquin* held for 42s. 6d. per oz. ; 4 caddies ditto low, unsightly, and damp sold at 11s. 6d. to 12s. per oz.

NUX VOMICA—For 114 bags good bold pale *Cochin*, a bid of 9s. 6d. per cwt. was refused, 10s. 6d. per cwt. being asked.

ORANGE PEEL.—22 packages bought in, prices being 5d. per lb. for thick cut, and 8d. per lb. for thin cut.

PATCHOULI LEAVES.—12 bales of fair quality, but slightly musty, were bought in at 4d. per lb.

PODOPHYLLIN RESIN.—36 tins, brand McKesson and Robbins, New York, sold at 7s. to 7s. 3d. per lb.

QUINCE SEEDS.—Good red Cape are firmly held at 1s. 6d. per lb., but this price was not obtainable at the auctions.

RHATANIA ROOT.—6 bales bought in at 6½d. per lb.

RHUBARB.—Good bold round *Canton* held for 1s. 4d. per lb.; ditto second size for 1s. 1d.; good grey trimming root for 1s. 3d.; ditto small part trimming root for 1s. 5d.; 1 case rough pickings round and flat sold for 10d. per lb.; bold flat *Canton* dull coat held for 1s. 8d. per lb.; ditto medium size for 1s. 3d. per lb.; 1 box flat *Shensi* high-dried sold at 11d.; dull coated flat high-dried half grey and dark mixed size held for 1s. per lb., a bid of 9d. being refused: common rough wormy round high-dried held for 6½d. to 8d. per lb., a bid of 6d. per lb. for one lot being declined; fine bold round *Shensi* held for 3s. 3d. per lb.; medium ditto for 1s. 9d. down to 1s. 4d.; bold flat ditto ¾ good, ¼ dark, for 2s. 4d. per lb.

SARSAPARILLA.—2 bales fair *Jamaica* sold at 1s. 8d. per lb.; 3 bales ditto 1CCD at 1s. 6d. per lb.; 7 bales good ditto, part rather coarse, held for 1s. 10d. per lb.; 1 bale red native for 1s. 2d. per lb. 22 bales *Lima* held for 1s. 2d. to 1s. 3d. per lb. 1 bale very rough, catalogued as *Lima*, held for 1s. 1d. per lb. 4 serons good *Honduras* held for 1s. 8d. per lb.

SENA.—Very little *Tinnevelly* from first hands was offered, such as there was being small spotty leaf, which sold at 2d. to 2½d. per lb.; pods, 1½d. per lb. A further arrival of about 150 bales is expected to arrive next week. *Alexandrian*: Siftings of dark colour sold at 2½d. per lb., being cheap.

SENEKA ROOT.—3 bales, very chumpy, being practically all chumps, sold at 11½d. per lb.

SQUILLS.—15 bales bought in at 2½d. for fair pale seconds up to 4d. per lb. for good bold.

STROPHANTHUS SEEDS.—2 bags, fair *Kombé*, bought in at 3s. 3d. per lb.

TONQUIN BEANS.—8 cases *Para*, held for 1s. 9d. per lb., for fair frosted.

VANILLA.—Was in small supply which sold in part at rather firmer rates.

WAX.—50 cases fair *Japan* in squares sold cheaply without reserve at 32s. to 32s. 6d. per cwt. 12 packages *Jamaica* sold at £6 15s. to £7 for fair to good quality. Fair *Australian* bought in at £7 5s. per cwt.

Newcastle Chemical Report.

JULY 6, 1898.

With the exception of more shipping orders passing for new goods there is little new business to report. Sulphur is somewhat scarce, and very firm at quotation. Prices are:—Bleaching Powder, according to market, £6 5s. to £6 10s. Soda Crystals: basis, 45s. to 52s. 6d. Caustic Soda: 70 per cent. basis, £7 5s. to £7 10s. Soda Ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. Sulphur: £5 per ton.

Liverpool Market Report.

JULY 6, 1898.

Business has been of a steady character during the week, though there has not been much variety in the goods handled. Good sales of Ginger have been effected, and two lots of dried Kola Nuts changed hands at recent rates. In Heavy Chemicals there is an improved inquiry, with better tone as regards Sulphates of Copper and Ammonia.

AMMONIA SALTS.—*Carbonate*: 3d. per lb. *Sal Ammoniac*: 33s. to 35s. per cwt. *Sulphate* again dearer at £9 7s. 6d. to £9 8s. 9d. per ton.

BLEACHING POWDER.—Is quiet at £5 10s. to £6 per ton.

CANARYSEED.—Turkish is rather more inquired after, and 250 bags sold for 25s. 6d. per 464 lbs.

COPPERAS.—38s. per ton Lancashire; 36s. Welsh.

COPPER SULPHATE.—£15 17s. 6d. per ton.

GINGER.—Fifty bags good *Cochin* found a buyer of 23s. per cwt., and 720 bags of *Sierra Leone* made 18s. per cwt. in transit.

KOLA NUTS.—Twenty bags dried sold for 1½d. per lb. and 19 packages for 1¼d., both in store.

OILS (FIXED) AND SPIRITS.—*Castor* is very steady; *Calcutta* at 3¾d. per lb., *French 1st pressure* at 3½d. to 3¾d., and *Madras* at 3¾d. per lb. *Olive*: Spanish oils are now subject to an export

duty of 2¼ per cent., which is equal to a rise in price of about 12s. 6d. per tun. *Linseed* is quiet at 18s. to 18s. 6d. per cwt. *Cottonseed* is unchanged in price, and still slow of sale at 15s. 9d. to 16s. 3d. per cwt. *Spirits of Turpentine* is again a turn lower and may be had for 21s. 9d. per cwt.

POTASH SALTS.—*Bichromate*: 3¼d. per lb. *Chlorate*: 3¼d. to 3½d. per lb. *Cream of Tartar*: 78s. 6d. per cwt. *Potashes* are only nominal and very slow of sale at 20s. to 20s. 3d. per cwt. *Pearl-ash* is very slack, both in inquiry and sale, and is quoted at 35s. per cwt. *Saltpetre*: 21s. 6d. per cwt.

SODA SALTS.—*Bicarbonate*: £6 15s. per ton. *Borax*: £12 15s. to £13 per ton. *Caustic*: 70 per cent., £7 5s. per ton; 60 per cent., £6 5s. *Crystals*: £3 per ton. *Nitrate* is steady at 7s. 6d. to 7s. 9d. per cwt.

Manchester Chemical Report.

JULY 5, 1898.

It is almost impossible to accentuate the dulness which prevails in heavy chemicals, for the reports on all hands are that transactions are of a hand-to-mouth character, and in drysalteries only a moderate business is passing. In miscellaneous articles there is a general reduction on last week's prices. Brown Acetate of Lime varies from £5 2s. 6d. to £5 5s. delivered Manchester. Salt Cake is easier at 24s in bulk on rails. Carboic Acid is in better request. Naphthas continue firm and unchanged. Benzols are a trifle lower—90's being quoted 10d., and 50's to 90's 10½d. to 11d. Creosote is moving well at 2½d. Sulphur is scarce, and varies from £4 10s. to £5 per ton, according to delivery. White Powdered Arsenic is dull at £16 10s. per ton ex-ship Garston. Aniline Oil higher at 5½d., and Salt at 5d. Pitch firmer at 17s. 6d. to 18s. *f.a.s.* Manchester Ship Canal. Lancashire Yellow Prussiate firm at 7d. per lb. Green Copperas in fair inquiry at late rates.

Trade Notes.

MESSRS. BURROUGHS, WELLCOME & Co. point out a printer's error in the note referring to their bismuth subgallate tabloids in last week's issue page 24d. Each tabloid contains 5 grains and not 35 grains as printed.

THE WELL-KNOWN BUSINESS of Mr. James Burrough, of the Cale Street Distillery, Chelsea, has been converted into a limited company for family reasons. No shares are being offered to the public.

MESSRS. R. MORRISON & Co., 2, Fen Court, Fenchurch Street, London, E.C., have been appointed the sole agents for the United Kingdom for the old-established and well-known firm of Messrs. Gehe & Co., wholesale druggists and manufacturers of fine chemicals and pharmaceutical preparations, Dresden, Germany.

MESSRS. GEORGE HOUGHTON AND SON, 88 and 89, High Holborn, W.C., send a copy of their 1898 price list of photographic apparatus and materials. It contains nearly 700 pages with a comprehensive index, and is a book of reference that no photographic dealer should be without. The price is 6d. or 10d. post free, but a copy is sent free to professional photographers or dealers on receipt of trade card. The same firm also send specimens of their mounts in various sizes and artistic designs. No daintier mounts could be desired, and chemists interested in the photographic trade should take care to see them.

Partnerships Dissolved.

(From the London Gazette).

J. S. Turner, J. H. Galton, and Donald F. Shearer, Surgeons and Apothecaries, Upper Norwood, so far as regards Donald F. Shearer, who retires. Debts will be received and paid by J. S. Turner and J. H. Galton.

G. H. Ward Humphreys and H. Boyd Cardew, Physicians and Surgeons, Cheltenham. Debts will be received and paid by H. Boyd Cardew.

John P. Little and David Coulthard, Chemists, Druggists, and Drysalterers, The Crescent, Douglas, Isle of Man. Debts will be

received and paid by David Coulthard, who will continue the business in his own name.

B. E. Fordyce and A. F. Wilson, Physicians and Surgeons, Chesterton Road, Cambridge. Debts will be received and paid by B. E. Fordyce.

E. A. Elkington and C. E. Baddeley, Surgeons, etc., Newport, Salop. Debts will be received and paid by E. A. Elkington.

S. Locke and J. W. Ingram, Veterinary Surgeons, 100 and 102, Grosvenor Street, Chorlton-on-Medlock, Manchester. Debts will be received and paid by S. Locke.

Receiving Orders in Bankruptcy.

(From the London Gazette.)

A. J. Grossman, photographer, 18, Effingham Crescent, Dover, and carrying on business at 20, Biggin Street, Dover.

John Lowes, mineral water manufacturer, 6, Oaks Place, Tenterden, Kent.

W. D. Clark, chemist, The Stockhill Drug Stores, Holbeck, Leeds.

News in Brief.

MR. G. S. WEST, A.R.C.S., Scholar of St. John's College, Cambridge, the younger son of Mr. Wm. West, chemist, Bradford, obtained a First Class in the second part of the recent University examination for the Natural Sciences Tripos at Cambridge at the end of his third year of residence. This examination is usually taken at the end of the fourth year.

A TONIC AS A PUNISHMENT.—At Richmond, on June 30, a chemist was fined twenty shillings for making a boy drink water out of a quassia cup. The boy was very much frightened, thought he had been poisoned, and even complained of great pain, though it was shown in evidence that the water was perfectly harmless and could have no other effect but that of a mild tonic. It was administered to the boy as a punishment for swinging on the shop-blind.

THE COURT OF THE PATTERNMAKERS' COMPANY has inaugurated a fund for the purchase and presentation of a badge and chain of office to Lieutenant-Colonel Clifford Probyn upon his election as sheriff of London. Friends of the sheriff-elect are invited to forward their subscription either to Mr. Harry S. Foster, M.P., 46, Finsbury Circus, Hon. Treasurer, or Mr. W. H. Pannell, 13, Basinghall Street, Hon. Secretary of the fund.

CRICKET.—At a match played on Saturday, July 2, between Burgoyne Burbridges C. C. and Allenburys C. C., the latter were victorious by 37 runs, the scoring being 52 against 89.

SILVER WEDDING PRESENTATION.—On Saturday morning, at the Camden Town Works of Messrs. Idris & Co., Ltd., an interesting ceremony was witnessed in the presentation by the employes of a pair of handsome silver candelabra to Mr. and Mrs. Idris in recognition of their silver wedding. The function took place in the yard, where, on their appearance, the assembled employes greeted their chief and his wife with unbounded enthusiasm. Miss White, on behalf of the young ladies of the establishment, having presented Mrs. Idris with a handsome bouquet, Mr. Griffith explained that the presentation had only been suggested on Monday last, but so heartily and unanimously had the idea been taken up that it was easily evident how greatly the staff admired Mr. Idris's sound commercial knowledge, his sense of justice, and his uniform kindness. It was a happy circumstance that the founding of the firm had been almost synchronous with the event they were now celebrating. The workpeople were proud of the public honours their chief had gained, and should he be returned to Parliament, it was no more than his merits warranted. Mr. Simpson and Mr. Hussey then made the presentation, and begged its acceptance as a token of affection and respect, and they trusted the recipients would, for a great many years to come, live to enjoy the great success of the firm during the past quarter of a century. Mr. Idris, on coming forward to reply, was greeted with loud cheers. He confessed that the gift had completely taken him by surprise, although he guessed there was something in the wind when he was asked to bring his wife with him that morning. He did not know

how he deserved their kindness, as his chief function in that building was to act as fault-finder. He was proud of that mark of their kindness to them, and next to the esteem of his own family, he valued that of his fellow-workpeople. Mr. Idris, who spoke with visible emotion, said he had endeavoured under all circumstances to do his duty, and he thanked them from the bottom of his heart for their appreciation. Mrs. Idris, in an eloquent speech, also acknowledged the gift, which she prized more highly than any she had ever received, because it showed that Mr. Idris and herself had undoubtedly found a place in their hearts, and she trusted that the bond of sympathy between them would grow and deepen and not be lightly broken. They would never forget that morning, whether their years were few or many. Not only was the gift subscribed for by the employes of the firm in London, but all the provincial establishments of Messrs. Idris and Co., Ltd., took part in the presentation. During the morning telegrams conveying heartiest congratulations and best wishes were received from the workpeople at the factories in Liverpool, Southampton, etc. The wedding of Mr. and Mrs. Idris took place at Pembroke Dock, in Pembrokeshire, twenty-five years ago, and it is interesting to note that Mr. Adpar Jones, a director of Idris's, who has been associated with the firm from its infancy, was "best man" on that occasion.

MR. A. NICHOLSON, chemist and druggist, of Tunbridge Wells, has been called to give evidence before the Select Committee of the House of Commons on the question of telephonic control. Mr. Nicholson has been in business in Tunbridge Wells for over thirty-five years, and was one of the original subscribers of the Tunbridge Wells Telephone Exchange, and appeared before the Committee as Chairman of the Tunbridge Wells Telephone Subscribers' Committee, as well as on behalf of other local bodies. The Subscribers' Committee was formed in 1895, four chemists being members.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

Miscellaneous.

Magic Lanterns, second-hand; triples and binoculars; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s. —Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

WANTED.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

Perkin and Kipping's 'Organic Chemistry'; Green's 'Botany,' second volume; Benthams and Hooker's 'Flora'; Cross and Cole's 'Modern Microscopy.' State edition, condition, and price. "Chemist," 6, Long Causeway, Peterborough.

Martindale's Extra Pharmacopoeia, eighth edition, in good condition. Lowest price to "Chemist," 147, Holdenhurst Road, Bournemouth.

Will give 4s. 6d. for 'Chemist and Druggist,' posted free for year (Mondays), or exchange 'Pharmaceutical Journal,'—Chemist, Mossley Hill, Liverpool.

Formulae suiting any good toilet specialty; liberal price. Particulars privately to W. Lewis, 15, Shelden Street, Bishop's Road, London, W.

Students' and Chemists' Books wanted for cash. Please supply following particulars:—Edition, date of publication, condition, and price required.—Gower, Publisher, Waterloo, Liverpool.

Advertisements.

(Received too late for Classification.)

SEASIDE engagement wanted, for few weeks, in high-class dispensing business. Qualified. 23. H. J. S., Abbey Villas, Wellowgate, Grimsby.

WANTED, a Qualified Junior ASSISTANT (out-door) accustomed to good-class trade. Apply to JOHN H. MATHER, Pharmacist, Godalming.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Arnott, Attenburrow, Blackburn, Bradbury, Brooks, Brunt, Burrell, Catkin, Clark, Currie, Davy, Elsdon, Fraser, Gardner, Gifford, Gray, Gregory, Hanbury, Hancock, Hill, Hyslop, Ireland, Jennings, Lake, Lambert, Mason, Morrison, Mumbray, Poole, Reynolds, Taylor, Turner, West, Whysall, Williams, Wilson.



London Report.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

JULY 14, 1893.

Business has been somewhat more active during past week, although many complaints are still heard of the dulness of trade in drugs and chemicals. Quinine is fairly steady. Acid Citric and Tartaric and Cream of Tartar firm. Sulphate of Ammonia again lower. Opium, Morphia, and Codeia very firm. Sulphonal and Phenactin steady. Acetanilide weak. Glycerin quiet but firm. Acid Carbolic in good demand at steady prices. Phenazone again lower. Acid Oxalic steady. Borax and Acid Boracic very quiet. Thymol dearer and expected to further advance. The same applies to Orris. Quicksilver and Mercurials, Bismuth and Salts unchanged. Balsam Peru dearer. Ipecacuanha firm. The following are prices actually ruling for articles of chief interest:—

ACETANILIDE—Is very quiet at 1s. 1d. to 1s. 2d. per lb., according to quantity, for bulk packing.

ACID BORACIC—Quiet at 23s. to 24s. per cwt. for *crystal* and 25s. to 26s. for *powder*.

ACID CARBOLIC—Steady at 6¾d. to 7d. per lb. according to make for 35-36° C. *ice crystals* in bulk, other qualities and packing in proportion. *Crude* 60° F. 2s. 1d., 75° F. 2s. 7d. per gallon. *Liquid*: 95 per cent. of pale straw colour 1s. 1d. to 1s. 2d. per gallon, in 40 gallon casks.

ACID CITRIC—Is very firm, and the price of *Lemon juice* justifies a further advance. At present 1s. 2d. per lb. remains the quotation.

ACID TARTARIC—Firm at 1s. 1d. per lb. for *English*, and 1s. 0¼d. per lb. for *foreign*.

AMMONIA COMPOUNDS.—*Bromide* firm at 2s. 1d. per lb. *Iodide* quiet at 14s. 6d. per lb. *Oxalate* unchanged at 6d. per lb. *Sulphocyanide* firm at 1s. 1d. to 1s. 2d. per lb. *Sulphate* again lower at £9 3s. 9d. for grey prompt, 24 per cent., London. *Sol ammoniac*: Sublimed firsts, 35s. per cwt.; seconds 33s. per cwt. *Carbonate*, 3¾d. to 4d. per lb., according to package.

ATROPINE Is firm at 17s. 10d. per oz. for the *pure*, and 15s. 6d. per oz. for the *Sulphate P. B.*

BALSAM CANADA—Steady at 1s. 3d. per lb.

BALSAM COPAIBA—Quiet and tending easier at 2s. per lb.

BALSAM TOLU—Dull and lower at 1s. 9d. to 1s. 10d. per lb.

BALSAM PERU—Is scarce and held for high prices—9s. 6d. to 10s. per lb.

BISMUTH—Unchanged at 5s. per lb. for the *metal*, and 4s. 10d. for the *Subnitrate* in 5-cwt. lots.

BLEACHING POWDER.—Dull of sale at £6 15s. to £7 per ton, according to quantity.

BORAX—Steady but with very little doing. Quotations remain unchanged at 13s. 6d. to 14s. per cwt. for *lump, powder* 6d. per cwt. more.

BROMIDES—Makers quote 1s. 9½d. to *Potass Bromide*, 2s. 1d. for *Ammon.*, and 2s. 0¼d. for *Soda Bromide*. *Bromine* 1s. 11d. per lb. in 20-case lots.

BUCHU LEAVES.—There has been some inquiry this week for fair round green leaves, but the article seems concentrated in few hands, and holders are firm at 5d. to 6d. per lb.

CAMPHOR.—Crude continues dull with easier values. Refiners have therefore reduced their prices 1d. per lb., as follows:—bells, 1s. 2½d. per lb.; blocks, 1-lb., ½-lb., or ¼-lb., 1s. 2½d. per lb.; other sizes at proportionate prices. Flowers in 5 or 10-lb. boxes, 1s. 2½d. per lb.; ditto in 1-lb. boxes, 1s. 3½d. per lb.

CASCARA SAGRADA—Is in better demand and inclined to be dearer, owing to advices that supplies are likely to be small. New bark is held for 22s. 6d. per cwt., whilst for old bark 25s. to 27s. 6d. per cwt., according to quantity, is required.

CLOVES.—Privately *Zanzibar* quiet but firm, spot 3¾d., Oct.-Dec. delivery 3¾d. At auction 80 bales *Zanzibar* sold without reserve, at 3¾d. to 3¾d.; 10 cases *Penang* bought in at 8¾d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: Commercial, 1s. 4½d.; pure, 2s. 9d. per gallon. *Benzole*: 50 per cent., 1s. 1d.; 90 per cent., 1s. per gallon. *Crude Naphtha*: 30 per cent. at 120° C., 5d. *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 9d. per gallon.

COCAINE—Is quiet but steady at 9s. 3d. to 9s. 9d. per oz., according to brand, for the *Hydrochlorate* in 25-oz. tins.

CODEIA.—Makers quote 11s. 6d. to 11s. 9d. per oz., according to quantity. It would appear likely, however, that price will be advanced in the autumn, if not at an earlier date.

COD LIVER OIL.—Slow of sale at 85s. to 90s., *f.o.b.*, for best new non-congealing *Norwegian* oil in 25-gallon tin-lined barrels. For *Newfoundland* oil there is at present no demand.

COLOCYNTH—Market is very quiet, and holders are anxious to make sales. Prices nominally 1s. to 1s. 2d. per lb. according to quality.

CREAM OF TARTAR—Dearer at 73s. per cwt. for white French *Crystals* on the spot. *Powder* 75s. to 76s. per cwt. High strength *Crystals* are very firm at 82s. 6d. per cwt. *Powder* 85s. per cwt.

DRAGON'S BLOOD.—The one case offered in last week's auctions has since been sold at £5 per cwt.

GALLS.—*China* continue very quiet, with a few sales of fair at 54s. per cwt. *Persian* in better demand, with sales of Blues at 54s. per cwt. and Greens at 50s. for fine.

GINGER.—*Cochin* continues flat. Of rough kinds 425 bags sold at easy rates. *Calicut* without reserve at 23s.; fair rough, 22s. 6d. Of 83 cases only 23 cases small native, partly cut, sold at 32s. 6d.; the remainder, native half cut, bought in at 48s. to 50s. *Jamaica* steady; 104 barrels sold; good common, 72s. 6d.; middling to good middling washed, 75s. to 78s.; 12 half-barrels good plump sold at 88s.

GLYCERIN—Quiet but firm at 52s. 6d. to 65s. per cwt. according to brand; for *German* white double distilled chemically pure 1260° quality in 2 cwt. cases and 56 lb. tins. *English* being obtainable at rather less money.

GOLDEN SEAL ROOT—Is lower at 1s. 10d. per lb. to come forward.

IPECACUANHA—*Rio* continues very firm and except for damages it does not appear possible to buy below 9s. per lb., whilst for picked 9s. 6d. per lb. is required. *Carthagena* is also very firm at 5s. per lb. with a rather better inquiry.

IODIDES—Continue in good demand at 9s. 9d. to 10s. 3d. for *Potass. Iodide*, and 13s. 4d. per lb. for *Iodoform*. Price of *Iodine* is 7½d. per oz.

JALAP.—Supplies are stated to be small this season, so that an improvement in values is anticipated, present price is 6d. per lb. for good, but demand is slow.

JUNIPER BERRIES—Continue very dear, and the near approach of the new crop does not appear to make holders of the old any less firm. Sales this week have been made at 10s. 3d. per cwt. *c.i.f.* terms.

MENTHOL—Is rather better at 7s. per lb. on spot and 6s. 6d. to 6s. 9d. per lb., *c.i.f.*

Monthly Statement of Drugs, etc., Warehoused in London.—July 1, 1898.

Articles.		June, 1898.		Stocks, June 30.		Articles.		June, 1898.		Stocks, June 30.	
		Arrivals.	Deliveries.	1898.	1897.			Arrivals.	Deliveries.	1898.	1897.
Aloes (all kinds).....	packages	480	188	5,004	4,648	Gum, Mastic	packages	—	1	25	11
Balsams	"	54	92	390	470	Myrrh	"	11	32	436	528
Cinchona Bark	"	1,989	1,376	20,830	22,080	Olibanum	"	1,427	180	4,028	2,294
Quinine Sulphate	ounces	103,824	55,808	1,604,544	1,415,840	Tragacanth	"	696	756	3,082	2,701
Beeswax	packages	918	456	1,798	2,845	Ipecacuanha	"	59	93	231	246
Camphor	"	260	325	9,843	11,335	Jalap	"	20	7	309	413
Cardamoms	"	366	299	1,534	1,119	Nux Vomica	"	—	22	117	547
Cochineal	"	474	403	2,886	2,157	Oils, Castor	"	217	152	633	424
Calumba Root	"	377	281	579	72	Olive	"	382	237	1,179	870
Cubebs	"	76	5	1,954	322	Aniseed	"	—	—	112	97
Dragon's Blood	"	—	11	19	79	Cassia	"	—	23	83	57
Galls (all kinds)	"	2,583	507	6,581	3,344	Rhubarb	"	100	153	466	294
Gum, Ammoniacum.....	"	—	1	26	46	Saltpetre	tons	1,890	1,881	2,897	6,233
Arabic, all kinds.....	"	2,438	1,128	10,870	12,530	Sarsaparilla	packages	107	139	296	208
Asafoetida.....	"	—	16	491	299	Senna	"	171	235	570	1,166
Benjamin	"	932	424	3,130	3,228	Shellac	"	5,103	4,835	57,497	50,190
Galbanum	"	—	—	15	1	Terra Japonica, Gambier	tons	446	602	1,496	995
Gamboge	"	29	11	273	308	Cutch	"	73	79	1,158	1,600
Guaiacum.....	"	10	1	57	74	Turmeric	"	15	24	261	729
Kino	"	2	8	35	83						

The stocks of camphor, oils of aniseed and cassia are incomplete, some warehouses not making returns.

MERCURIALS.—Makers' prices are unchanged at 2s. 9d. and 2s. 5d. per lb. for *Calomel* and *Corrosive sublimate* respectively in $\frac{1}{2}$ -cwt. lots.

MORPHIA.—Makers now quote 4s. 9d. to 5s. per oz. for the *Hydrochlorate Salt* in powder, stating that the present cost of *Opium* would fully justify a further advance.

NITRATE OF SILVER.—Rather higher in sympathy with higher price of the metal, crystals being quoted 1s. 5 $\frac{1}{2}$ d. per oz. in quantity, the sticks being proportionately dearer.

NITRATE OF SODA.—Quiet at £7 12s. 6d. to £7 15s. per ton for *Commercial*, and £7 17s. 6d. to £8 for *refined*.

OILS (ESSENTIAL).—*Peppermint*: *H. G. H.* is steady at 5s. 6d. to 5s. 8d. per lb., according to quantity. *Wayne County* of good quality held for 3s. 9d. to 3s. 10d. per lb. *Sassafras* lower at 1s. 7d. to 1s. 8d. per lb. *Sandalwood*: Logs are scarce, and the prices of the oil are therefore advancing; English drawn is quoted 12s. 6d. to 13s. per lb., as to quantity. *Star Aniseed* quiet at 7s. per lb. on the spot. *Cassia* in rather better demand, with sales of fine quality at 5s. 6d. per lb.

OILS (FIXED) AND SPIRITS.—*Linseed*: Lower but closing firm; on the spot, pipes £16 7s. 6d., barrels £16 15s. *Rape*: firmer, ordinary brown on the spot £21 15s., refined spot £23 5s. *Cotton*: Quiet, London crude spot £13 15s., refined spot £15 10s. to £16, according to make. *Coconut*: Ceylon on the spot £24, for pipes; *Cochin* nominally £28 10s. *Palm* unchanged at £22 10s. for Lagos on the spot. *Turpentine*: There is more doing, and the market is firmer, American spot 21s. 3d. per cwt. *Petroleum Oil*: Quiet Russian spot 4 $\frac{1}{2}$ d. per gallon, American 5 $\frac{1}{2}$ d. per gallon, water white 6 $\frac{1}{4}$ d. per gallon. *Petroleum Spirit*: American 5 $\frac{1}{2}$ d., deodorised 6d. per gallon.

OPIUM.—Market is firm. In Smyrna sales have been made up to 10s. 9d. per lb. for new *tale quale*, while price of good *manufacturing* stuff ranges here from 10s. 9d. to 11s. 3d. per lb. *Druggists'* is worth 11s. to 12s. 6d. for fair to fine quality. *Soft shipping*, 11s. 3d. to 12s. 6d. *Persian*, 11s. 3d. to 12s. 3d. per lb.

ORRIS ROOT.—Reports from Leghorn state that the new crop promises to be very bad, both as to quality and quantity, the latter being, it is said, not more than two-thirds of that of last year. *Florentine* sorts are quoted 36s. per cwt., and picked, 40s. per cwt., *c. i. f.* terms.

PERMANGANATE OF POTASH.—Quiet at 62s. 6d. for small crystals and 67s. 6d. per cwt. for large crystals in 1-cwt. kegs.

PHENAZONE.—The competition between the various makers has led to a further reduction in price down to 12s. per lb. for quantity in bulk packing; there is, however, now a slightly better feeling in the article, the idea being that we may possibly now see a reaction. *Dr. Knorr's Antipyrine* is maintained at 2s. 1 $\frac{1}{2}$ d. per oz. in 1 oz. tins.

PHENACETIN.—A good article is still obtainable at 3s. 9d. to 4s. 3d. per lb. for *crystals* or *powder*, according to quantity. It is rumoured that *Bayer's* article, which has been maintained at the fancy figure of 14s. 3d. per lb. for bulk, will shortly be reduced in price, while it is believed that one of the other best brands, viz., *Riedel's*, will be offered in original packing at a higher price than

that at which it has lately been selling as a commercial article in ordinary bulk packing.

POTASH COMPOUNDS.—*Chlorate* is firm at 3 $\frac{1}{2}$ d. per lb. *Cyanide* continues comparatively scarce on the spot, and some considerable business has been done for export at 1s. 1 $\frac{1}{2}$ d. per lb. for the 98 to 100 per cent. cake. *Bromide* steady at 1s. 9 $\frac{1}{2}$ d. per lb. *Iodide* firm at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Bichromate*: 4d. to 4 $\frac{1}{2}$ d. per lb. in large bulk. *Prussiate*: Yellow steady at 7d. per lb.; red firm at 1s. 2d. per lb. *Permanganate* quiet at 62s. 6d. and 67s. 6d. for small and large crystals respectively. *Bicarbonate*: 30s. per cwt. for crystals or powder.

QUICKSILVER.—Unchanged at £7 12s. 6d. from first hands, second hands 6d. less.

QUININE.—Market has been quiet, with, however, a fairly firm undertone. Maker's price remains 10d. per oz. for the *Sulphate*, with very little obtainable from second hand below this figure.

SALICYLATES.—Makers have advanced the prices of these 2 $\frac{1}{2}$ d. per lb., quotations for small lots being now:—*Salicylic Acid*: Powder, 1s. 10d. per lb.; crystals, 2s. per lb.; physiologically-pure crystals, 3s. 10d. per lb. *Salicylate of Soda*: Powder, 2s. per lb.; crystals, 2s. 6d. per lb.; physiologically-pure crystals, 3s. 6d. per lb. Above prices referring to 1-lb. paper parcels, the usual extra charges being made for boxes, bottles, or tins. For contracts for 2, 8, and 20 cwt. over six and twelve months the usual reductions are made.

SANTONINE.—Is unchanged at 4s. 5 $\frac{1}{2}$ d. per lb. for 3-cwt. lots.

SENEGA ROOT.—Good Western is offered at 1s. per lb. *c. i. f.*, and at 1s. 2d. per lb. on the spot.

SHELLAC.—A very quiet market with small transactions. Prices are, however, fairly steady. *TN Orange* being quoted on the spot at 64s. to 65s. basis fair.

SODA COMPOUNDS.—*Crystals* quiet at 57s. 6d. per ton in barrels. *Bicarbonate* steady at £7 10s. per ton for the 98 per cent. commercial quality, and 18s. 6d. per cwt. for the chemically pure, free from monocarbonate. *Ash* firm at £5 5s. to £5 15s. per ton, according to strength. *Bromide* firm at 2s. 0 $\frac{1}{2}$ d. per lb. *Iodide* steady at 11s. 7d. per lb. *Caustic*: 70 per cent. white, £7 15s. per ton.

SPERMACEIN.—Is lower at 1s. 2d. to 1s. 3d. per lb., according to quantity.

SPICES (VARIOUS).—*Black Pepper*: 65 bags Singapore sold at 4 $\frac{1}{2}$ d. to 4 $\frac{3}{4}$ d.; 10 bags Tellicherry sold at 4 $\frac{1}{4}$ d. to 4 $\frac{3}{4}$ d.; Wynaad bought in at 4 $\frac{3}{4}$ d. *White Pepper*: Singapore bought in good to fine at 8 $\frac{1}{2}$ d. to 10d. *Chillies*: 20 bags Zanzibar sold at 30s.; 28 bags fine red Japan bought in at 43s. *Cinnamon Chips*: 12 bags good Ceylon sold at 4 $\frac{1}{2}$ d. *Mace*: 7 packages West India sold at 1s. 6d. to 1s. 8d. *Nutmegs* steady: 4 cases Penang sold 66's at 2s. 4d.; 10 boxes Singapore sold 80's at 1s. 9d.; 90's at 1s. 5d.; 112's at 1s. 2d.; 8 packages West India sold, 98's at 1s. 3d.; 126's at 11d.

SULPHATE OF COPPER.—Dearer at £15 15s. to £16 15s. per ton according to brand.

SUGAR OF LEAD.—*Foreign* firm at 27s. 6d. per cwt. *English*, 0s. to 31s. per cwt.

SULPHONAL—Unchanged. Makers still executing orders for limited quantity and to regular customers only at 7s. 3d. per lb. in bulk packing, for both *crystal* and *powder*.

THYMOL.—Owing to the increase of the plague in India the prices for *Ajowan* seed are advancing rapidly. *Thymol* is quoted 7s. 6d. per lb., but higher values are likely to rule.

TURMERIC—Supplies continue scarce and quotations consequently rule high. *Bengal*, 20s. per cwt.; *Madras*, fair finger 23s. per cwt., fine quality obtaining excessive figures. *Cochin*, 17s. 6d. per cwt. for finger, 10s. per cwt. for split bulbs.

Newcastle Chemical Report.

JULY 13, 1898.

Not much new business passing, but shipping orders for heavy goods keep matters moving. Sulphur if anything is the turn scarcer but unchanged in value. General quotations are: Bleaching powder: £6 5s. to £6. 10s. Soda crystals: 45s. to £52 6s. Caustic soda: 70 per cent. basis, £7 5s. to £7 10s. Soda ash: 52 per cent., £4 5s. Alkali. 52 per cent., £5 5s. Sulphur: £5 per ton.

Liverpool Market Report.

JULY 13, 1898.

Transactions in goods of interest to druggists have been remarkably few during the week. In Seeds the only movements have been retail sales of Turkish Canaryseed at last week's rates. Oils generally are quoted as last week, Castor Oils having receded somewhat, and Spirits of Turpentine advanced about 3d. per cwt.

AMMONIA SALTS.—*Carbonate*, 3d. per lb. *Sal ammoniac*, 33s. to 35s. per cwt. *Suphate* is quieter and a shade lower at £9 7s. 6d. per ton.

BLEACHING POWDER—Is only selling slowly at £5 7s. 6d. to £5 15s. per ton, or 2s. 6d. per ton less than last week.

CANARYSEED.—Business has been confined to retail transactions in *Turkish* at 25s. to 26s. per 464 lbs.

CARNAUBA WAX.—About 70 bags have changed hands at 55s. to 57s. 6d. per cwt. for good yellow, and 34s. for grey.

COPPERAS—Is in good demand and firm at 38s. per ton for Lancashire, and 36s. for Welsh.

COPPER SULPHATE—Has advanced 7s. 6d. to 10s. per ton on last week's quotations, and now is held for £16 5s. to £16 7s. 6d. per ton.

OILS.—*Castor* are selling well at easier prices, Calcutta "good seconds" is at 3½d. per lb., French 1st pressure at 3d. to 3¼d., and Madras at 3¾d. *Olive* is dull and sales are few; *Spanish* oils rule from £28 to £30 per tun. *Linseed* of Liverpool make sells steadily at 18s. to 18s. 6d. per cwt. *Cottonseed*: Liverpool refined maintains its price of 15s. 9d. to 16s. 3d. per cwt. *Spirits of Turpentine* has risen 3d. per cwt. and holders ask 22s. per cwt.

POTASH SALTS.—*Bicarbonate* 30s. per cwt. *Bichromate* 3¼d. per lb. *Chlorate* 3¼d. per lb. *Cream of Tartar* is still quoted at 78s. 6d. per cwt. for finest white, both to arrive and on the spot. *Pearlashes* are nominal at 35s. per cwt. *Potashes* are in fair demand at 20s. to 20s. 3d. per cwt. *Prassiate* quiet at 6¼d. to 7d. *Saltpetre* 21s. 6d. per cwt.

SODA SALTS.—*Bicarbonate*: £6 15s. per ton. *Borax*: £12 15s. per ton. *Caustic*: 76 to 77 per cent., £8 5s.; 70 per cent., £7 5s. per ton. *Crystals* firm at £3 per ton. *Nitrate* is in quiet demand at 7s. 6d. to 7s. 9d. per cwt.

Manchester Chemical Report.

JULY 13, 1898.

There seems to be again a weakening tendency in heavy chemicals, and in the drysaltery department things are generally dull. The Board of Trade returns are again depressed, Bleaching Powder being the only article that shows any stiffening in price. Sulphate of Copper and Glycerin are perhaps the only articles locally which show any advance. In the first-named, dealers here are firm at £17 to £17 5s. per ton for best brands. delivered Manchester, though they cannot account for it at this season of the year, when it is usually at its lowest. Brown Acetate of Lime has again declined, and varies from £5 2s. 6d. to £5 5s. for America, *c.i.f.*, although £5 would be taken for a fair quantity with firm order. Glycerin is quoted £54 to £56, according to package on rails or *f.o.b.*, Manchester Ship Canal. Yellow Prus-

siate is a shade easier, although unchanged at 7d. White Powdered Arsenic varies from £16 to £16 5s. ex-ship Garston. Naphthas are steady at 4s. 1½d. to 4s. 3d. for miscible, and 2s. 7d. to 2s. 9d. per gallon for solvent wood (white colourless), with little offering. Benzols are dull and unchanged. Aniline Oil is firmer at 5¼d., and Salt, 5d. Alum dull.

News in Brief.

TRADE OUTING.—The employes of Messrs. Evans, Gadd & Co., of Exeter and Bristol, held their annual wayzgoose in delightful weather. The Bristol staff went to Dawlish, a popular seaside resort in South Devon, for their trip. A visit was subsequently paid to Teignmouth. Dinner was partaken of at the Royal Hotel at Dawlish, where the party had the pleasure of meeting Alderman H. Gadd, J.P., who presided. Mr. H. E. Boorne, the Bristol manager, was in the vice-chair. The day passed all too quickly, and the homeward journey was commenced after an enjoyable day's outing. The Exeter employes, to the number of about seventy, selected Dartmoor for a visit. They left Queen Street Station in special carriages, and proceeded by the London and South-Western Railway Company's picturesque route through Dartmoor to Tavistock, where an hour's stay was made, after which they left Backwell's "Cornish Arms" in well-appointed brakes for a twenty-mile drive across the moor. On returning to Tavistock a capital dinner was awaiting the party. Mr. W. J. Wippell occupied the chair and Mr. H. W. Gadd the vice-chair. The party left Tavistock by the 7.55 train, arriving in the "Ever Faithful" city at half-past nine, all voting the outing one of the most successful that had been arranged.

THE NEWCASTLE-ON-TYNE AND DISTRICT CHEMISTS' ASSOCIATION has made arrangements for a half-day excursion to Hexham on Wednesday next, July 20. The party will meet in the main area of the Central Station, Newcastle-on-Tyne, to travel by the 1.15 west express, on which special accommodation (saloon or otherwise) will be reserved. On arrival at Hexham, the party will proceed by way of the woods to Swallowship, where the earlier part of the afternoon will be spent in rambling, photography, etc. At 4.40 p.m. the visitors will leave Swallowship for Hexham, where tea will be served in the Royal Hotel, Priestpopple Street, at 5.30 p.m. Subsequently a visit will be paid to the Abbey at Hexham, under the guidance of Mr. J. P. Gibson, after which the evening will be spent according to individual inclination. The return train will leave Hexham Station at 10.10 p.m., reaching Newcastle Central at 10 48 p.m.

PRESENTATION TO MR. W. B. COWIE.—In Aitchison's Rooms, Queen Street, Edinburgh, on Wednesday, July 6, at a social meeting of past and present pupils of the Edinburgh Central School of Pharmacy, Clyde Street, the Principal, Mr. W. B. Cowie, was presented with a handsome timepiece and side ornaments on the occasion of his marriage. Mr. A. J. Dey occupied the chair, and at the request of the students the presentation was made by Mr. J. Rutherford Hill. Mr. Cowie expressed his high appreciation of this mark of their goodwill. It was quite a pleasure to him to teach such students, and he congratulated them on their success at recent examinations. They must not give him too much credit for the results. It was largely due to the devotion and ability of his assistants, Messrs. Senter and Scobie, and most of all to their own diligence and hard work. For himself and his future partner he desired to thank them most heartily for their kindness and good wishes.

THE CAMBRIDGE PHARMACEUTICAL ASSOCIATION held their annual summer outing on Thursday, July 7. A trip for the half-day being taken to Hunstanton, where the members and friends indulged in a substantial meat tea, after which Mr. E. Saville Peck photographed the group, when parties were made up for drives, sea trips, and walks. Mr. Harry Spencer, Mr. H. F. Cook and others entertained the company on the homeward journey with humorous songs and sketches. Mr. E. Saville Peck proposed a vote of thanks to the Secretary for the manner in which all the arrangements had been made and carried out. This was seconded by Mr. W. L. White in a humorous speech, and suitably responded to by Mr. B. Sidney Campkin. The party reached Cambridge shortly after 11 p.m., having had a most enjoyable trip.

THE COUNCIL OF THE PHARMACEUTICAL SOCIETY OF IRELAND invites applications for the post of Examiner to conduct the Pharmaceutical and General Chemistry Division of the Pharmaceutical Licence Examination, subject to the approval of His Excellency the Lord-Lieutenant and the Privy Council of Ireland. Full particulars can be obtained from the Registrar, Mr. Arthur T. Ferrall, 67, Lower Mount Street, Dublin, with whom applications should be lodged not later than the 27th inst.

MESSRS. JAMES TOWNSEND AND SON'S employes held their annual waygoose on Saturday, July 9, a portion of the party leaving St. David's, Exeter, at 5.45 a.m. for Bristol, while another portion left for Bath at 6.15 a.m., afterwards proceeding to Bristol in time for the annual dinner held at Stuckey's Hotel, Bristol. The chair was taken by Mr. James Townsend, the vice-chairs being occupied by Messrs. W. Townsend and T. J. Tayler. Beautiful weather prevailed, and the united party, numbering nearly 130, thoroughly enjoyed the day's outing. A train leaving Bristol at 10.35 p.m. conveyed the majority of the party back.

FREEMASONRY.—The installation meeting of the Apollo Lodge took place in the Town Hall, Beccles, on Thursday, when Bro. Walter Plumbly was duly installed W.M. The following brethren are the officers for the year:—Bro. A. McQueen, S.W.; Bro. Youngs, J.W.; Bro. Copeman, S.D.; Bro. Godfrey, J.D.; Bro. White, I.G.; Bro. Norman, Tyler (for the forty-eighth time); Bro. Yarnall, organist; Bro. Nobbs, treasurer; Bro. Scott, secretary. The banquet took place at the Bell Hotel, St. Olaves, and during the evening a centenary jewel was presented to Bro. Jolly, the I.P.M., in recognition of his earnestness and zeal for the good of the lodge during his year of office, and in the cause of the masonic charities. The installation ceremony was very impressively performed by Bro. Woodroffe, P.M., P.P.G.S. of W.

EDINBURGH DISTRICT CHEMISTS' GOLF CLUB.—The sixth and final round of the Hole and Hole competition, which began in March, was played over the Braids course last Saturday. Mr. A. C. Kirkpatrick, allowing Mr. D. N. Wylie one hole, beat him after a close game by two holes.

Trade Notes.

MR. J. F. SHOREY'S business as manufacturer of Peterman's Cockroach and Beetle Food and other vermin destroyers, carried on at 67, Farringdon Road, E.C., has been taken over by Messrs. F. Newbery and Sons, King Edward Street, Newgate Street, E.C., who will continue to attend to the yearly contracts, etc.

MESSRS. F. NEWBERY AND SONS, 1 and 3, King Edward Street, Newgate Street, E.C. announce that the proprietors of Cuticura remedies have notified advanced rates for Cuticura Resolvent, and Cuticura Soap, which have just taken effect. They also intimate that the sole agency in this country for the sale of the following preparations has been taken over by the firm, prices hitherto prevailing remaining in force, viz:—Fels's Tuna, Richter's Pain Expeller, Congo Pills, etc., and Peterman's Cockroach and Beetle Poison and other vermin killers.

THYROID GLANDS are in increasing demand, and inquiries are occasionally received as to where they may best be obtained. Mr. T. Williams, 2, Trowbridge Street, Liverpool, announces that he is open to supply sheep's thyroid glands (Scotch) in any quantity to suit purchasers. He also supplies kidney glands and ovaries.

MESSRS. BURROUGHS, WELLCOME & Co. send samples of their "Tabloid" Hypophosphites Compound, in which the full therapeutic activity of all the constituents is retained without any danger of an overdose of strychnine either through a mistake in measurement or through precipitation. Two strengths are issued, each in bottles of 25 and 100. "Tabloid" Hypophosphites Compound, gr. 1-1/2, contains gr. 1/128 of strychnine hypophosphite, together with the combined hypophosphites of calcium, potassium, manganese, iron and quinine, and is equivalent to dr. 1/2 of standard compound syrup of hypophosphites. "Tabloid" Hypophosphites Compound, gr. 3, contains gr. 1/64 of strychnine hypophosphite, together with the combined hypophosphites of calcium, potassium, manganese, iron and quinine, and is equivalent to dr. 1 of standard compound syrup of hypophosphites.

Advertisements.

(Received too late for Classification.)

FOR SALE.—High-class DISPENSING BUSINESS in good suburb. Large house and handsomely-fitted shop. Apply by letter for interview with trade and banker's reference. REES, Chemist, 5, Queen's Parade, Muswell Hill, N.

SITUATION wanted as LOCUM-TENENS. Qualified. Age 53. Disengaged latter part August and after. JONES, at Mr. Mumford's, 40, Castle Rd., Cardiff.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Magic Lanterns, second-hand; triples and binoculars; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Major, scientific, requires situation, not in retail; excellent references. Apply—"Ajax," Pharm. Journ. Office, 5, Serle Street, W.C.

One each 5s. and 10s. 6d. Arcma Atomiser, with 15 bottles assorted Inhalants for £1.—"Cascara," Pharm. Journ. Office, 5, Serle Street, W.C.

Ovaline soap, large surplus stock; 36 boxes Breidenbach's soaps; stereotype block to print homoeopathic cards; what offers? Any quantity carriage paid.—Gibson Dixon, Chemist, Halifax.

Complete Fittings for Chemists' Shop, new and good, cheap.—Apply, Business, 64, Linthorpe Road, N.

For Sale.—11s. Rooke's Elixir, 6s. 6d.; 4s. 6d. Crosby's, 3s.; 4s. 6d. Sequah's Oil, 3s.; Snook's Pills, 8d.; Frampton's, 8d.; Nurse Powell's, 7d.; 2s. 9d. ditto, 1s. 6d.; 2s. 9d. Johnson's Syrup, 2s.; Herrmann's Helmet Metal Polish, black or red, per gross, 1d. size, 3s. 9d.; 2d., 6s. 6d.; 3d., 11s.; 4d., 16s.; "Nanon" white, 1d., 6s.; 2d., 10s.; 4d., 18s.; Winch. Acetic Ether, 2s. 10d. per lb.; 1s. 1 1/2. Barrow Evan's Peppermint, 7d.; 2s. 9d. ditto, 1s. 8d.—Percy, Chemist, Truro.

For Sale.—Four 2-gal. swan necked, one 1-gal. pear-shaped Carboys; black and gold Dispensing Screen and Desk Case.—Carveth, Chemist, Plymouth.

Twelve Tooth Forceps, 10s.; 'Extra Pharmacopoeia,' 6th edition, 'Minor Ailments,' Remsen's 'Organic Chemistry,' Pereira's 'Selecta,' Bentley's 'Botany,' 4th edition. What offers?—Lee, Chemist, Derby.

Soda-water Trolley, light and strong, on which your boy can easily convey 3 dozen syphons, 37s., carriage paid. Further particulars of Arthur and Co., Cambridge.

Books.

Wills' 'Pharmacy,' latest, 3s. 6d.; 'Elementary Materia,' latest, 3s.; Squire, latest, 4s. 6d.; Martindale, 1892, 3s. 6d.; Atfield, latest, 7s. 6d.; B. P., 1885, 3s. All excellent condition, some new. Carriage free. Gower, Waterloo, Liverpool.

Perkin and Kipping's 'Organic Chemistry'; Green's 'Botany,' second volume; Bentham and Hooker's 'Flora'; Cross and Cole's 'Modern Microscopy.' State edition, condition, and price. "Chemist," 6, Long Causeway, Peterborough.

WANTED.

Proctor's 'Pharmacy,' third edition, state price and if quite clean.—E. S. Peck, Trumpington Street, Cambridge.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

Sponge Case—Similar to Maw's Fig. 3 preferred. State condition and lowest price.—Gare, Chemist, Lymington, Hants.

Dandelion roots (dried), by the cwt.; Rennets (dried), by the gross.—Percy, Chemist, Truro.

Old metal mortars, in any condition; also old apothecaries' jars; send description and lowest price.—Chemist, 157a, Lodge Lane, Liverpool.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Bullivant, Campkin, Cracknell, Cresswell, Eberlin, Ellis, Frank, Gillard, Guiler, Hawthorn, Hewlett, Hill, James, Jamison, Jones, Keen, Kirkby, Kirkpatrick, McKnight, Merson, Naylor, Peck, Plumbly, Richmond, Roberts, Rowland, Savage, Smith, Thompson, Tucker, Wells, White, Wyatt.



London Report.

JULY 21, 1898.

As might have been anticipated, business has been very quiet during the past week, and a revival of trade can now hardly be expected before the advent of cooler weather. Quinine is quiet. Opium has advanced in consequence of a report of an even more reduced crop than had been previously prognosticated. This, if confirmed, will mean also higher prices for Morphia and Codeia. Acid Citric extremely firm. Cream of Tartar and Acid Tartaric steady. Quicksilver and Mercurials unchanged. Borax and Acid Boracic quiet. Cod-liver Oil dull. Glycerin dearer. Cocaine steady. Sulphonal and Phenacetin quiet. Acetanilid lower. Sulphate of Ammonia rather dearer. Iodides and Bromides unchanged. The following prices are actually ruling for articles of principal interest:—

ACETANILIDE—Lower, there being sellers at 1s. per lb. for quantity and in bulk.

ACID BORACIC—Quiet at 23s. 6d. per cwt. for *crystals* and 25s. 6d. per cwt. for *powder*.

ACID CARBOLIC—Quiet but steady at 6¼d. for 35-36° C. *ice crystals* in bulk packing, other qualities and packing in proportion. *Crude* 60° F. 2s. 1d., 75° F. 2s. 6d. per gallon. *Liquid*: 95 per cent. of pale straw colour 1s. 1d. to 1s. 2d. per gallon, in 40 gallon casks.

ACID CITRIC—Continues very firm at 1s. 2d. per lb., with a probability of an early rise, juice being firm at £16 10s.

ACID OXALIC—Steady at 3¼d. per lb. for bulk packing.

ACID TARTARIC—Very firm at 1s. 1d. per lb. for English *crystals*, and 12¼d. per lb. for foreign.

AMMONIA COMPOUNDS.—*Bromide* firm at 2s. 1d. per lb. *Iodide* steady at 14s. 6d. per lb. *Sulphate* dearer £9 6s. 3d. for grey prompt, 24 per cent., London. *Sal ammoniac* unchanged at 35s. and 33s. for first and second sublimed respectively. *Sulpho-cyanide* steady at 1s. 2d. per lb. *Carbonate*, 3¼d. to 4d. per lb., according to package.

ARSENIC.—*Powder*, 19s. per cwt. *Lump*, 34s. per cwt.

BLEACHING POWDER—Quiet at £6 15s. to £7 per ton.

BORAX.—Unchanged at 14s. per cwt. for *crystals* and 14s. 6d. per cwt. for *powder*.

BROMIDES AND BROMINE—In good demand at unchanged price.

CINCHONA BARK.—The auctions on Tuesday comprised smaller offerings than usual, amounting to 1160 packages as against 2700 at the previous sales. The bulk was disposed of at dearer rates. *Ceylon*: 356 bales offered and 266 bales sold, according to analysis; *Succirubra*, stem chips and shavings at 2¼d. to 2½d., broken quill at 3d., renewed chips at 2¾d. to 2½d. *East Indian*: Of 254 bales offered 211 bales sold, Red, stem chips, fair 2½d. to 3d., ordinary renewed ditto at 2¼d.; *Officinalis*, chips and shavings, fair to good 2½d. to 4¼d., renewed ditto 4¼d. to 4½d. *Java*: Of 310 bags and 40 bales 310 bags sold, Ledger stem chips, good at 4¼d. to 5¼d. *African*: 200 bales offered and sold, ordinary to fair quill at 2¼d. to 3½d., quilly chips 3¼d., with one lot at 4d.

CLOVES.—Privately *Zanzibar* have been in good demand, and prices have improved. Sales include spot, 3½d.; August to October delivery, 3½d. to 4d.; and October to December at 4¼d. At auction no *Zanzibar* offered; 1 barrel *Grenada* sold at 3½d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: Commercial, 1s. 2d. per gallon. *Benzole*: 50 per cent., 1s. 1d.; 90 per cent., 11d. *Crude Naphtha*: 30 per cent. at 120° C., 5d. *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 8d. per gallon.

COCAINE—Quiet but with a general feeling that the next move will probably be in an upward direction, price remains meantime

unchanged at 9s. 3d. to 9s. 6d. per oz. for the *Hydrochlorate* in 100-oz. lots.

CODEIA—Nominally unchanged at 11s. 6d. to 11s. 9d. per oz. for the *pure* and 1s. per oz. less for the *salts*.

COD-LIVER OIL—Remains almost a dead letter, price being nominally 85s. to 90s., *f.o.b.*, per barrel for best new non-congealing *Norwegian* oil in tin-lined barrels of 25 gallons.

CREAM OF TARTAR.—A good business has been done this week at rising rates, closing quiet but steady at 73s. 6d. for first white *crystals* on the spot, and 76s. for *powder*. *B.P. crystals*, 83s. per cwt.; *powder*, 86s. per cwt.

DAMIANA LEAVES.—San Francisco and Lower Californian correspondents report a scarcity, and prices are firm at 9d. per lb. to come forward.

GINGER.—*Cochin* continues in poor demand. Of 652 bags rough kinds only 135 bags sold at easy rates; low shrivelled 11s., ordinary ends 14s., small dull washed 19s. to 19s. 6d. Of 731 cases only 42 sold, bold limered Calicut 77s. 6d. to 80s., medium and small 39s., small 29s. to 33s. *Jamaica* is quiet at about previous rates, common to good common Rhatoon 65s. to 71s. 6d., small and low middling washed to good middling bright 72s. to 80s., good bright plump 81s. to 84s. 6d.

GLYCERIN—Has been advanced in price, one of the good *German* brands, which was previously quoted £53 per ton in ton lots, being now unobtainable from the makers below £54 for 1260° quality in tins and cases. A further advance is considered not improbable.

HENBANE LEAVES.—English dried leaves of second year's growth are very scarce, and as much as 12s. per lb. is asked, but even at this high figure very little could be got.

IODIDES AND IODINE—Are without change.

ISINGLASS.—The monthly auctions were held on Tuesday, the offerings being smaller than of late. About one-half sold at rather easier rates. The smaller supply of *Bombay* and *Kurrachee* was firmly held and mostly withdrawn, the few lots finding buyers showing full to slightly higher prices. The large supply of *Penang* was mostly sold at again lower prices for both leaf and tongue. *Saigon* leaf met little demand, and was all bought in. Moderate supplies of *Para* went off slowly at a decline of 1d. to 2d. *Maranham* also sold at easier rates. *West India* showed an average decline of 1d. per lb.

JAPAN WAX—Quiet at 32s. per cwt. for good squares.

KAVA KAVA—Is very scarce, and only small lots are to be had on the spot at 1s. per lb. American reports state that there are no stocks on the coast and none expected from Hawaii.

MERCURIALS—Unchanged at prices given last week.

MORPHIA.—Makers' price is nominally 4s. 10d. per oz. for the *Hydrochlorate* powder, but, should the advance in value of *Opium* be maintained, we shall certainly see higher prices in the near future.

NITRATE OF SODA—Quiet at £7 15s. for *commercial* and £8 per ton for *refined*.

OILS (ESSENTIAL).—*Star Aniseed* is dearer at 7s. 3d. per lb. *Cassia* in good enquiry and firm at 5s. 6d. per lb. for 80 to 85 per cent. *Peppermint*: Fine *Wayne County* is in better enquiry owing to continued reports of short acreage; 3s. 10d. to 4s. per lb. is quoted. *Citronelle* firm at 1s. 2d. per lb. *Lemongrass* 4¼d. per oz.

OILS (FIXED) AND SPIRITS.—*Linsced* dearer, but closes easy at £16 17s. 6d. for spot pipes, London, and £17 7s. 6d. for barrels. *Rape* dearer at £22 for ordinary brown on spot and £23 10s. for refined. *Cotton* steady at £13 15s. for London crude and £15 10s. to £16 for refined, according to make. *Olive* steady at £33 for green oils and up to 6s. per gallon for eating oils. *Coconut* lower at £23 10s. for Ceylon on the spot; *Cochin* unchanged at £28 10s. *Palm* lower at £22 5s. for Lagos on the spot. *Turpentine* dearer at 21s. 9d. per cwt. for American on the spot. *Petroleum Oil* firmer

at 4½d. per gallon for Russian and 5½d. per gallon for American. *Petroleum Spirit*: American 5½d. per gallon, deodorised 6d. per gallon.

OPIUM.—Market is exceedingly firm on the report just to hand from Smyrna that 11s. 6d. per lb. has been paid there, and that holders now ask 12s. per lb., cause being stated to be that the new crop is reported not likely to exceed 2500-3000 cases. Holders here have meantime withdrawn their quotations.

PERMANGANATE OF POTASH—Steady at unchanged prices.

PHENACETINE.—*Bayer's* article which was hitherto held at the fancy price of 14s. 3d. per lb. for bulk packing has been reduced to 5s. 6d. per lb.; people will, however hardly be willing to pay even this reduced price in view of the fact that a good and reliable article can be purchased at 3s. 9d. to 4s. 3d. per lb., according to quantity.

PHENAZONE.—There is not quite so much pressure to sell, price remaining nominally unchanged. It now remains to be seen what will be the result of the expected increased competition in the article, consequent on the expiry of the German patent for *Antipyrine* which takes place in a few days.

PODOPHYLLIN—Is slow of sale. A fully soluble article is offering at 12s. 6d. per lb.

POTASH COMPOUNDS.—*Chlorate* is steady at 3½d. per lb. *Bichromate* firm at 4d. per lb. in large bulk. *Prussiate*: English is firm at 7d. per lb. for yellow; red is held for 1s. 2d. per lb. *Bromide* unchanged at 1s. 9½d. per lb. *Iodide* quiet at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Permanganate* quiet but unchanged at 62s. 6d. per cwt. for small, and 67s. 6d. per cwt. for large crystals. *Cyanide* continues scarce for immediate delivery at 1s. 1½d. to 1s. 2½d. per lb. for the 98 to 100 per cent. cake. *Bicarbonate* unchanged at 30s. per cwt. for crystals or powder.

QUICKSILVER—Quiet but firm at £7 12s. 6d. per bottle from first hands.

QUININE—Remains quiet at 10d. per oz. for good *German* brands from the makers for *Sulphate* in 100-oz. tins and 1000-oz. lots, there being but little offering from second hand below this figure.

SALTPETRE.—*English* refined 20s. per cwt. in large bulk.

SCAMMONY.—*Virgin*: Firsts have been sold at 30s. per lb., and good seconds at 23s. per lb. Supply is now running short. *Roots* are in good supply, but business is prevented by holders asking long prices. *Resin*, 6s. 9d. to 7s. per lb.

SENEGA ROOT—Is inquired for, but appears scarce on the spot at 1s. 2d. per lb.

SHELLAC.—This market continues very quiet, and at the fortnightly auctions on Tuesday, whilst demand was good, sales were only made by giving way slightly in values. A total of 885 cases were offered and 577 cases sold. *Second Orange*: Of 679 cases 426 sold, chiefly without reserve, fine pale (2 cases) at 79s., fair bright flat free at 63s. to 64s., ordinary red at 61s., ordinary reddish livery at 50s. to 60s., more or less cakey and blocky, fair to good bright at 58s. to 62s., claret colour, part hard block at 52s. to 54s. *Garnet*: Of 76 cases 56 sold, flat ruby free at 56s., ditto part hard block at 54s., blocky G at 55s. *Button*: Of 130 cases 93 sold, pure firsts at 95s., ditto seconds at 88s. to 89s., very low resinous dark at 16s. to 20s.

SODA COMPOUNDS.—*Crystals* steady at 57s. 6d. per ton in barrels. *Bicarbonate* firm at £7 10s. per ton for the 97 per cent. commercial quality, and 18s. 6d. per cwt. for the free from monocarbonate quality. *Ash* firm at £5 5s. to £5 15s. per ton, according to strength. *Bromide* firm at 2s. 0½d. per lb. *Iodide* quiet at 11s. 7d. per lb. *Caustic*: 70 per cent. white, £7 15s. per ton., 60 per cent. £6 15s. per ton.

SPICES (VARIOUS).—*Black Pepper*: *Aleppy* bought in at 4½d. *White Pepper* also all bought in, Singapore at 8½d. and Siam at 8¼d. *Chillies*: 95 bags bought in at 32s. to 42s. *Macé*: 10 cases Penang bought in, pickings 1s. 4d. to 1s. 5d., good red 2s.; 60 packages West India sold well, mostly at 1s. 6d. to 1s. 8d., low 1s. 4d. to 1s. 5d., a few lots good to fine palish 1s. 10d. to 2s. 4d. *Nutmegs* steady at full previous prices. *Pimento* firm: 140 bags sold at 4¾d. to 4¼d.

SUGAR OF LEAD.—*Foreign* is very firm at the advance to 27s. 6d. per cwt. *English* 31s. per cwt.

SULPHATE COPPER—Dearer at £16 to £17 5s. per ton according to brand.

SULPHONAL.—Makers are still selling in restricted quantities at 7s. 3d. per lb. in bulk.

SULPHUR.—A firm market. *Foreign* roll 6s. 6d. per cwt., flower 7s. per cwt.; *English* roll 7s. 6d. per cwt.

To-day's Drug Auction passed off quietly, chief point of interest being an advance in Buchu Leaves and a fall in value of Colombo Root, of which latter, however, the offerings consisted chiefly of the lower qualities.

ACONITE ROOT.—3 bags *Japan* bought in at 27s. 6d. per cwt.

ALOES.—Good bright livery *Curacoa* sold at 34s. 6d. per cwt. down to 28s. for less desirable quality. *Zanzibar* of fair quality in monkey skins bought in at 90s. per cwt., ditto good part softish selling at 59s. per cwt. 4 cases soft and drossy cape held for 17s. per cwt.

AMBERGRIS.—2 tins together, only 5¼ oz. of not very special quality, sold at 85s. per oz.; 1 tin 2¾ oz. nett. of really fine quality held for 100s. per oz., only 90s. being bid.

ANISEED.—10 bags good *Spanish* bought in at 25s. per cwt.

ANNATTO SEEDS.—33 bags of fair quality chiefly bought in, 1 bag *ICSD* selling without reserve at 2½d. per lb.

BALSAM PERU.—Good genuine quality was held for 9s. per lb.

BALSAM TOLU.—18 cases were bought in at 1s. 8d. per lb.

BIRD LIME.—2 cases *Japan* bought in. 6d. would probably be the price, a bid of 3d. per lb. not being entertained.

BUCHU LEAVES.—18 bales fair to good green rounds sold at an advance of fully 1½d. per lb., medium green selling at 6d. per lb.

CAMOMILES.—15 packages bought in at 50s. per cwt.

CARDAMOMS.—In only moderate supply, and very few sold. Medium *Mysore* sold at 2s. 3d. per lb., other qualities being bought in.

CASCARILLA BARK.—Fair thin bright sold at 36s. per cwt., down to 25s. per cwt. for siftings.

CINCHONA BARK.—8 bales *Guayaquil* crown bark bought in at 9d. per lb. 1 case fair quills *Red* bark at 5s. per lb.

COLOCYNTH.—5 cases *Turkey* bought in at 1s. per lb. for small apple.

COLOMBO ROOT.—Price is decidedly lower while quality of the offerings left much to be desired. Fair sorts for which 25s. was asked not long ago were sold at 15s. per cwt., while 156 bags of dull sorts only realised 13s. down to 10s. 6d. per cwt.; good sort sold at 17s. 6d. to 18s. per cwt.

CORIANDER SEED.—85 bags fair *Morocco* sold without reserve at 5s. 3d. per cwt.

COTTON SEED OIL.—1 barrel sold without reserve at 12s. 6d. per cwt.

CROTON SEEDS.—1 bag of fair quality bought in at 75s. per cwt.

CUBEBS.—73 bags of fair quality held for 25s. per cwt.

CUMIN SEED.—11 serons country damaged sold cheaply without reserve at 6s. per cwt. Good *Malta* was held for 28s. per cwt.

CUS CUS ROOT.—15 bales cleaned bought in at 50s. per cwt.

CUTTLE FISH.—16 packages mostly sold at 4d. for fair medium down to 3d. per lb. for smaller.

DRAGON'S BLOOD.—4 cases *Zanzibar* drop, of fair colour but woody, held for £7 10s. per cwt.

ESSENTIAL OILS.—2 tins *Lime Oil* bought in at 4s. per lb. 4 cases *Cinnamon Oil* at 9d. per oz., 6d. per oz. being, however, the price which would have been accepted. *Oil of Lemon* bought in at 3s. 3d. to 4s. per lb. *Eucalyptus*: Fair commercial was held for 11d. to 1s. per lb. 5 cases *Hale and Parshall's Oil of Peppermint* for 4s. 6d. per lb. 2 cases *Cinnamon-bark oil* bought in, 4 ditto held for 1s. 6d. per oz.

ERGOT OF RYE.—Good *Spanish* was bought in at 9d. per lb. weevily ditto at 7d.

GALANGAL ROOT.—20 bales sold without reserve at 23s. per cwt.

GUM ACCROIDES.—12 bags taken out at 20s. per cwt.

GUM ARABIC.—7 bales fair *Turkish* sorts held for 75s. per cwt., good pale grain for £7.

GUM BENJAMIN.—Medium seconds *Sumatra*, part sold at £6 5s. to £6 15s. per cwt., rest being taken out at higher prices. *Palem-bang* fetched 35s. per cwt. Medium *Siam* bought in at £13, lower quality at £7 10s. per cwt.

GUM ELEMI.—9 cases fair pale were held for 26s. per cwt.

GUM GUAIAACUM.—40 cases sold at 2½d. per lb. for common block, up to 4d. per lb. for somewhat better quality. Good glassy block fetched 2s. per lb., down to 12½d. per lb. for somewhat inferior, while for low drossy only 1d. per lb. was offered.

GUM KINO.—3 cases *African* bought in at 3s. per lb. for fair down to 2s. for dark block, and 1s. for woody; while for genuine *Cochin* 12s. per lb. was required.

HONEY.—5 packages *Jamaica* realised 21s. per cwt., down to 16s. for inferior quality. 100 barrels *Chilian* part sold at 21s.,

down to 18s. per cwt. 15 cases fair *Californian* were all bought in at 30s. per cwt.

IPECACUANHA.—For *Rio* there was no demand, but holders decline to sell under 9s. per lb. *Carthagenia*: A few bags sold at 4s. 10d. to 5s. per lb., being firm.

JALAP.—57 bales fair small heavy tubers held for 5d. per lb.

KAMALA.—6 cases bought in at 11d. per lb. for fair bright, and 5d. per lb. for dull.

KOLA NUTS.—6 bags of fair quality were taken out at 4½d. per lb.; 3½d. would, however, probably have been accepted. 14 bags bright cut sold cheaply without reserve at 2d. per lb.

MUSK.—1 tin low *Touquin* dark and damp sold cheaply at 26s. per oz.

NUX VOMICA.—114 bags good bright *Cochin* bought in at 10s. 6d. per cwt., 25 bags fair ditto selling at 8s.

ORANGE PEEL.—7d. to 8d. per lb. was price required for fair to good thin cut.

ORRIS ROOT.—7 serons *Mogador* sold without reserve at 20s. 6d. per cwt. for good, down to 10s. 6d. for ordinary. 25 bags fair *Florentine* held for 40s. per cwt.

QUINCE SEEDS.—1 bag fair *Cape* sold at 1s. 6d. per lb.

RHATANIA ROOT.—6 bales were taken out at 7d., a bid of 5d. per lb. being refused.

RHUBARB.—Good flat *high-dried*, two-thirds good colour, was held for 1s. 2d., ditto second size, of better colour for 1s. 1d. per lb.; round *Shensi* bought in at 3s. for small trimming root of fine colour, and at 1s. 7d. for ditto not so good in colour; 2 cases bold round but very wormy sold without reserve at 9½d. per lb. Four cases medium round *Canton* were bought in at 1s. per lb. Common flat *high-dried* sold at 8¼d. to 9¼d. per lb.

SARSAPARILLA.—8 bales fair red to grey native *Jamaica* held for 1s. 2d. per lb., a bid of 1s. being declined. 19 bales *Lima* part sold at 11½d. to 1s. 2d. per lb. 3 bales fair *Jamaica* sold at 1s. 10d. per lb., fair *Honduras* held for 1s. 7d. per lb., and *Mexican* for 4½d. per lb.

SENNA.—About 140 bales *Tinnevelly* from first hands, all of low quality, sold at fully last sales' rates at 1½d. to 2½d. for small spotty to medium leaf. *Jungle* sold at 1d. per lb. *Alexandria* kinds in no demand, all being bought in; good leaf at 7d. per lb.

SQUILLS.—12 bags fair bought in, 3d. per lb. being price required.

TAMARINDS.—30 barrels fair *West Indian* realised from 9s. 6d. to 10s. per cwt., 1 cask good wild *Barbados* taken out at 14s. per cwt.

TURMERIC.—13 bags *China* taken out at 17s. per cwt.

VANILLOES.—53 tins black *Mauritius* sold at 25s. per lb. for 8 to 8½ inch down to 16s. per lb. for 4 to 5½ inch.; *Seychelles* realised 19s. 6d. per lb. for 7 to 8 inch down to 16s. for 4 to 5½ inch.

WAX.—2 packages fair *Jamaica* sold at £6 15s. per cwt.; 26 packages *Morocco* bought in at £6; *Madagascar* at £6 to £6 7s. 6d.; *Zanzibar* at £6 per cwt.

Liverpool Market Report.

JULY 20, 1898.

A brisker tone has been noticeable during the week's business, sales have been more numerous, and several slight increases have taken place in the price of certain staple articles. Good sales of West African produce have been reported, chiefly in Ginger, Chillies, Kola nuts, and Beeswax. No very considerable alteration has occurred in the prices of oils with the exception of a rise in Spirits of Turpentine.

AMMONIA SALTS.—*Carbonate* scarce at 3d. per lb. *Sulphate* is also scarce at £9 7s. 6d. to £9 10s. per ton, but quiet.

BEESWAX.—45 sacks of *Chilian* made from £6 17s. 6d. to £7 10s. per cwt., and small amounts of *Gambia* sold for £6 15s. per cwt.

BLEACHING POWDER.—Is quiet at £5 7s. 6d. to £5 15s. per ton.

CANARY SEED.—Is quite neglected, and the price merely nominal at 25s. to 26s. per 464 lbs. 50 bags of *Turkish* sold at 25s. 6d.

CHILLIES.—Small amounts of fine *Sierra Leone* fruit changed hands at 40s. per cwt. in store.

COPPERAS.—Continues firm at 36s. and 38s. per ton.

COPPER SULPHATE.—Is very firm at £16 10s. per ton, higher rates are looked for when the season commences.

GINGER.—Sales of *Sierra Leone Rhizome* have been effected a 18s. 6d. in store, and 18s. per cwt ex-quay.

HONEY.—30 barrels of *Chilian* were disposed of at 24s. 6d. per cwt. for Pile 1, and 27s. 6d. to 28s. per cwt. for Pile X.

KOLA NUTS.—30 packages of dried fetched 1½d. per lb.

LINSEED.—Sellers quote 35s. 4½d. per 416 lbs. for *Calcutta* seed and 32s. for *River Plate*, July to August, but buyers evidently expect lower rates, as no business has been concluded.

OILS (FIXED) AND SPIRITS.—*Castor* is firmly held for 3¼d. per lb. *Calcutta* "good seconds," 3d. to 3½d. French 1st pressure, and 3½d. per lb. for *Madras*. The demand is steady and good, but supplies are somewhat short. *Olive* is dull and sales only retail in quantity. Holders would accept rather lower than late rates in order to clear the quays. *Linseed* of *Liverpool* make still commands a fair trade at 18s. to 18s. 6d. per cwt. *Cottonseed*: *Liverpool* refined in export barrels is selling steadily at 15s. 9d. to 16s. 3d. per cwt. *Spirits of turpentine* is in fair demand at the higher rate of 22s. 6d. per cwt.

POTASH SALTS.—*Bicarbonate* (*Montreal*): 30s. per cwt. *Bichromate*: 3¼d. per lb. *Chlorate* firm at 3½d. to 3¾d. per lb. *Cream of Tartar* does not command much attention at 78s. 6d. per cwt. *Pearlashes* continue nominal at 35s. per cwt. *Potashes* are in improved demand at 20s. 3d. to 20s. 6d. per cwt. *Saltpetre*: 21s. 6d. per cwt.

SODA SALTS.—*Bicarbonate*: £6 15s. per ton. *Borax*: £12 15s. to £13 10s. per ton. *Caustic*: 76 to 77 per cent., £8 5s. per ton; 60 per cent., £6 5s. *Crystals* steady at £3 per ton. *Nitrate* is not very brisk and is a turn easier in price, 7s. 4½d. to 7s. 7½d. per cwt.

Newcastle Chemical Report.

JULY 20, 1898.

More orders for heavy chemicals are moving in the hands of shippers, but still not to the extent of stating that a busy tone exists. Sulphur is a trifle scarce, otherwise the market is unchanged, and late prices rule thus: Bleaching powder, £6 5s. to £6 10s. Soda crystals, basis, price, 45s. to 52s. 6d. Caustic soda: 70 per cent. basis, price, £7 5s. to £7 10s. Soda ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. Sulphur: £5 per ton.

Manchester Chemical Report.

JULY 20, 1878.

The dull state of things noted for two or three weeks past continues. In heavy chemicals there has been no material change, either on home or foreign account. Bleaching Powder is weak at £5 per ton, soft-wood casks, on rails. Sulphate of Copper continues to advance, and now ranges from £17 5s. to £17 10s. per ton for best brands, delivered Manchester. Brown Acetate is dull at £5 to £5 5s. per ton, *c.i.f.*, Manchester or at station, both Welsh and American. Chlorate of Potash is rather dearer at 3½d. per lb. Salt Cake ranges from 24s. to 25s. per ton in bulk on rails. Yellow Prussiate is firm at 6¼d. to 7d., and there is an upward tendency. Benzols are a shade lower, although 11d. is asked for 90's, July-December delivery. Naphthas, especially miscible, are scarce, and makers are well sold forwards. Green Copperas of Lancashire make is fairly firm.

Partnerships Dissolved.

(From the London Gazette.)

E. R. B. Reynolds, Highcroft, Shepherd's Hill, Highgate, R. A. Ironside, 8, Highbury New Park, N., and A. E. Reynolds, 81, Hornsey Rise, N., Surgeons carrying on a medical practice at the above addresses. Debts will be received and paid by the late partners at their respective addresses.

Wm. Parker and Wm. Walker (trading as Walker and Parker), Mineral Water Manufacturers, Crown Works, London Road, Coventry. Debts will be received and paid by Wm. Walker.

Henry J. Stokes and Henry F. Stokes, Surgeons, etc.

J. H. Kirk and Geo. J. Sershall (trading as the Coloured Ivoryide Photo Co.), Photographic Artists, 62, Soho Hill, Handsworth, Stafford. Debts will be received and paid by Geo. J. Sershall, who will continue the business under the old style.

G. W. Blomfield and E. E. Blomfield, Physicians and Surgeons, Knottingley and Pontefract. Debts will be received and paid by G. W. Blomfield.

Eliza Abbott and J. J. Anning, Chemists and Druggists, 145, Woodhouse Lane, Leeds.

PHARMACY ACTS AMENDMENT BILL.

In the House of Lords on Thursday afternoon the Pharmacy Acts Amendment Bill was set down for third reading, and notice of amendment had been given by the Lord Chancellor as follows:—

A company may carry on the business of a pharmaceutical chemist or chemist and druggist if and so long as the business is *bona fide* conducted by a manager or assistant being a duly registered pharmaceutical chemist or chemist and druggist, but, subject as aforesaid, Sections 1 and 15 of the Pharmacy Act, 1868, shall apply in the case of a company in like manner as they apply in the case of an individual.

The Earl of Hardwicke having formally moved the third reading of the measure,

The Lord Chancellor, referring to the amendment which stood in his name on the paper, said: "Undoubtedly the state of the law as disclosed in the inquiry before the Standing Committee is extremely unsatisfactory, and it appeared to me under the circumstances that some amendment of the law was required. I do not think this amendment of mine would hurt the Bill; still, the Bill, on the other hand, really and truly only affects the internal economy of the Pharmaceutical Society. I have received a number of complaints in respect of companies carrying on the business of chemists and druggists, but most of the complaints came from Ireland, and therefore would not be touched. However, the question is a very important and serious one. I know that after the Bill was introduced in the House of Commons an agreement was come to that it should be taken as an unopposed Bill, but I have received a very considerable body of correspondence on both sides with reference to this question discussing whether or not such an amendment ought or ought not to be introduced into the existing law. Well, my Lords, I have considered the matter very carefully, and it appears to me that the amendment would be inoperative unless there was a very considerable amount of machinery introduced in the measure in the way of registration. I have therefore come to the conclusion—though I still adhere to the opinion I expressed in the Standing Committee—that unless such additional provisions were made it would be better for me not to move the amendment now standing in my name."

The amendment having been withdrawn, the Bill was then read a third time and passed.

News in Brief.

MR. J. KENN ROBERTS, A.P.S., who has been in business in Swansea for twenty-five years, has removed to new premises in Marlborough Road, Rhydding, Swansea, but still retains the old title of the St. Helen's Pharmacy.

MR. HAROLD WILSON, who for the past two years has held the post of Demonstrator in Pharmacy and Materia Medica in the Society's School has been appointed Pharmacist to University College Hospital, London.

MR. SIDEBOTHAM (Hyde) will on Friday, 22nd inst., ask leave to introduce a Bill to regulate the use of University Degrees in the British Isles. This belated Bill is not expected to make much disturbance this session. Mr. Sidebotham is a graduate of Owens College and a Bachelor of Music of Oxford, but his political judgment in introducing a private measure after Mr. Balfour has announced the suspension of the 12 o'clock rule for the remainder of the session may be somewhat questioned by the mere layman.

A FELLOW-FEELING FOR JURORS distinguishes Mr. Pickersgill (Bethnal Green) above his Parliamentary colleagues. The honourable gentleman's sensitiveness to the sufferings of criminals is well known, but it is gratifying to learn that he has a compassionate thought for the juries which try them. He asked the Home Secretary to direct his special attention to the present-day jury box, and see if its capabilities of inflicting physical pain could not be modified. Replying to Mr. Pickersgill, Sir M. W. Ridley said he had received no complaints, but now that the subject had been mentioned he would see what could be done. This information is of little interest to the pharmaceutical chemist, but the as yet unemancipated chemist and druggist will be glad of the prospect of being comfortable when he is called upon to discharge that highest act of citizenship—service on juries.

MR. THOMAS MABEN, pharmaceutical chemist, Hawick, was induced to give 15s. to John Irving, clerk, of Galashiels, who represented that he required the money to bail his brother out of prison. The statement was false, and in consequence of the deception, on July 18 he received a sentence of fourteen days' imprisonment.

IRISH PAUPERS' MEDICINES will be prepared according to the new B.P. in due course, but for the present they will be supplied as heretofore. One very well-known firm of union drug contractors in Ireland was recently asked by one of its union customers whether it is supplying the medicines in conformity with the Pharmacopœia of 1898 or that of thirteen years ago, and the reply was that the firm proposed to continue to use the older work until their contract expires, as that would give them time to study the new work. In the opinion of the *Medical Press* that statement indicates admirable discretion.

ACCIDENTAL POISONING CASES.

CARBOLIC ACID kept in a medicine bottle caused the death of Alice Mary Evans (34), of Cathless Road, Balham, on Tuesday, July 12. She appears to have mistaken the poison for medicine which she had been taking regularly for some time. The jury returned a verdict of "Death by misadventure."

CARELESS STORAGE OF LIQUID WEED-KILLER appears to have been responsible for the death of the Rev. James Thomson, minister of Arbroath Parish Church. On Tuesday, July 19, he and his wife cycled from Comrie to Drummond Castle, arriving at their destination thirsty and fatigued. Whilst passing through the estate, observing what he thought was a barrel of water near the road, he drank some of the contents, but discovered when too late that it was arsenical weed-killer. Assistance being obtained he was conveyed to Crieff, where he died the following day.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Magic Lanterns, second-hand; triples and binoculars; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

One dozen each Ashton and Parsons' Pilules, Sulphur, Nux Vomica, Chamomile, Aconite, Belladonna, Phosph., Ipecac.; new and clean; what offers?—Houston, Chemist, Chesterfield.

R.R. Facile Hand-Camera and Canvas Case, cost £5 12s. 6d., good as new, £3 10s. or offers.—T. B. Rowell, Haydon Bridge.

Books.

"Dispensatory," latest, complete, quite new; cost 35s., take 27s. 6d.—M., 22, Society Place, Derby.

WANTED.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

Perkin and Kipping's 'Organic Chemistry'; Green's 'Botany,' second volume; Bentham and Hooker's 'Flora'; Cross and Cole's 'Modern Microscopy.' State edition, condition, and price. "Chemist," 6, Long Causeway, Peterborough.

Old Chemists' Pots, Jars, and Bottles. Particulars and price to "Antique," Pharmaceutical Journal Office, 5, Serle Street, London, W.C.

Students' and Chemists' Books wanted for cash or exchange. Please supply following particulars:—Edition, date of publication, condition, and price required.—Gower, Publisher, Waterloo, Liverpool.

Offers Wanted.—1 oz. Piperazin; 3 × 1 oz. Guaiacol Carb.; ½ lb. Guaiacol; 1 oz. Chinosol; 2 ozs. Cocain Hydrochlor.; 1 oz. Zymine (Fairchild); 1 lb. Bismuth Carb.; 3ss. Homatropin Hydrobrom.—Chemist, 156, Green Lanes, Stoke Newington, N.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Alcock, Atkinson, Austen, Brierley, Clegg, Downes, Evans, Forrest, Freeman, Gifford, Glyn-Jones, Goldby, Griffith, Hewlett, Hill, Hogg, Johnston, Lake, Lawrence, MacNaught, Plumbly, Reynolds, Ross, Southall, Swainson, Symes, Thompson, Winship.



London Report.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

JULY 28, 1898.

The Markets have again been very quiet during the past week, with, however, a somewhat more hopeful feeling as to the future of trade in Drugs and Chemicals after the summer holidays are over. There has been a further advance in Acid Citric, which closes quite firm. The same may also be said of Acid Tartaric and Cream of Tartar. Opium is again dearer, which has had its effect on Morphia and Codeia. Quicksilver and Mercurials, Iodine and Iodides, Bromine and Bromides, Bismuth and Salts, are all unchanged. Cod-liver Oil very quiet. Glycerin firm. Quinine quiet and unchanged. Sulphate of Ammonia dearer. Cocaine rather firmer, as also is Phenacetin. Sulphonal unchanged. Acetanilide weak. Borax and Acid Boracic very quiet. Acid Oxalic lower. Ipecacuanha steady. The following are the actual prices of articles of chief interest:—

ACETANILIDE.—Weak at 1s. to 1s. 1d. per lb., according to quantity.

ACID BORACIC.—Quiet at 23s. per cwt. for *crystals*, and 25s. per cwt. for *powder*.

ACID CARBOLIC.—Is quiet but steady at 6½d. to 6¾d. per lb. for 35-36° C. *ice crystals* in 2½-cwt. drums and overcasks; other qualities and packing in proportion. *Crude*: 60° F., 2s. 1d.; 75° F., 2s. 6d. per gallon. *Liquid*: 95 per cent., of pale straw colour, 1s. 1d. to 1s. 2d. per gallon in 40 gallon casks.

ACID CITRIC.—Is again dearer at 1s. 2½d. per lb. for *Crystal*. Market is very firm, and a further rise is expected in view of the relatively higher values of juice.

ACID OXALIC.—Steady at late reduction to 3½d. to 3¾d. per lb. on the spot.

ACID TANNIC.—The *leviss B.P.* quality is quoted 1s. 8d. to 1s. 9d. per lb. in cwt. cases.

ACID TARTARIC.—Exceedingly firm at 1s. 1d. per lb. for *English crystal* and 12¼d. per lb. for *foreign*. An early advance is anticipated.

AMMONIA COMPOUNDS.—*Sulphate* dearer, with a very firm market. Grey prompt, 24 per cent., London, £9 10s. per ton; Hull, prompt, £9 8s. 9d.; Leith, prompt, £9 10s. per ton. *Carbonate* firm at 3¾d. to 4d. per lb., according to package. *Bromide* steady at 2s. 1d. per lb. *Iodide* unchanged at 14s. 6d. per lb. *Sulpho-cyanide* firm and scarce on the spot; 1s. 2d. per lb. quoted. *Sal ammoniac* steady at 35s. per cwt. for sublimed firsts, and 33s. per cwt. for seconds.

APOMORPHIA.—One maker advanced his price to 17s. per oz., while a further advance in value would appear to be practically certain.

BISMUTH.—There is no change in price either of the *metal* or of the *salts*.

BLEACHING POWDER.—Firm at £6 15s. to £7 10s. per ton, according to package.

BORAX.—Is steady, although quiet, at 13s. 6d. per cwt. for *lump*, and 14s. per cwt. for *powder*.

BROMIDES.—Without change at prices quoted last week.

CAMPHOR.—The position of *crude* shows no improvement, and quotations in the absence of business are quite nominal. *China* at 78s. 6d. per cwt., and *Japan*, 87s. per cwt., *c.i.f.* terms. *Refined* is quiet at late reduction.

CARDAMOMS.—There has been more enquiry privately, and a moderate business has been done at some improvement on the prices realised in last auctions.

CLOVES.—Privately *Zanzibar* have been strong, and good business has passed, including spot, 4¼d.; August to October delivery, 4¾d. to 4½d.; October to December, 4¾d. to 4½d.; January to March, 4½d. At auction of 125 bales *Zanzibar* 25 bales middling sold at 4d.; 8 cases good picked *Penang* bought in at 10d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: Commercial, 1s. 4d., pure 2s. 3d. per gallon. *Benzole*: 50 per cent., 11d.; 90 per cent., 10d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C., 5d. *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 7½d. per gallon.

COCAINE.—There is a decidedly better feeling in this article, prompted first by the fact that buyers are now rigorously insisting on having an article which quite fully answers all the B.P. tests (which fact has tended to throw into the shade one or two of the makes which have lately been offering at comparatively reduced prices), and, secondly, owing to the limited supply of *crude*. The best brands of the article can, however, still be bought from the makers at 9s. 3d. to 9s. 6d. per oz. for the *Hydrochlorate* in 25-oz. tins and 100-oz. lots.

COD LIVER OIL.—Very quiet, nominal price being 85s. to 90s., according to brand *f.o.b.* for best new non-congealing *Norwegian* oil in tin lined barrels of 25 gallons each.

CODEIA.—Makers lately advanced their price to 12s. 6d. per oz., at which figure the article remains very firm.

CREAM OF TARTAR.—Is again dearer, first white *crystals* on the spot having been done at 74s. per cwt., and at 76s. 6d. to 77s. per cwt. for *powder*. Good B.P. *crystals* firm at 83s. per cwt.: *powder*, 86s. per cwt.

DAMIANA LEAVES.—Are again reported dearer from the other side, and 10d. per lb. here is quoted.

GALLS.—*Persian* are very firm, but little business has been done owing to the firmness of holders.

GOLDEN SEAL ROOT.—Comes dearer from New York at 1s. 8d. to 1s. 9d. per lb. *c.i.f.*

GINGER.—*Cochin* remains flat; of 587 bags, rough kinds, only 190 bags sold, cuttings 13s., sea damaged washed rough 18s. 6d. to 19s., the remainder bought in washed rough 22s., brown 26s.; 98 cases, medium and small native, part cut, bought in at 42s. to 50s. *Jamaica* steady but quiet, of 279 barrels only 100 sold, common *Rhatoon* 65s. to 65s. 6d., middling to good middling washed 73s. to 77s.; 36 half-barrels, good bright plump, sold at 86s. 6d. to 88s.

GLYCERIN.—Is firm at 52s. 6d. per cwt. for *English* and 55s. to 65s. according to brand for *German* white double-distilled chemically pure 1260 quality in tins and cases.

IODIDES.—In good demand at unchanged prices.

IPECACUANHA.—Since last week's auctions a few bales of *Rio* have changed hands at 9s. per lb., and a certain quantity of *Carthagena* at 5s. per lb.

JAPAN WAX.—Is very quiet. Good squares quoted 32s. 6d. per cwt.

LAVENDER FLOWERS.—*New* are offering at 25s. to 27s. 6d. per cwt., *c.i.f.*, according to quantity.

MERCURIALS.—Are firm at unchanged prices.

MORPHIA.—Makers' prices are 5s. per oz. for powdered salts, and 2d. per oz. more for *crystals*, at which figures the article is very firm, in face of the continued rise in value of opium.

NITRATE OF SODA—Is quoted £7 12s. 6d. per ton for *commercial*, and £7 17s. 6d. per ton for *refined*.

NITRATE OF SILVER—Has continued to fluctuate slightly in sympathy with price of the *metal*, price being 1s. 5½d. to 1s. 6½d. per oz., according to quantity, for *crystals*, *sticks* costing more in proportion.

OILS (ESSENTIAL).—*Star Aniseed* is quieter, with sellers on the spot at 7s. 1½d. per lb. *Peppermint*: American H.G.H. is quoted 5s. 6d. to 5s. 9d. per lb., according to quantity. *Wayne County*: New York advices report a firm market. Here on the spot 4s. per lb. is quoted. *Cassia* firm and dearer, 70 to 75 per cent. 5s. 1½d. to 5s. 3d. per lb., 75 to 80 per cent. 5s. 6d. per lb. *Citronelle* is firm, but quotations are nominal. *Eucalyptus*: Good ordinary quality 1s. per lb.; medicinal oil 2s. 6d. to 2s. 9d. per lb.

OILS (FIXED) AND SPIRITS.—*Linseed* lower at £16 12s. 6d. for spot pipes, and £16 17s. 6d. for barrels. *Rape* is lower at £21 10s. for ordinary brown on the spot, refined spot £23. *Cotton* rather easier at £13 12s. 6d. for London crude on the spot, refined spot £15 15s. to £16, according to make. *Olive* quiet for green oils, Spanish lower, owing to exchange, at £31; French, Levant and Mogador £32 10s. *Coconut* firm; Ceylon in pipes on the spot, £23 10s.; hogsheads, £24 10s.; Cochin, spot, £28 10s. *Palm* slightly dearer at £22 10s. for Lagos on the spot. *Turpentine* dearer, but closing quiet at 22s. per cwt. for American on the spot. *Petroleum Oil* very firm at 4½d. per gallon for Russian, and 5½d. per gallon for American.

OPIUM.—The demand for both "druggists" and "manufacturing" kinds continues, and a large business has been done at advancing prices. Stocks have been considerably reduced, and a further advance may be safely anticipated. Most holders ask exorbitant figures; others have withdrawn their stocks from the market. Full rates have been paid for *soft shipping*. Nominal quotations on the spot are:—Ordinary to good *soft shipping*, 11s. 6d. to 13s. 6d. per lb.; good to fine *druggists*, 11s. to 12s. 6d. per lb.; *Persian*, 11s. 6d. to 12s. 6d. per lb.

PHENACETIN.—Market is rather firmer at 3s. 9d. to 4s. 3d. per lb. for good quality *crystal* or *powder* in quantity and bulk packing.

OTTO OF ROSE.—Mr. H. A. Holstein, of Constantinople, estimates this year's crop at about 48,000 Turkish ounces, as against 70,000 Turkish ounces in 1897, and an average of 71,000 Turkish ounces for the previous nine years. It is anticipated that in consequence of the small yield this season that higher prices will have to be paid.

PERMANGANATE OF POTASH—Is quoted 60s. to 62s. 6d. per cwt., according to quantity, for small crystals in 1 cwt. kegs, the large crystals costing 5s. per cwt. more.

PHENAZONE.—Dr. Knorr's *Antipyrine* was reduced late last week by nearly 50 per cent. from the comparatively high price at which it had been previously held, while the chemical equivalent of *Antipyrine*, *Phenazone* to wit, was also further reduced, there being sellers as low as 9s. per lb. in quantity and in large bulk packing.

POTASH COMPOUNDS.—*Chlorate* firm at 3½d. per lb. on the spot for both crystal and powder. *Bichromate* lower at 2¼d. to 3d. per lb. according to quantity. *Prussiate*: *Yellow* firm at 7d. per lb. *Red* unchanged at 1s. 2d. per lb. *Bicarbonate* steady at 30s. per cwt. for crystals and powder. *Iodide* unchanged at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Bromide* very firm at 1s. 9½d. per lb. *Permanganate* is in fair demand at 62s. 6d. per cwt. for small and 67s. 6d. per cwt. for large crystals. *Cyanide*: Spot goods continue scarce, and realise readily 1s. 2d. to 1s. 2½d. per lb. for the 98 to 100 per cent. cake.

QUICKSILVER—Is very firm at £7 12s. 6d. per flask from first hands, and £7 12s. from second-hand holders.

QUININE.—Market has been very quiet this week, makers' price being unchanged at 10d. per oz. for *German* brands of the *Sulphate* in 100 oz. tins and 1000 oz. lots.

SARSAPARILLA.—*Jamaica* is scarce, and 1s. 10d. per lb. is asked. *Native* is held for 1s. per lb. for fair grey to red, and 1s. 2d. per lb. for all red.

SENA.—There is some enquiry for *Tinnevely*, and business has been done at 2d. per lb. for small spotty leaves, and 3½d. to 4d. per lb. for fair medium leaves. Pods have been done at 1½d. per lb. for fair pale.

SENEGA ROOT—Is scarce on the spot, 1s. 2d. per lb. being asked for the little that is available. Price in the United States is firmer with a good demand.

SHELLAC.—The market is extremely quiet, and only a few hundred cases of *Second Orange* have been done this week at steady prices. For August delivery TN is quoted 64s. 6d. per cwt.

SODA COMPOUNDS.—*Crystals* remain firm at 57s. 6d. per ton in barrels. *Bicarbonate* unchanged at £7 5s. to £7 10s. per ton for the 97 to 98 per cent. commercial quality, and 18s. 6d. per cwt. for the fully bicarbonated chemically pure article. *Ash* steady at £5 5s. to £5 15s. per ton, according to strength. *Bromide* firm at 2s. 0½d. per lb. *Iodide* steady at 11s. 7d. per lb. *Caustic*: 70 per cent. white, £7 15s. per ton, 60 per cent. £1 per ton less.

SPICES (VARIOUS).—*Black Pepper*: 39 bags good Coorg and 73 bags Wynaad sold at 4½d. *White Pepper* privately firm, Penang 7¼d. to 8d., Siam and Singapore 8½d. to 9d., according to position. *Chillies*: 36 bales Zanzibar brought in at 32s., and 5 bales sea-damaged sold at 30s. 36 cases Japan sold, without reserve, at 32s. to 32s. 6d. *Cinnamon Chips*: 35 bags good Ceylon sold at 4¼d. *Mace*: 11 packages West India sold at 1s. 5d. to 1s. 11d. *Nutmegs* quiet but steady. *Pimento* firm: 100 bags good sold at 4½d.

SUGAR OF LEAD.—*Foreign* is firm at 27s. 6d. per cwt. *English*: 31s. per cwt.

SULPHATE OF COPPER—Is dearer at £16 to £17 5s. per ton, according to brand.

SULPHONAL.—Remains in *statu quo*, being still obtainable from the makers in limited quantity and to regular customers only at 7s. 3d. per lb. for bulk.

SULPHUR.—Is firm. *Foreign* roll 6s. 6d. per cwt. Flowers 7s. per cwt. *English* roll 7s. 6d. per cwt.

TURMERIC—Continues very firm, but scarcity restricts business. *Bengal* finger of dark fracture sold at 21s. per cwt. *Cochin* finger quoted at 21s. per cwt.; split bulbs, 10s. per cwt. *Madras* is very scarce, and extreme rates are asked.

Newcastle Chemical Report.

JULY 27, 1898.

Sulphur is scarce on this market, and very firmly held at price quoted. With the exception of new shipping orders in circulation against contracts, new business for forward is slow. Prices are: Sulphur: £5 to £5 5s. Bleaching powder, £6 5s. to £6 10s. Soda crystals, basis, 45s. to 52s. 6d. Caustic soda: 70 per cent. basis, £7 5s. to £7 10s. Soda ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. per ton.

Manchester Chemical Report.

JULY 27, 1898.

In heavy chemicals Ammonia Alkali, Soda Ash, and Crystals are fairly firm at late rates, but Caustic Soda and Bleaching Powder remain inactive. The price for the last-named article ranges from £5 2s. 6d. to £5 7s. 6d. per ton on rails, prompt delivery. Some contract business over next year has been put through, it is reported, at £5, an extraordinarily low figure under the circumstances. Sulphate of Copper is firm at from £17 to £17 10s. per ton, according to brand, delivered Manchester. It is evident there is little second-hand stuff on the market. Brown acetate continues to droop, and is rather neglected at even £5 per ton for American or Welsh ex-ship. Pitch has improved a little, but prices are still low. Locally, Green Copperas is in fair demand for best Lancashire make, but is suffering somewhat from the competition of the Welsh article. Aniline oil and salt are unchanged on last week.

Liverpool Market Report.

JULY 27, 1898.

AMMONIA SALTS.—*Carbonate*: 3d. per lb. *Sulphate*: £9 7s. 6d. to £9 10s. per ton.

BEE SWAX.—Gambia, 10 bales, at £6 15s. to £6 17s. 6d. per cwt.

BLEACHING POWDER—£5 7s. 6d. to £5 15s. per ton.

CANARY SEED—Continues dull and neglected at 25s. to 26s. per 464 lbs.

COPPERAS—Is very firm at 38s. per ton for Lancashire and 36s. for Welsh.

COPPER SULPHATE—Is firmly held for £16 10s. to £16 15s. per ton.

GINGER.—200 bags of Sierra Leone sold, ex-quay, at 18s. per cwt.

OILS (FIXED) AND SPIRITS.—*Castor* is somewhat quiet, but

Prices are steadily maintained at 3¼d. per lb. for Calcutta, 3d. to 3½d. for French, first pressure, and 3½d. per lb. for Madras. *Olive*: Spanish was offering early in the week at £28 15s. per tun. for Malaga for shipment, cost, and freight, and £27 15s. for Seville ditto; Malaga is now quoted on same terms at £28 5s. to £28 15s. *Linseed* of Liverpool make is priced at 18s. to 18s. 6d. per cwt. *Cottonseed*: Liverpool refined, 15s. 9d. to 16s. 3d. per cwt. *Spirits of turpentine* is again a shade higher at 22s. 9d. per cwt.

POTASH SALTS.—*Chlorate* is dearer; crystal, 3¼d. per lb.; and powder, 3½d. to 3½d. per lb. *Chromate (Bi)*, 3¼d. per lb. *Pearlash* quiet at 35s. per cwt. *Potashes* have dropped a little, owing to arrivals, 20s. to 20s. 3d. per cwt. *Tartar* is steady at 78s. 6d. per cwt.

SODA SALTS.—*Borax*, £13 to £14 per ton. *Bicarbonate*, £6 15s. per ton. *Caustic*: 70 per cent., £8 5s. per ton; 60 per cent., £6 5s. *Crystals* firm at £2 17s. 6d. to £3 per ton. *Nitrate*, 7s. 6d. to 7s. 9d. per cwt.

News in Brief.

THE HUNLEY LECTURE on "Recent Advances in Science and their Bearing on Medicine and Surgery," will be delivered next October at the Charing Cross Medical School by Professor Virchow.

AN OVERDOSE OF LAUDANUM taken by Charlotte Smith (49), of Wrelton, caused her death on July 2. It was shown at the inquest that the woman was an inveterate laudanum drinker, and the Coroner, in reviewing the evidence, commented strongly upon alleged defects of the law in regard to the sale of poisons. The jury condemned the action of the chemist who supplied the poison, on the ground that there was reason to believe he knew the purpose for which it was required. They also recommended alterations in the Act of Parliament relating to the sale of poisons.

MR. CHARLES E. TURNER, jun., eldest son of Mr. C. E. Turner, pharmaceutical chemist, Bury Street, Bloomsbury, W.C., has successfully passed the final examination of the Conjoint Board of the Royal Colleges of Physicians and Surgeons.

AN OVERDOSE OF MORPHINE has caused the death of the Medical Officer of Health for Montrose, Dr. Greatbatch, who suffered greatly from sleeplessness. Efforts were made to overcome the effects of the drug, but without success.

EDINBURGH PHARMACY ATHLETIC CLUB (Swimming Section).—The second of the series of summer handicaps (50 yards) was brought off in Dalry Baths on July 18, with the following result:—1, J. Grieve, 12 sec.; 2, L. S. Lamb, 6 sec.; 3, A. G. Paterson, 6 sec.; 4, G. H. C. Rowland, 8 sec.; 5, J. Lockerbie, scratch. A very close finish.

NEWCASTLE-ON-TYNE AND DISTRICT CHEMISTS' ASSOCIATION.—The second annual excursion was held on Wednesday, July 20, when a large company of members and their friends visited the ancient and picturesque borough of Hexham. On arrival at the town the party proceeded by way of the woods to Swallowship, where the time was spent in rambling, photography, etc. On returning to Hexham an excellent meat tea was provided at the Royal Hotel, the party doing full justice to the meal, afterwards inspecting the Abbey under the guidance of Mr. J. P. Gibson. The party included Mr. J. Maltby Clague, President of the Association; Mr. C. Ridley and party, Newcastle; Mr. and Mrs. J. D. Rose, Jarrow; Mr. W. Kerse, Newcastle; Mr. J. P. Gibson, Mr. John, and the Misses Gibson, Hexham; Mr. and Mrs. Brand, Wallsend; Mr. F. R. Dudderidge, Principal of the North of England School of Chemistry, Newcastle; Mr. Gelderdale, F.C.S., Mr. Ismay, Mr. Pescod, Newcastle, and many others. Mr. G. F. Merson, F.C.S., Hon. Secretary, was responsible for the arrangements for what proved to be a most delightful and enjoyable outing.

A COUNTY COUNCIL'S RESPONSIBILITIES.—The Warwickshire County Council has had its attention called by Mr. Hollick, chemist and druggist, Birmingham, to the important changes made in the B.P. Mr. Hollick expressed a hope that no prosecution would be instituted until the trade and the public had been allowed sufficient time to become acquainted with the new standard. He said the changes applied specially to

tincture of rhubarb, milk of sulphur, and chlorodyne, and, referring to the last mentioned, said it became a question in making up prescriptions whether chemists should disobey the law or kill the patient.—After thanking Mr. Hollick for his valuable statement, the Chairman suggested the addition of Mr. Hollick's name to the Committee, remarking that his practical experience was likely to be valuable. He added that as a public body they had only to carry out the law, and if in so doing they killed a patient, he could only say he was sorry for the patient.

CRICKET.—In the match played at Wadham Lodge, Walthamstow, on Saturday, July 23, between "Allenburys" C.C. and the City Mills, C.C., the former scored 101 for six wickets, and the latter 71 for five wickets.

MR. PELHAM C. MAITLAND, of Great Portland Street, W., formerly of Stonehouse, Plymouth, has obtained the diploma of the Royal College of Physicians of London. This is in addition to the Royal College of Surgeons (Eng.) and a triple qualification obtained before.

ARSENIC was the cause of death in the case of W. G. Nash (36), landlord of the Original Pack Horse Inn, Winchcombe, on July 5. He had been drinking and took what he supposed was a dose of Epsom salts, but which proved to be a white powder containing arsenic. "Misadventure," the jury thought.

POISONING BY LIQUID WEED-KILLER.—In connection with the death of the Rev. James Thompson, of Arbroath, mentioned last week, it appears that the barrel containing the weed-killer was placed on supports, covered by a tarpaulin, near the inner court of Drummond Castle, and hanging on the spigot was a tin jug. It is stated that the word "Poison" was marked on the barrel, but the tarpaulin cover hid it from view.

INLAND REVENUE PROSECUTION.—At Stalybridge Police Court, on July 13, Frederick William Jackson, "patent" medicine vendor, was summoned for exposing for sale medicines without a licence, and also for not having them stamped. Mr. Hawkins, who prosecuted, said defendant sold for one shilling a number of recipes, and presented each purchaser with a box of pills. That, he contended, amounted to a sale of the pills. Each box should have upon it a three halfpenny stamp, but they were all unstamped. The defendant pleaded that he thought it was not a sale when he gave away the pills with the recipes, but he was nevertheless fined.

LITTLE MISS LOGIC.

Little Dot (to Eminent Professor of Chemistry): Are you a chemist?

Eminent Professor: Yes, my dear.

L. D.: Have you got a shop with lovely large coloured bottles in the window?

E. P.: No, my dear, I don't keep a shop.

L. D.: Don't you? Then I suppose you don't sell Jones' Jubilee Cough Jujubes?

E. P.: No, my dear, I certainly do not.

L. D. (decidedly): I don't think I ought to talk to you any more. You can't be a respectable chemist.

E. P.: Why not, my dear?

L. D.: 'Cos it says on the box, "Sold by all respectable chemists."—*Punch*.

Marriages.

MASKEW—SMITH.—On July 19, at St. Mary's Parish Church, Scarborough, by the Right Rev. the Lord Bishop of Hull, William Maskew, pharmaceutical chemist, of 285, Oxford Street, Manchester, to Agnes Annie, eldest daughter of Richard Smith, jeweller, of 5, Newboro' Street, and 13, Albemarle Crescent, Scarborough.

COWIE—SINGER.—At Rothmaise Inch, Aberdeenshire, on the 26th inst., by the Rev. Wm. Masson E. C. Culsalmond, William Beverly Cowie, pharmaceutical chemist, Edinburgh, to Mary Barbara, third daughter of the late Adam Singer.

Publications Received.

THE VALUE OF CERTAIN DRUGS IN THE TREATMENT OF GOUT. By ARTHUR P. LUFF, M.D., B.Sc., F.R.C.P. (Lond.). Pp. 16. Being a reprint from the *Lancet*. From the Author.

PRACTICAL ORGANIC CHEMISTRY. By GEORGE GEORGE, F.C.S. Pp. 96. Price 1s. 6d. London: W. B. Clive. University Correspondence College Press. 1898. From the Publishers.

A COURSE OF PRACTICAL CHEMISTRY OR QUALITATIVE CHEMICAL ANALYSIS. By the late W. G. VALENTIN, F.C.S. Edited and revised by W. R. Hodgkinson. Ninth edition. Pp. xii. + 403. Price 9s. London: J. & A. Churchill. 1898. From the Publishers.

DIE OXYMETHYLANTHRACHINONE UND IHRE BEDENTUNG FÜR EINIGE ORGANISCHE ABFÜHRMITTEL. By A. TSCHIRCH. Reprinted from *Berichten der Deutschen Pharmaceutischen Gesellschaft*, Jahrgang 1898, Heft 5. Berlin: Verlag von Gebrüder Borntraeger. From the Author.

VERSUCH EINER THEORIE DER ORGANISCHEN ABFÜHRMITTEL, WELCHE OXYMETHYLANTHRACHINONE ENTHALTEN. By A. TSCHIRCH. Reprinted from *Schweiz Wochenschrift für Chemie und Pharmacie*, 1898, No. 23. From the Author.

KLEINE BEITRÄGE ZUR PHARMAKOBOTANIK UND PHARMAKOCHEMIE, Nos. 5 and 6. By A. TSCHIRCH. Reprinted from *Schweiz Wochenschrift für Chemie und Pharmacie*, Nos. 3 and 18. From the Author.

BEITRÄGE ZUR KENNTNIS DER ALOË. By GULLOW PEDERSEN. Reprinted from *Archiv der Pharmazie*. Bd. 236, 3 Heft. 1898.

DIE ANWENDUNG DER VERGLEICHENDEN ANATOMIE ZUR LÖSUNG VON FRAGEN DER ANGEWANDTEN PHARMAKOLOGISIE. By A. TSCHIRCH. Reprinted from *Schweiz Woch. für Chem. und Pharm.* 1897. No. 41. From the Author.

ERKENNUNG GEFÄLSCHTEN OPIUMS MITTELST RÖNTGENSTRAHLEN. By A. TSCHIRCH. Reprinted from *Schweiz Woch. für Chem. und Pharm.* 1898. No. 21. From the Author.

THE 1900 PHARMACOPEIA IN ITS RELATIONS TO THE SPECIAL DEPARTMENTS OF MEDICINE. By C. S. N. HALLBERG, Ph.C. Reprinted from *Medicine*. Detroit, Mich.: William M. Warren. From the Author.

SOMATOSE UND FERROSOMATOSE ALS ROBORANTIA. Von Dr. R. FUCHS. Abdruck aus *Die Heilkunde Monatsschrift für praktische Medizin*, 1898, Heft 8.

PROTARGOL, EIN SPECIFICUM CONJUNCTIVITIS, BLENNORRHOICA. Von Dr. A. DARIER, Paris. Abdruck aus *Die Ophthalmologische Klinik*, 1898, Nr. 7.

UEBER DIE EINWIRKUNG VON MONO- UND DI-CHLORACETAL AUF PHENOLE. By JULIUS HESSE. Pp. 47. Munchen: Druck von Val. Höfling, Kapellenstrasse Nr. 3. 1898. From the Author.

MANUALE DEL FARMACISTA. Del Dott. P. E. ALESSANDRI. Seconda edizione rifatta, di pag. xvi. + 731, con 145 tavole e 82 figure. £0. 6.50. Milano: Ulrico Hoepli, Editore. From the publisher.

BULLETIN DE L'ACADÉMIE ROYALE DE MÉDECINE DE BELGIQUE. Contribution à l'étude de l'essence de thym; par M. MAURICE DUYK. Pp. 12. Bruxelles: Hayez, Imprimeur de l'Académie Royale de Médecine de Belgique. 1898. From the Author.

CHEMICAL ANALYSIS, QUALITATIVE AND QUANTITATIVE. By WILLIAM BRIGGS, M.A., LL.B., F.C.S., and R. W. STEWART, D.Sc., Lond. Pp. viii. + 128. Price 3s. 6d. London: W. B. Clive, University Correspondence College Press. 1898. From the Publisher.

UEBER DIE BEREITUNG EINES HALTBAREN LIQUOR BUROWI. Von G. CANDUSSIO. Reprinted from the *Pharm. Post*. 1898. Nr. 25.

SAINT BARTHOLOMEW'S HOSPITAL REPORTS. Vol. xxxiii., 1897. Pp. viii. + 327 + 230. London: Smith, Elder and Co., 15, Waterloo Place. 1898. From the Publishers.

ALKALOIDAL ESTIMATION: A Bibliographical Index of Chemical Research Prepared from Original Literature for the Committee of Revision of the U.S.P., 1890-1900. By PAUL I. MURRILL, under the direction of ALBERT B. PRESCOTT. Pp. iii. + 58. Ann Arbor, 1898. Published by the Committee.

ZUR CHARACTERISTIK DER EISENSOMATOSE. Von Dr. med HUGO GOLDMANN.

DAS TRIONAL. Von Dr. RICHARD DREWS. Reprints from *Die Heilkundie*. Wien. 1897.

CHLOROFORM: ITS ABSOLUTELY SAFE ADMINISTRATION. By ROBERT BELL, M.D., F.F.P.S., etc. Pp. 40. Price 1s. Glasgow: J. M. Smith, Ltd., 67, Hope Street. 1898. From the Author.

UEBER DIE THERAPEUTISCHE VERWENDUNG DER MILCHSOMATOSE. Von Dr. J. P. ZUM BUSCH.

Advertisement.

(Received too late for Classification).

LABORATORY. Vacancies for two or three hands with some manufacturing experience, especially in chemicals. Apply by letter, with full particulars of age, experience, and wages required, to LABORATORY, c/o Street & Co., 30, Cornhill, E.C.

Partnerships Dissolved.

(From the London Gazette.)

John M. Owen, H. L. Swcte, and Joseph Hammond, Surgeons, Castle Hill, Fishguard, Pembroke. Debts will be received and paid by Joseph Hammond, Public Accountant, Duffryn Chambers, Pontypridd.

Wm. D. James and Hugh Rhodes, Surgeons, Sheffield.

Receiving Orders in Bankruptcy.

(From the London Gazette.)

Arthur Skand, Perfumer, 71, Leyspring Road, Leytonstone, and trading in co-partnership at 103, Bishopsgate Street Within.

Peter Craven, Ankle Strap Manufacturer, 10, Musgrave Fold, The Bank, and 19, Ellerby Road, Leeds.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

OFFERED.

Books.

First 3 Parts Quain's 'Dictionary of Medicine'; first 8 parts each of Cassell's 'History of England' and 'Family Physician.' First reasonable offer gets them.—Postlethwaite, Chemist, Barrow-in-Furness.

Miscellaneous.

Magic Lanterns, second-hand; triples and binials; oxyhydrogen microscope; marvellous pamphengos. oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Photographic mounts, Bristol cartes, 3s.; G.B.E., 10s.; cabinets, 10s.; G.B.E., 15s.; quarter-plates, 6s.; half-plates, 12s. 1000; plate-sunk mounts, 12 by 10, 40s. 1000. Samples free.—Edward Peck, East Dereham, Norfolk.

Soda-Water Trolley, will carry 2 or 3 dozen easily, 37s., carriage paid.—Particulars of Arthur & Co., Cambridge.

WANTED.

Formulae suiting any good toilet specialty; liberal price. Particulars privately to W. Lewis, 15, Shelden Street, Bishop's Road, London, W.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Bell, Bennett, Butcher, Evans, Ffoulkes, Gauber, Harvie, Hill, Johnson, Johnston, Long, Lunan, McKnight, McNaught, Matthews, Moore, Narami, Plumbly, Siviter, Thresh, Wild.



London Report.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

AUGUST 4, 1898.

As might have been expected, business has been extremely quiet during past week, comparatively few transactions having taken place, while the changes in value worthy of record are practically *nil*. Acid Citric remains extremely firm, one maker having advanced his price. Quinine steady. Cocaine, Opium, Morphia, and Codeia very firm. Glycerin is also firm. Same may be said of Quicksilver and Mercurials. Bromides and Iodides without change. Ipecacuanha steady. We give below the actual prices, some of which must, however, be considered as in so far nominal, in that there has been no business passing:—

ACETANILIDE.—There are sellers in half-ton lots at 1s. per lb. in bulk packing.

ACID CARBOLIC.—Quiet but steady at 6½d. to 6¾d. per lb. for 35 to 36° C. *ice crystal* in bulk packing according to quantity and brand. *Crude*: 60° F. 2s. 1d.; 75° F. 2s. 7d. per gallon. *Liquid*: 95 per cent. of pale straw colour 1s. 1d. to 1s. 2d. per gallon in 40-gallon casks.

ACID BORACIC.—Steady but quiet at 23s. per cwt. for *crystals*, and 25s. per cwt. for *powder*.

ACID CITRIC.—Is very firm at 1s. 2½d. per lb. on the spot, it being reported that one maker has advanced his price to 1s. 3d. per lb.

ACID TARTARIC.—Unchanged at 1s. 1d. per lb. for *English crystals* and 12¼d. per lb. for *Foreign*.

ACID OXALIC.—Is steady at 3½d. to 3¾d. per lb., according to package.

ALUM.—Loose lump £5 10s. per ton, ground in bags, £6 per ton.

AMMONIA COMPOUNDS.—*Sulphate* quiet at £9 10s. per ton for grey 24 per cent. *Carbonate* firm at 3¾d. to 4d. per lb., according to package. *Bromide* unchanged at 2s. 1d. per lb. *Iodide* quiet at 14s. 6d. per lb. *Sulpho-cyanide* very firm at 1s. 2d. per lb. *Sal ammoniac*: Sublimed firsts 35s. per cwt.; seconds 33s. per cwt. *Muriate*: 25s. per cwt. for white.

ARSENIC.—Firm at 19s. per cwt. for *powder*; *lump*, 34s. per cwt.

BISMUTH AND SALTS.—Unchanged.

BLEACHING POWDER.—Steady at £6 15s. to £7 per ton, according to package.

BORAX.—But little doing, price, however, firm at 13s. 6d. per cwt. for *lump*, and 14s. for *powder*.

BROMIDES.—Are firm at prices hitherto ruling.

BUCHU LEAVES.—This article has firmed up since the drug auctions, and a few small lots still to be had at 6d. per lb. have been secured, and in view of the small stocks and falling off in shipments from the Cape, no leaves of fair green colour can be had to-day under, it is said, 9d. per lb.

CAMPHOR.—*Crude* is very quiet, quotations are as follows:—China August to September steamer 78s.; and Japan 87s. per cwt. *c.i.f.*; *Refined* steady at 1s. 2d. to 1s. 2½d. per lb. for bells or flowers, and 1s. 3½d. to 1s. 6d. per lb. for tablets according to size.

CLOVES.—*Zanzibar* have been in active demand, and large sales

have resulted at advancing prices, comprising spot 4¾d., Aug.-Oct. delivery 4½d., and Oct.-Dec. 4¼d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: Commercial, 1s. 4d., pure 2s. 6d. per gallon. *Benzole*: 50 per cent., 11d.; 90 per cent., 10½d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C., 5d. *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 6d. per gallon.

CODEIA.—Is firm. at 12s. 6d. per oz. for the *pure*, the price of the *salts* being 1s. per oz. less.

COCAINE.—Market is firm at 9s. 3d. to 9s. 6d. per oz. for 100 oz. lots in 25 oz. tins, the tendency of price being in an upward direction, due partly to the reported scarcity of raw material, and partly to the fact that the increasing tendency to insist that the article fully answers all the requirements of the B.P. has had the effect of increasing demand for those brands which are known to fully answer such requirements.

COD-LIVER OIL.—Very little doing, price being nominally unchanged.

CREAM OF TARTAR.—Is a shade easier; first white *crystals* on the spot 73s. 6d. per cwt., and 76s. to 77s. per cwt. for powder. High strength quality is firm at 83s. and 86s. per cwt. for crystals and powder respectively.

DAMIANA LEAVES.—This article is reported from New York to be in a very strong position, 10d. per lb. is wanted on the spot here.

DRAGON'S BLOOD.—Stocks have fallen to 8 packages but a further arrival of 8 cases is just announced. Fine is much wanted.

GENTIAN ROOT.—Is rather easier at 19s. 6d. per cwt., to come forward.

GLYCERIN.—Remains firm at about last week's prices. It is, thought however, that with the advent of the increased demand for autumn and winter consumption we may very likely see a further advance in value.

GUM MASTIC.—Good clean pale tear is held for 1s. 11d. per lb., but demand is slow.

IODIDES.—Are in fair demand at unchanged prices.

IPECACUANHA.—Business has been done since our last at 9s. per lb. for fair *Rio* root and at 5s. per lb. for *Carthagenia*, the supply of the latter being small.

JAPAN WAX.—Quiet but steady at 33s. per cwt. for good squares.

MENTHOL.—Is firm, with fairly good inquiry, at 7s. 1½d. to 7s. 3d. per lb.

MERCURIALS.—Are firm at unchanged prices, viz., 2s. 5d. per lb. for *Corrosive Sublimate*, and 2s. 9d. per lb. for *Calomel* in 56-lb. lots.

MORPHIA.—Makers' prices remain firm at 5s. per oz. for the *powdered salts* and 5s. 2d. for *crystals*, in quantity and bulk packing.

NITRATE OF SODA.—*Commercial* is quoted at £7 12s. 6d. to £7 15s., and *refined* £7 17s. 6d. to £8 per ton.

OILS (ESSENTIAL).—*Star Aniseed* is firm at 7s. 1½d. per lb. on the spot, but demand is less active this week. *Cassia* is firm at 5s. 3d. to 5s. 6d. per lb. for 70 to 75 per cent., and 5s. 6d. to 5s. 9d. per lb. for 75 to 80 per cent. *Peppermint*: American firm; H.G.H. quoted 5s. 7½d. per lb.; Wayne County, 3s. 9d. per lb. It is stated that this year's Mitcham crop will be late, and a crop rather less than the average may be expected. *Lavender*: The Mitcham crop promises well, and should give a good yield. *Cloves*: English, 3s. per lb. *Santal Flav. Eng.*, 12s. per lb.

OILS (FIXED) AND SPIRITS.—*Linseed* quiet at £16 12s. 6d. for spot pipes, and £17 for barrels. *Rape* a shade easier at £21 10s. for ordinary brown on the spot, and £23 for refined on the spot. *Cotton* lower at £13 10s. for London crude spot; refined, £15 5s. to £16, according to make; Hull naked, refined spot, £13 5s. *Olive*: Green oils are firm at £32 per ton; feeding oils are also firm at 5s. 6d. to 6s. 6d. per gallon, according to quality. *Coconut* a shade lower at £23 5s. for Ceylon pipes on the spot: Cochin, spot,

Monthly Statement of Drugs, etc., Warehoused in London.—August 2, 1898.

Articles.	July, 1898.		Stocks, July 31.		Articles.	July, 1898.		Stocks, July 31.			
	Arrivals.	Deliveries.	1898.	1897.		Arrivals.	Deliveries.	1898.	1897.		
Aloes (all kinds).....	packages	1329	746	5,587	6,006	Gum, Mastic	packages	—	2	23	8
Balsams	"	58	54	394	422	Myrrh	"	33	6	463	527
Cinchona Bark	"	1,892	1,864	20,858	20,572	Olibanum	"	23	322	3,729	2,169
Quinine Sulphate	ounces	130,480	37,968	1,697,056	1,391,392	Tragacanth	"	117	644	2,555	3,380
Beeswax	packages	728	246	2,280	2,855	Ipecacuanha	"	124	56	299	234
Camphor	"	542	790	9,599	11,881	Jalap	"	40	3	346	376
Cardamoms	"	263	421	1,426	1,005	Nux Vomica	"	139	14	242	490
Cochineal	"	208	337	2,757	2,224	Oils, Castor	"	71	207	498	382
Calumba Root	"	974	527	1,026	175	Olive	"	201	178	1,201	858
Cubebs	"	—	44	1,910	354	Aniseed	"	50	9	153	96
Dragon's Blood	"	—	8	11	84	Cassia	"	10	6	87	117
Galls (all kinds)	"	9	213	6,377	4,734	Rhubarb	"	157	93	530	364
Gum, Ammoniacum.....	"	—	—	26	31	Saltpetre	tons	882	1,226	2,554	6,236
Arabic, all kinds..	"	590	978	10,471	13,470	Sarsaparilla	packages	148	70	374	317
Asafetida.....	"	29	40	480	291	Senna.....	"	253	212	611	988
Benjamin	"	140	204	3,066	3,158	Shellac	"	3,832	3,841	57,488	50,129
Galbanum	"	—	—	15	1	Terra Japonica, Gambier	tons	453	465	1,439	1,218
Gamboge	"	38	21	290	315	Cutch ..	"	76	103	1,130	1,579
Guaiacum.....	"	69	22	104	70	Turmeric	"	52	33	280	681
Kino	"	—	—	35	24						

The stocks of camphor, oils of aniseed and cassia are incomplete, some warehouses not making returns.

£28 10s. *Palm* firm at £22 10s. for Lagos on the spot. *Turpentine* firm at 22s. per cwt. for American on the spot. *Petroleum Oil* quiet at 4½d. to 4¾d. per gallon for Russian on the spot, and 5½d. per gallon for American; water white, 6¾d. per gallon. *Petroleum Spirit*: American, 5¾d.; deodorised, 6d. per gallon.

OPIUM—Is firm, prices being nominally about the same as last week.

PERMANGANATE OF POTASH.—Small crystals are quoted 62s. 6d. per cwt., and large crystals 67s. 6d. per cwt.

PHENACETIN—Is slightly firmer, price remaining, however, nominally unaltered, a good article being still obtainable at 3s. 9d. to 4s. 3d. per lb. in bulk packing, according to quantity.

PHENAZONE.—The price of this article is being still further cut. Buyers will, however, do well to be careful that they get a reliable product, it being reported that there are inferior makes in the market.

POTASH COMPOUNDS.—*Bromide* steady at 1s. 9½d. per lb. *Iodide* firm at 9s. 9d. to 10s. 3d. according to quantity. *Bicarbonate, Foreign*, crystal or powder, 30s. per cwt. *English* 35s. per cwt. *Chlorate* steady at 3¾d. per lb. *Bichromate* steady at 3¾d. per lb. *Prussiate* firm at 7d. per lb. for *Yellow*, and 1s. 2d. per lb. for *Red*. *Cyanide*: Cake, 1s. 2d. per lb.; Stick 1s. 7d. per lb. *Permanganate* steady at 62s. 6d. per cwt. for small, and 67s. 6d. per cwt. for large crystals.

QUICKSILVER—Continues strong at £7 12s. 6d. for flask from importers, with second-hand sellers at £7 12s.

QUININE.—Market is very quiet, with few sellers of German *sulphate* below makers' price, which remains 10d. per oz. for 1000-oz. lots in 100-oz. tins.

SENNA.—Stock of all grades remains abnormally low. *Alexandrian*: Market quiet, with demand for good leaf only, which is scarce. *Tinnevelly*: Business has been done this week at 3¾d. to 4d. per lb. for medium green leaf.

SHELLAC.—This article is exceedingly dull in all positions, and prices are quite nominal. According to telegraphic advices from Calcutta, the shipments to the United Kingdom during July amount to 3800 cwt., as against 8300 cwt. same time last year, to the United States 6500 cwt., against 1700 cwt. last year, and to the Continent 2600 cwt., as against 1900 cwt. last year.

SCAMMONY.—*Virgin*: Supply very short; firsts are held for 30s. per lb.; seconds 20s. to 25s. per lb. *Roots* are firmly held at 28s. to 30s. per cwt. *Resin* firm at 6s. 9d. to 7s. per lb.

SODA COMPOUNDS.—*Crystals* are steady at 57s. 6d. per ton in barrels. *Bicarbonate* steady at £7 5s. to £7 10s. per ton for the 97 per cent. commercial article, and 18s. 6d. per cwt. for the fully bicarbonated quality. *Ash* firm at £5 5s. to £5 15s. per ton, according to strength. *Bromide* unchanged at 2s. 0½d. per lb. *Iodide* quite at 11s. 7d. per lb. *Caustic*: 70 per cent. £8 per ton, 60 per cent. £7 per ton.

SUGAR OF LEAD.—*Foreign* continues very firm at 27s. 6d. to 28s. per cwt. *English* steady at 31s. per cwt.

SULPHONAL—Unchanged, the two makers still accepting orders from regular customers only, and for limited quality at 7s. 3d. per lb. in bulk.

SULPHUR—Firm. *Foreign roll*, 6s. 6d. per cwt. *Flowers*, 7s. per cwt. *English roll*, 7s. 6d. per cwt. *Flowers*, 9s. per cwt.

SULPHATE OF COPPER.—Very firm at £16 10s. to £17 per ton, according to brand and delivery.

TURMERIC—Continues exceedingly firm. *Bengal*, 21s. per cwt. *Madras* is in very small supply and high prices are asked. *Cochin*, finger, 20s. per cwt. for fair, bulbs 10s. per cwt.

Newcastle Chemical Report.

AUGUST 3, 1898.

Rather more is doing in heavy chemicals for the Baltic ports. Bleaching powder moves slowly at slightly easier figures. Sulphur still keeps scarce. Prices are: Bleaching powder, £6 to £6 10s. Soda crystals, 45s. to 52s. 6d. Caustic soda: 70 per cent. £7 5s. to £7 10s. Soda ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. per ton. Sulphur: £5 per ton.

Liverpool Market Report.

AUGUST 3, 1898.

AMMONIA SALTS.—*Carbonate*, 3d. per lb. *Sal ammoniac*, 33s. to 35s. per cwt. *Sulphate* is slightly dearer; £9 10s. to £9 12s. 6d. per ton.

BLEACHING POWDER—Is quiet at £5 7s. 6d. to £6 15s. per ton. CANARY SEED—Is not much inquired for, and rules steady at 25s. to 26s. per 464 lbs. for *Turkish*.

COPPERAS—Continues firm at 36s. and 38s. per ton.

COPPER SULPHATE—Is firm at £16 10s. to £16 15s. per ton.

HONEY.—*Chilian* has been in good demand for export, and 170 barrels, nearly all of Pile 3, sold at 21s. per cwt.

OILS (FIXED) AND SPIRITS.—*Castor* is quiet, Calcutta, 3¾d. per lb. *French*, 3d. per lb., *Madras* 3d. to 3¾d. per lb. *Olive*: Fine Spanish are in good demand, but supply is short. *Malaga* for shipment is quoted at £29 (cost and freight) per tun. *Linseed*: Liverpool pressure is unchanged at 18s. to 18s. 6d. per cwt. *Cottonseed*: Liverpool refined, is selling quietly at 15s. 9d. to 16s. 3d. per cwt. *Spirits of turpentine* is quoted at 22s. 6d. per cwt., for which it is firmly held.

POTASH SALTS.—*Bichromate* is quiet at 3¾d. per lb., a slight drop in price. *Chlorate* firm at 3¾d. to 3¾d. per lb. *Cream of Tartar* 78s. 6d. per cwt., both on the spot and to arrive. *Pearlashes* nominal at 35s. per cwt. *Potashes* are a turn firmer 21s. to 22s. per cwt.

SODA SALTS.—*Bicarbonate*, £6 15s., *Borax* firm, £13 to £14 per cwt. *Caustic*: 76 to 77 per cent., £8 2s. 6d. to £8 5s. per ton. *Crystals* £2 17s. 6d. to £3 per ton. *Nitrate*, steady 7s. 6d. to 7s. 9d. per cwt.

Manchester Chemical Report.

AUGUST 3, 1898.

There is little or nothing new to report in heavy chemicals, except perhaps that prices are somewhat easier, except for Ammonia Alkali, which remains firm at £4 2s. 6d. to £4 7s. 6d. per ton, according to quantity, on rails. Recovered Sulphur is firm at £4 10s. to £5 per ton, according to point of delivery. Sulphate of Copper is in less request at £17 per ton, best brands, delivered Manchester. Brown Acetate of Lime is higher, and may be quoted at £5 2s. 6d. to £5 5s., Welsh and American, delivered Manchester. Naphthas are still scarce, especially Miscible and Solvent Wood (white colourless), the latter being about 1d. higher than last week. Benzols are unchanged at 10d. for 90's and 50's to 90's. Creosote is higher, 2½d. to 2¾d. Pitch is slow of sale at low prices, and Anthracene is also low, being quoted 4½d. for A, and 3¾d. for B quality. Saltcake rather dearer at 24s. to 25s. per ton. Arsenic is dull at £15 to £15 5s., ex ship Garston. Acetate of Soda somewhat dearer.

News in Brief.

MR. J. W. KNAPMAN, the Pharmaceutical Society's Librarian, is to be congratulated on his eldest son having won, at Rugby School, a leaving exhibition of £30 per annum, tenable for four years.

A BOTTLE OF CARBOLIC ACID, kept in a washstand cupboard, at Sheffield, was discovered by Charles Fenn, a boy of six years, who administered a teaspoonful of the poison to his young brother, aged three. Afterwards he told the nurse that he had been giving him some medicine. The dose proved fatal.

A BOTTLE OF LINIMENT which stood on a chest of drawers was espied by Lawrance Oliver Withington (2½), living with his parents at Gosberton. He climbed on to a chair, obtained the bottle, drank a portion of the liniment, and died in a few hours from belladonna poisoning.

MISS LIZZIE BUCHANAN, daughter of Mr. David Buchanan, chemist and druggist, Kirriemuir, was successful, at a recent examination, in gaining the St. Andrew's L.L.A. Diploma. The young lady is an apprentice chemist and druggist, and also holds the Art Teacher's Certificate, South Kensington.

THE LORD MAYORALTY OF MANCHESTER.—At an informal private meeting of the Manchester City Council held on Wednesday afternoon a resolution was unanimously adopted, requesting Alderman R. Gibson, Ph.C., to allow himself to be nominated to the office for the ensuing year. A deputation was appointed to wait upon his Lordship and to report to another meeting to be held that day fortnight.

DROYLSDEN PRUSSIATE WORKS, MANCHESTER.—Messrs. R. H. Pickles and Co., chemical manufacturers and drysalters, announce that they have purchased the above works, and that all the patented products which were worked at the Ardwick Chemical Works will be carried on by them. Mr. R. H. Pickles and Mr. Hartley Pickles, who have been connected with the late firm of Robert Rumney and Mellor and Pickles for the last twenty years, will have the management.

DR. TANNER IS IN FORM this week. He has a number of questions on the paper and seems consumed with a thirst for knowledge. Amongst the posers for various Ministers he proposes to ask Mr. Long (Board of Agriculture) next Monday whether he has any evidence of the physiological action of the worm called *Solerostomum tetracanthum*, and whether he is aware that thymol is of great service as a "nematocide" in cases of severe "epizootic attacks" set up by the interesting organism above alluded to. This question makes a brave show on the notice paper and may make a sensation at the Board of Agriculture.

THE DIRECTOR-GENERAL of the Medical Department of the Navy is inviting applications from dispensers, who must be legally

qualified, for temporary service in the Royal Naval Hospitals, but a correspondent who has had much experience in the service expresses the hope that men will not be induced to apply for the positions offered, as there is positively no inducement whatever for a man in the service, promotion being a thing unknown. There is little reason to doubt that the position of pharmacists in the public service is far from satisfactory, and the authorities should not be surprised, therefore, if they experience difficulty in filling up vacancies with dispensers of the best type.

MR. H. E. ELLIS, Ph.C., late Demonstrator at the Northern School of Pharmacy, Manchester, has, on the recommendation of the Aberdeen Pharmaceutical Association, been appointed Pharmacy teacher at Robert Gordon's College, Aberdeen.

FOOD AND DRUGS ACT PROSECUTION.

Isaac Baron, shopkeeper, of Abbey Village, Withnell, was charged at the Chorley Petty Sessions on Tuesday, July 26, with selling a drug which was not of the nature and quality demanded.—P.S. Jackson said he visited defendant's shop on Thursday, May 19. He saw Mr. Baron, and asked what kind of drugs he sold, and he replied "Compound tincture of Turkey rhubarb." He asked to be supplied with eight ounces, and defendant took it from a three-pound bottle. Witness told defendant he had purchased it for the purpose of analysis, and made the usual offer as to the division of the article, and he left a third portion. The following day he took the sample to the public analyst. The latter reported that he had examined the sample, and found that it was composed of 47.0 per cent. of water, 50.1 of alcohol, 2.9 of total solids or extractives, of which 2.4 per cent. was soluble in water, and 0.4 per cent. was insoluble in water. The sample contained only about one-half the usual quantity of extractives in which were included the active ingredients of tincture of rhubarb. In the opinion of Mr. Collingwood Williams, the analyst, the sample had not been prepared by the method of the British Pharmacopœia, a copy of which was produced.—Cross-examined: He did not know that the B.P. only came into operation in June.—In defence, Mr. Evans, barrister-at-law, said they were charged with selling compound tincture of rhubarb to the prejudice of the purchaser and not being the quality demanded. He would be able to show that in the 1885 edition of the Pharmacopœia there was no such heading of any preparation as compound tincture of rhubarb. The British Pharmacopœia, 1898, was not published until May, and it was recognised in the trade that it only came into operation in June. The purchaser was notified that the preparation was a compound. He did not ask for a simple preparation at all, and there was no such thing in the British Pharmacopœia of 1885 as a compound. He suggested that the article demanded was supplied, and if it were not so, there was nothing done to the prejudice of the purchaser, because if the wrong article was sold, the prosecution must go further and show that the substances sold were to the prejudice of the purchaser.—The Bench retired, and on their return the Chairman said they had carefully considered the case, and had decided to convict. Defendant would be fined 40s. and costs.

Marriages.

KIRBY—ELLIOT.—On July 28 at St. Catherine's Church, Abercromby Square, Liverpool, by the Rev. T. W. M. Lund, M.A., Samuel Collier, son of the late Rev. Canon Kirby, Vicar of Haverthwaite, North Lanes, to Mary Louisa, eldest daughter of Robt. J. Elliot, Ph.D., of Liverpool.

KELLY—JOHNSTON.—On July 28, at Greyfriars Parish Church, Aberdeen, by the Rev. Gordon J. Murray, B.D., Francis Kelly, M.D., to Annie, youngest daughter of John Johnston, member of the Council of the Pharmaceutical Society.

MARTIN—MARTIN. On July 28, at Lamesley Parish Church, by the Rev. E. Sydney Savage, M.A., vicar designate of Hexham, assisted by the Rev. J. Crott, vicar of the parish, William Martin, M.A., M.D., fourth son of James Martin, Restronguet, Cornwall, to Ellen Renfree, eldest daughter of N. H. Martin, J.P., Pharmaceutical Chemist, Ravenswood, Low Fell.

Advertisements.

(Received too late for Classification).

WANTED.—Qualified ASSISTANT (out-doors), aged about 24. Good dispenser. Off one night weekly at 5. State height, experience, &c., to STARKIE, 7, Grand Hotel Bldgs., Charing Cross.

DISENGAGED August 30th. Qualified. LOCUM or permanent to hospital or private practice. Age 30. Present locum, Bromley Hospital, E. Previous locum, South Western Hospital, Stockwell, S.W. Highest testimonials. Thoroughly trustworthy. Address, DISPENSER, Poplar and Stepney Sick Asylum, Bromley, London, E.

PARIS.—Wanted, immediately, by a first-class chemist, a qualified ASSISTANT. Must be expert salesman, competent prescriber, and of good address, with knowledge of French preferred. For particulars, write, enclosing photo (will be returned), J. DELOUCHE, 2, Place Vendôme, Paris.

CLIFTON.—Wanted, an ASSISTANT for August 22nd, or soon after. One accustomed to good-class dispensing and retail, with knowledge of photography. Not necessarily qualified. Apply, with full particulars and photo, to COMPACT, "Pharm. Journal" Office, 5, Serle St., London, W.C.

APOTHEKER, 29, with German qualification, and also Dr. Zil. of Basle, desires situation in high-class pharmacy. Speaks French and German fluently. Reply, Dr. PAUL SCHNEIDER, 6, Bedford Place, Russell Square, London.

Publications Received.

ON THE TREATMENT OF OBESITY AND MYXŒDEMA BY A NEW PREPARATION OF THYROID ("THYROGLANDIN"). By WILLIAM MACLENNAN, M.B. Reprinted for the Author from the *British Medical Journal*. London: British Medical Association, 429, Strand, W.C. 1898. From the Author.

BALSAMS, RESINS, GUM-RESINS, AND MILKY JUICES. By KARL DIETERICH, Ph.D., Helfenberg. Reprinted from the *Chemist and Druggist*. 1898. From the Author.

UEBER DEN JETZIGEN STAND DER HARZ-ANALYSE. By Dr. KARL DIETERICH. Reprinted from the *Oest. Chemiker-Zeitung*. Wien, 1898. From the Author.

ZUR MORPHINBESTIMMUNG IM OPIUM. By Dr. KARL DIETERICH. Reprinted from *Berichten der Deutschen Pharmaceutischen Gesellschaft*. Berlin: Gebrüder Bornträger. 1898. From the Author.

ZUR CHEMIE UND PHYSIOLOGIE DER JODEIWEISSVERBINDUNGEN. By Dr. KARL DIETERICH. Reprinted from *Pharmaceutischen Zeitung*. Berlin: Julius Springer. 1898. From the Author.

Partnerships Dissolved.

(From the London Gazette.)

W. Moore and E. Stanley Robinson, Surgeons and General Medical Practitioners, Stourport, Worcester.

G. Fortescue and Henry Forth (trading as George Fortescue), Soap Manufacturers, Bradford Street, Bulwell, Nottingham, so far as Henry Forth is concerned.

E. Y. Oakes and J. A. Gardiner, Chemists and Druggists, High Street, Ely. Debts will be received and paid by J. A. Gardiner.

R. J. Sankey, C. E. Döring, and P. H. E. Döring (trading as the Continental Bottle Co.), Bottle Merchants, 78, Billiter Square Buildings, E.C., so far as A. J. Sankey is concerned.

C. Stafford-Noble and Francis Liddell (trading as Noble and Co.), Photographic Engineers, 19, Mount Pleasant, Pentonville, N.

A. Nash and E. H. Pratt, Veterinary Surgeons, Northallerton. Debts will be received and paid by E. H. Pratt, who will continue the business.

Tom Kershaw and Harry Bennett, Botanical Brewers, Rochdale, Lancs. The said Harry Bennett and Thomas G. Cooke, of Birmingham, will continue the business and receive and pay all debts.

Receiving Orders in Bankruptcy.

(From the London Gazette.)

Benjamin H. Baker (trading as Baker & Co.), Drysalter, 48, Marlborough Road, The Brook, Liverpool, and lately carrying on business at 41, Upper Frederick Street, Liverpool.

John H. Atherton, Chemist and Druggist, 46, Market Street, Wigan.

OBITUARY.

JENKINS.—On July 25, Jabez Jenkins, Chemist and Druggist, Llysyfrann. Aged 62.

TAYLOR.—On July 27, Joseph Edward Taylor, Chemist and Druggist, Manchester. Aged 35.

SHEARING.—On July 28, Robert Shearing, Chemist and Druggist. Aged 85.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

OFFERED.

Books.

Pharmaceutical Journal, 7 vols., from July, 1879, to July, 1886, bound, clean, perfect, 1s. 6d. per vol., 1, Cemetery Road, Burry, Suffolk.

Brunton's Text-book, 'Pharmacology, Therapeutics, and Materia Medica,' and Lescher's 'Recent Materia Medica,' new, 22s. cash.—Westwood, 14, Thomas Street, Grimsby.

Whitla's 'Materia Medica, Pharmacy, and Therapeutics,' Brunton's ditto; Martindale's, 1885, 1888, 1891, 1892; Squire's 'Companion,' 1882, 1890, 1894; 'Vet. Counter Practice'; Canning's 'Formulae.' What offers?—Tansley, Chemist, Kingsgrove, Staffs.

Miscellaneous.

Photographic mounts, Bristol cartes, 3s.; G.B.E., 10s.; cabinets, 10s.; G.B.E., 15s.; quarter-plates, 6s.; half-plates, 12s. 1000; plate-sunk mounts, 12 by 10, 40s. 1000. Samples free.—Edward Peck, East Dereham, Norfolk.

Magic Lanterns, second-hand; triples and binoculars; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Three 6-gall. pear-shape carboys, cut stoppers; offers.—Scanlan, 436, Borough Road, Birkenhead.

Moulds.—Suppository, Pessary, Bougie, Capsule, Fumigating Pastille, all Maw's patterns, some new; particulars free.—Warnes, Chemist, 333, Gray's Inⁿ Road, W.C.

A few gross Iolanthe Hair-curling Fluid, 3d. size, 18s. gross, carriage paid; Camwal Shares wanted.—S. Sugden, Pharmacist, Waterfoot, Manchester.

Dispensing Screen for sale, by Maw, nearly new, 5 ft. 3 in. x 6 ft.—Apply by letter only, 64, Linthorpe Road, N.

WANTED.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Bell, Buchanan, Cannon, Deed, Donald, Elliot, Elsdon, Ferrall, Hackforth, Hill, McKnight, Moss, Plumbly, Reid, Stephenson, Warrell.

NOTES ON EXPOSURE IN PHOTOGRAPHY.*

Of all subjects connected with photography, probably the most difficult to the tyro is the estimation of the correct exposure for the various subjects which he may wish to take. It is possible, by long experience and working under practically fixed conditions, to mentally estimate the correct exposure, a well-known instance being the studio work of a professional photographer, but when it comes to the taking of all classes of subjects, under varying conditions of light, the task is by no means so easy, and it is with the hope that the following exposure tables may be of some assistance that they are included in this work.

There are certain factors which govern the duration of exposure which must be thoroughly grasped before starting practical work. They are:—

- 1.—The sensitiveness of the plate.
- 2.—The ratio aperture of the lens.
- 3.—The character of the subject.
- 4.—The chemical activity of the light illuminating the object.

1.—THE SENSITIVENESS OF THE PLATE.

There is not, unfortunately, absolute agreement as to the best method of estimating plate speeds or sensitiveness. Briefly, we may say that there are four methods: (a) "times"; (b) Warnerke's system; (c) Hurter and Driffield's system; (d) no system.

(a) "Times."—It is well known that the present gelatine dry plate has supplanted for general work the old wet collodion process, which is now only used for particular kinds of work, and in the early days of dry plates their speed was reckoned as so many "times" a wet plate. Unfortunately, the sensitiveness of a wet plate was by no means a fixed quantity, but varied considerably with certain conditions, which we need not enter into. This method is, therefore, about as unreliable as it can be, though it is still sometimes used, and a plate is described as "15 times," "30 times," and so on.

(b) Warnerke's system.—This consisted in exposing a plate behind a numbered screen to the light emitted from a phosphorescent tablet under given conditions, and a plate was said to be 18, 22, or 25, according to the number that could be read on development. The numbers on the screen ranged from 1 to 25. Notwithstanding the many grave defects existent in this method it is still sometimes used.

(c) Hurter and Driffield's system.—This is now the most generally accepted, and, briefly, a plate is exposed to a standard light developed for a standard time, the deposit measured in a photometer, and the speed calculated from the reading. The numbers are frequently expressed as "X, H, and D," and this is the system that has been chosen for these exposure tables.

(d) No System.—It is possibly an open question whether a method of denominating plate speeds from no system can be called a method at all, but the fact remains that there are many plates on the market which are merely called "ordinary," "landscape," "rapid," "extra rapid," "special rapid," "instantaneous," "snapshot," and so on. The actual definition, as regards speed, of these words being left entirely to the manufacturer, so that there can be no common agreement as to what these terms mean.

2.—THE RATIO APERTURE OF THE LENS.

There is, fortunately, more agreement as to this factor in photographic circles, and the result is that the leading opticians now designate the aperture of the diaphragms or stops of the lens in terms of the focal length. Thus a stop which has a diameter of aperture that is one-eighth of the focal length of the lens, no matter whether that focus be 3 or 300 inches, always requires the same exposure *ceteris paribus*. This is hardly the place to define "ratio aperture," "focal length," etc., because they are treated of in all elementary text-books on photography. The usual apertures of stops are 1/8, 1/11.31, 1/16, 1/22.62, 1/32, 1/45, 1/64 of the focus, and are written as F8, F16, etc., or f/8, f/16, etc. The ratio of exposure with the above, or any other stops, is readily found by squaring the F number, thus:—

S	×	S	=	64	—	1	—	1/4
11.31	×	11.31	=	128	—	2	—	1/8
16	×	16	=	256	—	4	—	1/16
22.62	×	22.62	=	512	—	8	—	1/32
32	×	32	=	1024	—	16	—	1/64
45	×	45	=	2048	—	32	—	1/128
64	×	64	=	4096	—	64	—	1/256

So that if the exposure with F/8 was two seconds, the exposure for any other stop may be found by increasing it in the ratio of

the square of the second stop to F/8; to facilitate matters this ratio is shown in the third column above. Thus the exposure would be with F/45, $2 \times 32 = 64$ secs. For the purpose of these tables, however, F/16 has been taken as the unit, for this aperture is far more general than F/8 in ordinary work.

3.—THE CHARACTER OF THE SUBJECT.

By this factor we mean practically the colour of the object or its light-reflecting powers; thus it is obvious that a white cloud lit by the sun will reflect far more light than a piece of black velvet lit by the same sun. Subjects may therefore be divided into the following classes:—

Sea and sky	1/16
Snow scenes, white objects, and black and white objects	1/8
Ordinary landscape	1
Heavy foreground or close objects	3
Portraits outdoors in diffused light	7
" in sitting rooms	150
Interiors, well lighted	300

4.—THE CHEMICAL ACTIVITY OF THE LIGHT.

It has been proved by several eminent chemists that the actinic power of the light is constant for any given hour, on any given day, in any given month, provided always that meteorological

Month.	6 a.m. and 6 p.m.	7 a.m. and 5 p.m.	8 a.m. and 4 p.m.	9 a.m. and 3 p.m.	10 a.m. and 2 p.m.	11 a.m. to 1 p.m.
January 10	—	—	4	1 1/4	2 1/2	1/2
" 20	—	—	4	1	2 1/2	2 1/2
" 30	—	—	2	2	2 1/2	2 1/2
February 10	—	—	1 1/4	1 1/2	2 1/2	1 1/2
" 20	—	3 1/2	1	1 1/2	2 1/2	1 1/2
March 1	—	2 1/4	3 1/2	2 1/2	1 1/2	1 1/2
" 10	—	1 1/2	3 1/2	1 1/2	1 1/2	1 1/2
" 20	4	1 1/2	3 1/2	1 1/2	1 1/2	1 1/2
" 30	2	1 1/2	3 1/2	1 1/2	1 1/2	1 1/2
April 10	1 1/4	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
" 20	1	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
" 30	2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
May 10	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
" 20	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
" 30	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
June 10	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
" 20	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
" 30	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
July 10	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
" 20	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
" 30	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
August 10	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
" 20	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
" 30	1	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
September 10	1 3/4	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
" 20	3 1/4	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
" 30	5	1	1 1/2	1 1/2	1 1/2	1 1/2
October 10	—	2	1 1/2	2 1/2	1 1/2	1 1/2
" 20	—	3	1 1/2	2 1/2	1 1/2	1 1/2
" 30	—	—	1 1/4	2	1 1/2	1 1/2
November 10	—	—	2 1/4	1 1/2	1 1/2	2 1/2
" 20	—	—	4	1 1/2	1 1/2	2 1/2
" 30	—	—	4	1 1/4	1 1/2	2 1/2
December 10	—	—	4 1/2	1 1/2	2 1/2	1 1/2
" 20	—	—	4 1/2	1 1/2	2 1/2	1 1/2
" 30	—	—	3 1/2	1 1/2	2 1/2	1 1/2

influences do not come into play. For our purposes we have taken four meteorological conditions—very bright, bright, ordinary, dull. There will be no difficulty in estimating the light after a little practice. "Very bright" may be defined as what one would naturally call a brilliant day; "bright" would mean not so brilliant, and yet sunny; whilst "ordinary" means a bright day, and yet no sun, whereas "dull" means a heavy, lowering day.

Each month has been divided into three divisions, that is, the exposures have been calculated for the 10th, 20th, and 30th of each month, and the days have been divided into equally active hours; thus from 11 a.m. to 1 p.m., 10 a.m. and 2 p.m., 9 a.m. and 3 p.m., 8 a.m. and 4 p.m., 7 a.m. and 5 p.m., 6 a.m., and 6 p.m., 5 a.m. and 7 p.m.

In all cases a plate speed of 60 H and D, which is a normal,

Reprinted from the 'Photographic Tourists' Guide,' published at the Pharmaceutical Journal Office, 5, Serle Street, Lincoln's Inn, W.C.

ordinary, or landscape-plate speed, has been taken as the unit, and the advantage of Messrs. Hurter and Driffield's speed system is that the plate speeds are directly proportional, and the exposures consequently inversely proportional—that is to say, a plate marked 30 H and D is just half the speed of one marked 60, and would require double the exposure, and one marked 120 double the speed of the 60, and would require half the exposure.

The unit aperture has been taken as F/16; the unit subject as an ordinary landscape; the unit light has been taken as "ordinary."

Now the factors for the various lights are as follows:—

Ordinary	1
Bright	$\frac{3}{4}$
Very bright	$\frac{1}{2}$
Dull	2

Now to explain the working of the various factors we have laid down, let us take an example.

Required the exposure with a lens working at F/22 with a plate marked H and D 60, for ordinary landscape, on June 25, at 11 a.m. On turning to the table of exposures we find the exposure to be 1/10 second with F/16, and by the table on p. 65, we see that F/22 requires twice the exposure.

$$\therefore 1/10 \times 2 = 1/5 \text{ sec.}$$

Taking precisely the same conditions, but with a very dull day, we simply give double the exposure found above, which will be $2/5$ sec.

Suppose we take the same conditions as in the last, but wish to take a portrait outdoors, then we have $2/5 \times 7 = 3$ sec. practically.

FOREIGN DARK-ROOMS.*

The addresses in the following list are those on the Continent and in other parts of the world at which dark rooms are available for the use of tourists. Many of them belong to dealers from whom photographic materials may be obtained, others are attached to hotels, public institutions, and private houses.

EUROPE.

AUSTRIA-HUNGARY.

- Altenburg (S.A.).**
Oscar Müller.
- Freiburg (in Bohemia).**
Carl Theod. Mayer, Münsterstr.
- Karlsruhe (in Bohemia).**
Rud. Mayer, Karl-Freiderickstr. 32.
- Prague.**
Adolf Fischl, Ferdinandstr. 23.
- Reichenberg (in Bohemia).**
W. E. Kahl, Bahnhofstr. 28.
- Salzburg.**
Dr. W. Sedlitzky.
- Steinschonau.**
Carl Hahnel.
Rech. Helzel, Sonnenbergerstr.
- Vienna.**
Oscar Kramer, Graben 7.
R. Lechner, Graben 31.

BELGIUM.

- Antwerp.**
L. van Neck, Rue Klapdorp 10 and 5, Place de Meir.
- Brussels.**
J. Margner & Co., Rue M. aux H. Potagères 22.
- Ostende.**
J. Demuynnek, 127, Rue Christine.

DENMARK.

- Copenhagen.**
Budtz Müllers Efterfølgere, Amalgortory 22.
Stolten and Simonsen, Kilostestrade.
Hansen.
Weller.

FRANCE.

- Asnières.**
Vorbe, Grand Rue 11.
- Bourbonne les Bains.**
Humblot-Ferret.
- Cannes.**
Buisson, 12, Bd. de Croisette.
J. Campana, 41, Rue de Fréjas.
- Compiègne.**
Le Compte Aquado.
- Enghein les Bains.**
Hotel de l'Etablissement thermal.
- Fontainebleau.**
Hotel de l'Aigle Noir.
- Mabeuge.**
Dandy.
Maillard.
- Mentone.**
Fosse, Rue Partoneuse.
- Morlaix.**
Fougère, Place Thiers.
- Nice.**
Comptoir Général, 57, Rue aints. Roch.
- Paris.**
Eastman Photo Materials Co., Ltd., 4, Place Vendôme.
Fribourg & Hesse, 26, Rue des Ecoles.
Hermages, 18, Rue Rambuteau.
Lievens, 20, Rue Richelieu.
J. H. Tunmer Bros., 10, Rue Gustave Courbet. D.
- St. Raphael.**
H. Ferrari.
- Vesoul.**
Pernel & Co.

GERMANY.

- Baden Baden.**
B. Bickel, Langestr. 20.
Schreck, Langestr. 19.
G. Strumpf, Lichtenthalerstr. 53.
- Berlin.**
R. Gaedicke, Ritterstr. 74.
Dr. A. Heseckel & Co., Landsbergerstr. 32.
F. Kuhn, Charlottenstr. 50.
Romain Talbot, Kaiser-Wilhelmstr. 46.
- Bremen.**
J. F. Scholke, Osterthorstr. 38.
- Cologne.**
J. H. Annacher, Bischofsgartenstr. 10.
- Dresden.**
C. F. Bernhardt, Palais Gutenberg.
Otto Francke, Pragerstr. 28.
E. Kaders, Alstr.
Emil Wünsche, Moritzstr. 20.
- Dusseldorf.**
Hotel Heck, Blumenstr.
- Flensburg.**
J. A. Groth, Carsten-Nirschen-Weg. 10.
- Frankfort-on-the-Main.**
Haake & Albers, Kerchnerstr. 4.
E. Vom Werth & Co., Friedenstr. 2.
- Gorlitz.**
Gaertig & Thiemann, Emmerichstr. 826.
Herbst & Firl, Handlg.
- Gottingen.**
Lange, Weenderstr. 34.
- Hamburg.**
Schütze & Noack, Pass. Scholvien 8.
- Hanover.**
S. ederlein, Luisenstr. 2.
- Kiel.**
M. Bensemer, Holstenstr.
- Klingenthal (N.).**
R. Klinger.
- Kosen (Thuringen).**
R. Krause.
- Markersdorf.**
Franz Eypert, Weinhaus.
- Miehlen.**
Wilhelm Redhardt.
- Munster (Westph.).**
A. Schellen, Schulstr. 23.
- Obermodern (Els).**
G. Schultz.
- Osnabruck.**
G. Pilmeyer.
- Stretten.**
Hans Draeger, Kohlmarkt. 2.
- Strasburg (Alsace).**
Meyer & Wanner, 21, Spiesegasse.
- Stuttgart.**
Ludwig Schaller, Marienstr. 14.
- Teplitz.**
Carl Müller.
- Wiesbaden.**
W. Hammer, Kirchgasse 2A.

HOLLAND.

- Amsterdam.**
Loman & Co.
- Alexandria.**
Castellani, Corsa Roma.
- Bergamo.**
A. Taramelli, Via Torquato Tasso 22.

Bologna.

- Sergato & Belvidere, Via Farina 24.
- Casale Montferrato.**
A. Bertolio, Via Garibaldi 6.
- Florence.**
Pietro Sbiza, Piazza Signoria 4.
Studio Dibettante Fotografi, Scala 1
- Genoa.**
Badino, Portici V. Emanuelli.
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A. Satteri, Via Carlo Felice 10.
A. Speiche, S.S. Gerolamo 3.
Hotel de la Ville.

Havre.

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R. Cavanagh & L. Foucher Fils, 30, Rue Thiers.

Leghorn.

- Y. Bettini, Via Ricasoli 18.

Milan.

- Bathista Borghi, Via Angello 47.
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- Guilio du Besse.
G. Sommer & Sons, Place Victoire.

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- A. Zenoni, Via Ospedal.

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San Remo.

- J. Scotto, Rue V. Emanuel 16.

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Bergen.

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Christiania.

- H. Abel, Prindsengade 11.
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Lisbon.

- J. J. Ribeiro, Rua Aurea 222.

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Bucharest.

- University of Bucharest.

Jassy.

- University of Jassy.

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- J. Block.
J. Pockorny, Rue de la Poste.

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T. Jochim & Co., Betite Morskaja 4.

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- F. Arenas, Plaza Regomir 5.
School of Micro-biology.

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- Lohr & Morejohn, Espoz-y-Mina 3.
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Stockholm.

Numa Petersen, Hamngatan.
J. Schmidt, Drottningatan 68
Academy of Sciences.
C. A. Pike
Medico-Chirurgical Inst.
The Observatory.
Swedish Tourist Club.

SWITZERLAND.**Basel.**

R. Carls, Clarastr, 5
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Berner Oberland.

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Grand Hôtel des Salines.

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Hôtel du Grand-Muveran.

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S. Bosshard.
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Cavachache Brathero, Grand Rue de Péra 675.

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Amballa.

Law Bros.

Bombay.

Babajee Sakharam & Co., Esuf Buildings, opposite Goculdas Tejpal Hospital.
Phillips & Co., Oriental Buildings.
A. Treacher & Co., Esplanade Road.
Devidas Vundravundas, 68, Warden Road.

Calcutta.

John Blees, 3, Hare Street.
W. Newman & Co., Dalhousie Square.

Darjeeling.

Smith, Stanistreet & Co.

Indore (C. I.).

Herzog & Higgins.

Jullundur (Punjab).

Mrs. Joseph, Cheltenham House.

Kalimpong.

Rev. J. Sutherland, M.A.
Rev. J. A. Graham, M.A.

Lahore.

John Blees.

Madras.

Major Hands, Police Court, Office Road.

T. P. S. Nagarathnam.

Phillips & Co., Esplanade Fort.
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Mhow.

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Poona.

Phillips and Co., Ltd., Templehouse Camp, Bhodwar Peth.

Secunderabad.

P. Metzker.

EMPIRE OF JAPAN.**Kobe.**

M. Fukushima, 41, Sakaimachist.

Osaka.

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Yokohama.

Cocking and Co.
North & Rae, 61, Main Street.

MALAY PENINSULA.**Brindjey.**

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Laboean.

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Medan.

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A. L. Rocha, San Sebastian 25.
C. Royes, Plaza Cervantes.
José Royes, C. de S. Gabriel 8.

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S. A. Senamoff.
Carl Schultz.

SIAM.**Bangkok.**

Anderson & Co., Oriental Store.
Möller & Meisner, near Royal Seminary.

STRAITS SETTLEMENTS.**Singapore.**

Photo Studio, Orchard Street

OCEANIA.—Australasia.**NEW SOUTH WALES.****Molong.**

W. G. Middleton Edwards.

Sydney.

Baker & Rouse, 375, George Street.
W. Cargill, 26, Market Street.
J. W. Small & Co., 373, George Street.

NEW ZEALAND.**Wellington.**

Barraud & Son, Molesworth Street.

QUEENSLAND.**Brisbane.**

Baker & Rouse, Elizabeth Street.
J. W. Small & Co., Queen Street.

TASMANIA.**Launceston.**

J. Sparrow, Brisbane Street.

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B. G. Lennon & Co., Ltd.

Johans Town.

B. G. Lennon & Co., Ltd.

Trade Notes.

MESSRS. REYNOLDS & BRANSON, LTD., direct attention to a dish designed by Mr. H. de Paiva B. Veale, L.S.A. (Lond.), for the reception of flexible catheters in daily use. It consists of an elongated narrow vessel furnished with an overlapping lid, and it is sufficiently long to admit a catheter of ordinary length without flexion being necessary. The catheter rests on two transverse ridges attached to the bottom of the dish, so that the antiseptic solution with which the dish is filled surrounds the instrument. A flexible catheter once having been used has to be bent to place in most of the receptacles as used at present, and this frequently produced "kinking" or injury at the eye. In this dish the catheter can be kept



perfectly straight, and a minimum amount of solution is required to keep it submerged. The vessel being long and flat it may be kept by a patient's bedside without fear of upsetting it, and the shallow depth, combined with the absence of angles, renders the dish very easily cleaned and sterilised. A label may be attached to the handle, or the patient's name may be written directly in ink or pencil on the lid. The dishes will serve for all forms of flexible catheters or bougies, and may also be used for drainage tubes. They are manufactured of iron, enamel ware, glass, or porcelain, and may be obtained from Messrs. Reynolds & Branson, Limited, of Leeds, at a small cost.

MESSRS. BURROUGHS, WELLCOME & Co. send specimens of zinc oxide tabloids, for which it is anticipated there will be a demand. The therapeutic uses of zinc oxide are many, and it is thought there is little doubt that the imperfect solubility of pills of this drug has discouraged its use for internal administration. The rapid disintegration of zinc oxide tabloids when dropped into water should remove this objection, and enable so useful a therapeutic agent to be more generally prescribed. They are issued in bottles containing 100.

MESSRS. JEWsbury AND BROWN, of Manchester, have produced a daintily-bound little volume for the waistcoat pocket, in which the doses and strengths of substances official in the British Pharmacopœia, 1898, are compared with those of the 1885 volume. Nothing better of the kind has yet been produced, and the volume is commended to the notice of readers of the Journal.

MESSRS. BURGoyNE, BURBIDGES & Co., of 16, Coleman Street, have submitted samples of Chlorobrom. This preparation, which is a combination of bromide of potassium and chloralamide, was the outcome of a suggestion by the late Dr. Charteris, Professor of Materia Medica and Therapeutics at Glasgow University, who since its introduction made a series of further experiments with it. It appears that it had been the professor's habit in his lectures to speak of the climatic treatment of disease, and notably of the magic effect produced by sea voyages, which in many cases was, unfortunately, discounted by the patient's liability to seasickness, and in order that this disadvantage might be removed he recommended the use of chlorobrom, which from personal experience he knew in many cases cures, and in all cases alleviates, seasickness. Numerous testimonials from ships' surgeons speak of chlorobrom as a most valuable preventive, both in long and short voyages, of this distressing ailment. Chlorobrom has also proved a most valuable remedy in insomnia. Messrs. Burgoyne & Co. will be glad to hear from chemists issuing price-lists and almanacks with a view to the insertion of advertisements of this preparation.

ENAMEL FOR DENTAL PLATES.—In order to overcome the inconvenience and concurrent pain and discomfort due to the shrinkage of the gums after teeth have been extracted, a Dr. Clarke has invented a rubber oil enamel, which is applied to the dental plates, and provides an elastic medium or buffer for the gums. Messrs. May, Roberts & Co., of Clerkenwell Road, are the wholesale agents for the sale of this ingenious invention.

MESSRS. W. R. WARNER & Co., of Philadelphia, have sent us (through their London agents, Messrs. F. Newbery & Sons) samples of their soluble preparations. Amongst them are compressed lentiforms of cascara sagrada, sugar coated, a convenient form for the administration of this aperient. Lithia water lentiforms each containing five grains of citrate of lithia, and affording an accurate method of administering a definite quantity of soluble lithia. Pil. sumbul comp. and pil. sumbul aperient are preparations of sumbul, which is a stimulant and tonic to the nervous system. Another preparation in liquid form of this drug is tono-sumbul cordial, in which the potency is increased by the addition of iron and cinchona. It is free from the disagreeable flavour of many bitter tonics.

MESSRS. NEWBERY & SONS have also forwarded samples of various toilet articles, &c. The St. Paul's Carbolic Tooth Powder bears no proprietor's name, and is supplied in quantities with labels bearing customer's name and address. Other articles similarly supplied are Almond Shaving Cream and Areca Nut Tooth Paste. "Papyroles" is the registered title given to the toilet roll papers issued by this firm in various sizes and prices from 6d. to 1s. The Old London Dalmatian Insect Killing Powder supplied in tin boxes should find a ready sale at this season.

MESSRS. MARION & Co., of Bury Street, Chelsea, call attention to their system of protected profits for chemists who undertake the sale of their Royal Court Hair Dyes.

OFFICE APPLIANCES.—In every business it is of the utmost importance to be able to refer to invoices, orders, and letters without delay or difficulty. The Globe Ideal File, which is supplied by Thomas Turner, Ltd., of Leicester, whose London office is 44, Holborn Viaduct, was introduced some twelve years since for this purpose, and from time to time repeated improvements have been made, such as have been suggested by experience in its use. The Ideal File is in the form of a drawer with open back to give easy access to its contents, which with the index are held in by an automatic spring. When the files are filled the contents can be removed to transfer cases, and there is an ingenious system of indexing, so that the contents can be readily referred to. The same firm supplies desks with roll tops in various forms of sizes, catalogues of which can be had on application to the manufacturers.

A NEW TRUSS PAD.—Mr. Vincent Wood, of Albion Place, Blackfriars, has forwarded for our inspection one of his new moulded truss-heads, which, it is claimed, is prepared chemically and specially moulded, and will not be affected by heat or cold. These truss pads have been subjected to a hydraulic power pressure of nearly 50 tons without bursting. Trusses with these pads will be supplied at a very slight advance on the price of ordinary trusses, and an excellent sample has been shown us which will be sold to the trade at 30s. per dozen.

AMIRAL SOAP FOR THE CURE OF OBESITY.—It is claimed for this soap that it will remove an excess of adipose tissue wherever applied. Testimonials emanating from medical men giving results of their experience appear to show that this soap when applied is absorbed by the pores of the skin, and has the effect of dispersing the local deposits of fatty tissue. The soap is green in colour, possesses a pleasant aromatic odour, and will doubtless meet with a ready sale amongst those who suffer discomfort through corpulence, many of whom have tried various internal remedies without success, and often with harmful results. Some of the leading medical journals testify to its freedom from injurious substances. The active agent is an extract of animal bile. The Amiral Soap Syndicate, Ltd., of 28A, Basinghall Street, have acquired the sole right of sale throughout the world, France and her Colonies and the Argentine Republic excepted.

THE BUSINESS OF MR. H. W. COX, of Cursitor-street, the maker of X-ray coils and apparatus, has recently been converted into a limited company. We have previously mentioned that Mr. Cox's work is to be relied on, and we are informed that he will continue to supervise the manufacture of all the apparatus made by the firm.



London Report.

AUGUST 11, 1898.

As might have been expected, the drug and chemical markets have been exceedingly quiet during the past few days, while the actual changes in value have been more or less unimportant. At the same time there is certainly a better feeling as to the prospects of business during the coming autumn, winter, and spring, and buyers, who have been hitherto holding off, and as far as possible only buying from hand to month, appear to be seriously considering the apparent advisability of securing supplies while prices remain, as is still the case with many articles, at a comparatively cheap level; and in view of the hope of a speedy termination of the Spanish-American war, combined with the prospects of a bounteous harvest, it is to be hoped that we may ere long see a satisfactory state of trade generally prevailing. Opium, Morphia, and Codeia remain very firm. Quinine steady. Iodides and Bromides in fair demand. Quicksilver and Mercurials firm. Saffron dearer, in consequence of the progress made in the negotiations for peace and consequent advance in Spanish rate of exchange, combined with actual good position of the article. Cod Liver Oil quiet. Glycerine firm. Cocaine likely to be dearer. Sulphonal unchanged. Phenacetin steady. Acetanilide dull and weak. Acid Carbolic in fair demand at steady prices. Sulphate of Ammonia rather firmer. Borax and Acid Boracic quiet. Acid Citric dearer. Cream of Tartar quiet. Acid Tartaric firm. Ipecacuanha very firm. Cacao Butter much dearer. The following are the prices actually ruling for articles of chief interest:—

ACETANILIDE—Can be bought at 1s. per lb. in half-ton lots. The article is, however, somewhat slow of sale.

ACID ACETIC is firm; 1 to 7 is quoted 14s. 3d. per cwt., B.P. 15s. 6d. per cwt., 50 per cent. 21s. 6d. per cwt., 74 per cent. 30s. per cwt., 85 per cent. 34s. per cwt., and Glacial 39s. 6d. per cwt.

ACID BORACIC unchanged at 23s. per cwt. for crystals, and 25s. per cwt. for powder.

ACID CARBOLIC.—Market remains steady at 6½d. to 6¾d. per lb. according to make for 35 to 36° C. *ice crystal* in large bulk, other qualities and packing in proportion. *Crude*: 60° F. 2s. 1d.; 75° F. 2s. 7d. per gallon. *Liquid*: 95 per cent. of pale straw colour 1s. 2d. per gallon in 40-gallon casks.

ACID CHRYSOPHANIC steady but quiet at 11s. 6d. to 13s. 6d. per lb.

ACID CITRIC is quiet but firm at 1s. 2½d. to 1s. 3d. per lb. for English crystals. Makers ask the latter figure.

ACID OXALIC firm at 3½d. per lb. on the spot.

ACID TANNIC is firm at 1s. 9½d. per lb. for light crystals, and 1s. 3d. per lb. for pure powder.

ACID TARTARIC.—English on the spot firm at 1s. 1d. per lb. for Crystals Foreign unchanged at 12¾d. per lb.

ALUM.—Loose lump is quoted £5 10s. per ton, ground in bags £6 per ton.

AMMONIA COMPOUNDS.—*Sulphate* rather firmer at £9 11s. 3d. per ton for grey prompt 24 per cent. *Carbonate* unchanged at 3¾d. to 4d. per lb. according to package. *Bromide* steady at 2s. 1d. per lb. *Iodide* firm at 14s. 6d. per lb. *Sulpho-cyanide* in good request at 1s. 2d. per lb. *Sal ammoniac*: Sublimed, "firsts," 35s. per cwt.; seconds, 33s. per cwt.

APOMORPHIA—Is firm in sympathy with *morphia*, at 17s. to 18s. per oz.

ARSENIC—Steady at 19s. per cwt. for powder, and 34s. per cwt. for lump.

ASAFETIDA.—There are some inquiries on the market, part for fine quality, which is exceedingly scarce, and part at prices which holders will not accept.

ATROPINE.—Remains firm at 17s. per oz. for the *pure* and 15s. 6d. per oz. for the *Sulphate P.B.*

BALSAM CANADA—Is steady at 1s. 3d. to 1s. 4d. per lb. in cases of 2 + 45-lb. tins.

BALSAM CAPIVI is easier at 1s. 11d. per lb. on the spot.

BALSAM TOLU is steady at 1s. 8d. to 1s. 9d. per lb. in large tins.

BISMUTH—Unchanged at 6s. per lb. for the *metal* and 4s. 10d. per lb. for the *subnitrate*.

BLEACHING POWDER—Is unchanged at £6 15s. to £7 15s. per ton, according to brand, quantity, and packing.

BORAX steady at 14s. per cwt. for lump and 14s. 6d. per cwt. for powder.

BROMIDES in good demand at 1s. 10d. per lb. for *Pot. Bromide*.

BUCHU LEAVES.—These continue scarce, and 9d. per lb. is asked for fair green round, and the same price is required for long leaves.

CALABAR BEANS—Are quiet but steady at 3d. per lb.

CAMPHOR.—Both *crude* and refined are quiet at unchanged prices.

CASCARA SAGRADA.—This bark is decidedly firmer, and higher prices are looked for in the autumn, when the smallness of this year's crop will be more evident. New bark is quoted 21s. per cwt., whilst for three-year-old bark 25s. per cwt. is asked, this quality being scarce.

CHLORAL HYDRATE remains in good demand at 3s. 11d. to 4s. 6½d. per lb., according to packages.

CINCHONA BARK.—7503 packages are advertised for the Amsterdam auctions on the 25th inst. The shipments from Java for July were 1,172,000 Amsterdam lbs. against 900,000 last year; and the total shipments from January to July were 6,089,000 lbs. as against 4,234,000 lbs. for the corresponding period last year.

CLOVES.—Privately the market for *Zanzibar* has been quiet and is rather easier. Business has passed at 4¾d. for October to December delivery, and there are further sellers at this figure, and buyers of January to March at the same price. At auction of 128 bales *Zanzibar* only 21 bales sold at 4¾d. to 4¾d.; 50 bags *Ambonya* bought in at 5½d. Of 44 cases *Penang* 8 cases dull, of old import, sold without reserve at 7¾d. to 7¾d. 1 box *Ceylon* sold at 7d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: Commercial, 1s. 3d.; pure, 2s. 3d. per gallon. *Benzole*: 50 per cent., 1s. 1d.; 90 per cent., 10½d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C., 5d. per gallon. *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 8d. per gallon.

COCAINE—Is firmer. There is, however, so far, no change in price, which remains at 9s. 3d. to 9s. 6d. per oz. for the *Hydrochlorate* in 25-oz. tins and 100-oz. lots.

COCA LEAVES.—Green *Truxillo* are firm at 7d. per lb. *Bolivian* are offered to arrive at 8½d. per lb.

COCOA BUTTER.—In the monthly auctions on Tuesday, 300 cases sold with active competition at a decided advance in values. Average price works out at 1s. 2½d. per lb., as against 10¾d. in July, and 9¾d. per lb. in June.

CODEIA.—Makers are firm at the advanced price of 12s. 6d. per oz. for the *pure*, and 1s. per oz. less for the *salts*.

COD LIVER OIL is quiet but firm. Fine quality *Norwegian* is offered at 85s. per barrel on the spot.

COLOCYNTH.—The demand for these apples is very quiet, and quotations of 1s. to 1s. 2d. per lb. are therefore nominal.

COUMARINE is quiet at 2s. 3d. per oz. in bottles of 1 oz., or in large bulk at less.

CREAM OF TARTAR is quiet. First white crystals on the spot, 74s. per cwt.; powder, 76s. to 77s. per cwt. High strength B.P. crystals, 80s. per cwt.; powder, 82s. 6d. per cwt.

DAMIANA LEAVES are tending upwards, and 10d. per lb. is asked on the spot.

ESERINE (PHYSOSTIGMINE) quiet at the reduced price of 2s. per gramme for the *sulphate* and 3s. per gramme for the *pure*.

GENTIAN ROOT—Is quiet but steady at 18s. 6d. to 19s. 6d. per cwt. *f.o.b.* for good dry red root.

GINGER.—*Cochin* continues dull, 875 bags rough kinds being mostly bought in, washed 23s., brown 25s. to 26s., only 80 bags being sold, cuttings 12s., dull washed rough 20s. to 22s. 6d. Of 89 cases only 17 cases limed A cut sold at 80s. *Jamaica* went off slowly; of 229 barrels and 41 half-barrels only 40 packages sold at 69s. to 75s.

GLYCERIN—Is firm at 55s. to 65s. per cwt., according to quantity and brand, for *German* best white double distilled chemically pure 1260 quality in tins and cases, *English* being obtainable at somewhat lower figures.

GUM ACACIA.—Market is very quiet for picked *Trieste*, for which consumption is limited. Quotations range from £7 to £13 per cwt. For *Soudan* sorts 80s. to 85s. per cwt. is asked, at which small sales have been made.

GUM TRAGACANTH.—Values of all grades remain steady, although the business this week has been confined to the lower qualities. Firsts are quoted £13 10s. to £14 per cwt.; seconds, £13; thirds, £10 10s. to £11.

GUARANA.—Is very slow of sale, although quotations are low at 1s. 6d. per lb.

HELIOTROPINE.—In bottles of 1 oz. this is quoted at 1s. 7d. per oz. inclusive.

HYDRASTIS CANADENSIS.—This root is reported to be in good demand in America, causing higher prices to be asked. Quotations come 1s. 9d. to 1s. 10d. per lb. for early shipment.

INSECT FLOWERS.—Quotations are now at a very low level, and new crop are quoted as follows:—Open flowers, 49s. 6d. per cwt.; half open, 68s. per cwt.; and closed at 100s. per cwt.

IODIDES steady at 9s. 9d. to 10s. 3d. per lb. for *Pot. Iodide*, and 13s. 4d. to 13s. 7d. per lb. for *Iodoform*.

IPECACUANHA continues to be firmly held at 9s. per lb. for fair *Rio* and 5s. per lb. for *Carthagena*, at which prices small sales have been made.

JALAP is a shade firmer and holders will not sell good small V.C. tubers below 6d. per lb. Arrivals of new crop have been small.

JAPAN WAX—Is very quiet, and good squares can be had at 33s. to 34s. per cwt., according to quantity.

LITHIA is firm at 10s. 8d. per lb. for the carbonate in 2 cwt. lots, the other salts being quoted in proportion.

LOBELIA HERB—Loose in bags is quoted at 4½d. per lb. on the spot, and pressed packets at 6d. per lb.

MENTHOL.—Good dry crystals continue firm at 7s. 1½d. to 7s. 3d. per lb. on the spot, and the article is quoted dearer for arrival.

MERCURIALS.—Firm at 2s. 5d. per lb. for *Corrosive sublimate* and 2s. 9d. per lb. for *Calomel* in 56-lb. lots.

MORPHIA is very firm at 5s. per oz. for the *Hydrochlorate powder*, and 2d. per oz. more for the *crystals*.

NITRATE OF SILVER—Continues to fluctuate in sympathy with price of the *metal*; *crystals* being quoted 1s. 5d. to 1s. 6d. per oz., according to quantity; *sticks* being quoted at the proportionate difference.

NITRATE OF SODA quiet at £7 12s. 6d. per ton for commercial and £8 per ton for refined.

OILS (ESSENTIAL).—*Peppermint*: American is dearer owing to frosts on the 10th of last month, which did much damage, although not so much as was first expected. In some places it is said crops will be very small owing to this and dry weather, and choice Wayne County will be in short supply. New crop is quoted at 4s. 3d. per lb. *c.i.f.*, whilst old crop on the spot is to be had still at 3s. 10d. to 3s. 11d. per lb. H.G.H. is very firm at 5s. 7½d. to 5s. 9d. per lb. *Japanese* very slow of sale; dementholised on the spot at 3s. per lb.; 40 per cent. at 4s. 3d. per lb. *Star aniseed* remains quiet, although quotation is firm at 7s. 1½d. per lb. on the spot. *Cassia* rather easier at 4s. 9d. to 5s. per lb. for spot, 70 to 75 per cent.

Citronelle is quiet at 1s. 1½d. per lb in tins. *Clove*: English is 3d. per lb. dearer at 3s. 3d. per lb.

OILS (FIXED) AND SPIRITS.—*Linseed* dearer, and closes firm at £16 17s. 6d. for spot pipes, whilst barrels are quoted £17 5s.—same position. *Rape* steady at last week's prices of £22 10s. for ordinary brown on the spot, and £23 for refined. *Cotton* firm at £13 10s. for London crude on the spot, and £15 5s. to £16 for refined, according to make. *Cocunut* steady at £23 5s. for Ceylon pipes on the spot; *Cochin* spot, £28 10s. *Palm*: Lagos on spot, £22 10s. *Turpentine* quiet at 22s. per cwt. on the spot for American. *Petroleum oil* steady at 4½d. per gallon for Russian on the spot; American, 5½d. per gallon; Water White, 6¼d. per gallon. *Petroleum spirit*: American, 5½d. per gallon; deodorised, 6d. per gallon.

OPIUM—Remains very firm. Quotations, which are, however, somewhat nominal, are as follows:—*Soft shipping*, ordinary to good, 11s. 6d. to 14s. per lb.; good to fine *Druggists*, 11s. 6d. to 13s. per lb.; *Persian*, 11s. 6d. to 12s. 9d. per lb.

ORRIS' ROOT.—Favourable reports have been received from Italy respecting the new crop, at the same time it is not considered probable that we shall see any reduction on present quotations of 36s. per cwt. *c.i.f.* for *Florentine* sorts, and 40s. to 42s. 6d. for picked *Florentine*.

PERMANGANATE OF POTASH—Is quiet at 62s. 6d. per cwt. for *small crystals* in 1-cwt. kegs and 5s. per cwt. more for *large crystals*.

PILOCARPINE—Is quiet at 33s. per oz. for the *Hydrochlorate* and *Nitrate salts*.

PHENACETIN.—Firm at 3s. 9d. to 4s. 3d. per lb. according to quantity and make. Bayer's make is in limited demand at the reduced price of 5s. 6d. per lb.

PHENZONE (*Antipyrine*) weak, at 9s. per lb., in quantity and bulk packing. *Dr. Knorr's Antipyrine* remains steady at the late reduction, the sale of same being, however, restricted by the fact that its chemical equivalent, *Phenazone*, to wit, is obtainable, as stated above, at about 30 per cent. less money.

PODOPHYLLIN is steady at 12s. 6d. per lb. for B.P. quality. Good autumn dug *Mandrake Root* is firm at 25s. 6d. per cwt., summer dug being quoted at 2s. per cwt. less.

POTASH COMPOUNDS.—*Bicarbonate* steady at 30s. per cwt. for foreign crystal or powder, and 35s. per cwt. for English. *Bromide* steady at 1s. 9½d. per lb. *Chlorate* firm at 3½d. per lb. on the spot. *Iodide* quiet but firm at 9s. 9d. to 10s. 3d. per lb. *Bichromate* unchanged at 3½d. to 3¾d. per lb. *Prussiate* firm at 7d. per lb. for yellow, and 1s. 2d. per lb. for red. *Cyanide* firm for spot delivery at 1s. 2d. per lb. for cake; sticks 1s. 7d. per lb. *Permanganate* steady at 62s. 6d. per cwt. for small, and 67s. 6d. per cwt. for large crystals.

QUICKSILVER continues without change at £7 12s. 6d. per flask from importers and 6d. less from second hands.

QUININE—Remains in an inactive condition, and whilst nothing is to be had under makers' price of 10d. per oz., very little if any business has been doing in the article during the past few days.

SAFFRON—Has had a sharp advance this week, and with peace in sight and a consequent improvement in the exchange, a further important advance is very probable. *Valencia* is quoted 35s. to 40s. per lb., according to quality.

SALICINE—Is firm at 10s. to 10s. 6d. per lb., according to quantity.

SANTONINE—Is steady at 4s. 5½d. per lb. in 3 cwt. lots.

SALICYLATES are firm at the late advance of 2¼d. per lb., to 1s. 10d. per lb. for the *Acid Powder*, and 2s. per lb. for the *Acid Crystals*, and 2s. per lb. for the *Soda Powder*, and 2s. 6d. per lb. for the soda crystals, and to 3s. 10d. per lb. for the physiologically pure acid crystals, and 3s. 6d. per lb. for the physiologically pure soda crystals.

SCAMMONY.—*Virgin* is in short supply. "Firsts" quoted 30s. per lb. *Resin* steady at 6s. 6d. to 6s. 9d. per lb. as to quantity.

SENEGA ROOT is dearer and stock here is small. From New York higher prices are quoted, being equal to about 1s. 2½d. per lb., London terms.

SENNA.—By the steamer Egypt from Bombay 236 bales *Tinnevelly* have arrived. This, however, is thought to be old crop, but probably samples will be up in time for the next drug sales. A few sales of fair small leaf quality have been made at 2d. per lb. this week. *Alexandrian* leaves are dull of sale. Fine leaf is scarce; broken leaf is quoted at 4d. to 4½d. per lb.; siftings, 2¾d. to 3d. per lb.; and "sorts" have been sold in a retail way at 3d. per lb.

SHELLAC.—The supplies at the auctions were on an unusually

small scale, notwithstanding an interval of three weeks. 123 cases second orange offered, and 103 cases sold at steady rates; dull palish free flat at 63s. per cwt. The speculative market is dearer, with more business passing. *TIN* sold at 62s. to 64s. per cwt., closing buyers at latter price.

SNAKE ROOT is rather easier at 1s. 1½d. per lb. on the spot; demand, however, is slack.

SODA COMPOUNDS.—*Crystals* continue firm at 57s. 6d. per ton in barrels. *Bicarbonate* firm at £7 5s. to £7 10s. per ton for the 97 per cent. commercial article, and 18s. 6d. per cwt. for the fully bicarbonated quality. *Ash* steady at £5 5s. to £5 15s. per ton as to strength. *Bromide* quiet at 2s. 0½d. per lb. *Iodide* quiet at 11s. 7d. per lb. *Caustic*: 70 per cent. £8 per ton, 60 per cent. £7 per ton.

SPERMACEYL.—American is lower at 1s. 2d. per lb., packed in 60 lb. boxes.

SPICES (VARIOUS).—*Black Pepper*: 52 bags Singapore bought in, 3 bags Perak sold at 4½d., 180 bags Tellicherry bought in at 4½d. 5 bags Ceylon sold at 4½d. *White Pepper*: Only 124 bags offered and bought in, Siam at 8½d, Singapore 9d. to 9½d. *Chillies*: 45 bales dull Japan sold at 31s. 6d. *Capsicums*: 2 bales Natal sold at 75s. *Cassia Lignea*: 348 boxes bought in at 55s.; of 156 bales broken, 16 bales sold at 32s. *Mace*: 13 cases Penang broken pickings bought in at 1s. 4d., and 4 cases Bombay at 1s. 7d.; 42 packages West India sold at 1s. 5d. to 1s. 8d., pickings 1s. 2d. to 1s. 3d. *Pimento* in better demand, 126 bags sold at 4½d. to 5d.

STAR ANISEED—Is very firm at 120s. per cwt. on the spot.

STROPHANTHUS SEEDS.—Green *Kombé* are firm at 3s. 3d. per lb. Brown seeds have been done this week at 10d. per lb. for weevily.

STRYCHNINE—Firm at 2s. 1d. per oz. for pure crystals, 2s. for precipitated, and 1s. 9d. for sulphate or nitrate.

SULPHATE OF COPPER is firm at £16 to £17 5s. per ton on the spot, according to brand.

SUGAR OF LEAD—Firm at 27s. 6d. to 28s. per cwt. for *foreign* and 31s. to 32s. 6d. per cwt. for *English*.

SULPHONAL quiet, makers still accepting orders for limited quantities at 7s. 3d. per lb. in bulk packing.

VANILLINE—Is quoted as low as 3s. 4d. per oz. for large quantity, this being, of course, for the *synthetic* product.

Manchester Chemical Report.

AUGUST 10, 1898.

There is a fair amount of business passing locally, but the export returns for the past month are still far from encouraging. So far as what may be termed chemical and pharmaceutical preparations are concerned there is a very small increase, but heavy chemicals are still a diminishing quantity, especially to the United States. All round Alkali shows a decline of 24·1 per cent., and bleaching materials an increase of 12·0 per cent, but this is more than counterbalanced by a decrease in value of 28·1 in the one and 6·3 in the other. So far as this market is concerned, caustic soda is decidedly dull, but ammonia alkali and soda crystals are fairly active. Brown acetate of lime has declined to £4 15s. and £5 *c.i.f.*, Welsh and American, and sulphate of copper is weaker at £17 per ton best brands, delivered. Manchester Glycerine is very firm at £54 per ton, local make on rails or *f.o.b.*, and £50 maker. Green Copperas is in good demand locally, but prices are unchanged. In Yellow Prussiate makers are well sold, and generally the figure is 7d. per lb., reports to the contrary notwithstanding. Prussiate of Soda is, on the other hand, easy at 5¼d. to 5½d. Bichromate of Potash is about a farthing lower. Chlorate of Potash unchanged. Aniline oil and Salt are firm at 5½d. and 5d. respectively. Benzols continue to decline, and the phenomenal figure of 9d. and 9½d for 50's and 50's—90's has been touched. Naphthas are firm all round, solvent wood (white colourless) being quoted 3s. per gallon.

Liverpool Market Report.

AUGUST 10, 1898.

With the passing of the holiday season the general tone of the market has improved considerably, and prices generally have become more settled. Several good sales of Linseed from the River Plate are reported, and Canaryseed, after a considerable period of neglect, gives indications of both improved demand and better prices. Stocks of several staples have fallen rather low, and with

a better demand prices have gone up considerably; this has been most observable in Potashes, Quillaya Bark, and Olive Oil.

AMMONIA SALTS.—*Carbonate*: 3d. per lb. *Sal ammoniac*: 33s. to 35s. per cwt. *Sulphate*: £9 10s. per ton.

BEE SWAX.—Some 45 sacks of Chilian and packages of Gambia sold for £7 per cwt. and £6 13s. 9d. per cwt respectively.

BLEACHING POWDER—Is unchanged and slow of sale at £5 7s. 6d. to £5 15s. per ton.

CANARY SEED—Is very firm and much improved in inquiry. 100 bags of Turkish sold at 26s. per 464 lbs., and 300 bags at 27s.

COPPERAS—38s. per ton for Lancashire, and 36s. per ton for Welsh.

COPPER SULPHATE—Is a little dearer, £16 12s. 6d. to £16 15s. per ton.

GINGER.—Cochin has been selling from store in small lots at 25s. per cwt.

LINSEED.—3000 bags of River Plate sold at 31s. 9d. per 416 lbs., and 700 bags at 32s.

OILS (FIXED) AND SPIRITS.—*Castor*: Calcutta is firmly held for the improved price of 3¼d. per lb.; French, 3d., and Madras 3d. per lb. *Olive* is advancing; Malaga on the spot is quoted at £29 10s. to £30 10s. per tun. *Linseed* of Liverpool pressure is in steady demand at 17s. 9d. to 18s. 6d. per cwt. *Cottonseed*: Liverpool refined is still quoted at 15s. 9d. to 16s. 3d. per cwt. *Spirits of Turpentine* is selling quietly at 22s. 6d. per cwt.

POTASH SALTS.—*Bicarbonate*, 30s. per cwt.; bichromate, 3½d. per lb. Chlorate is firm at 3¾d. per lb. Cream of tartar is still quoted at 78s. 6d. per cwt. Pearlashes nominal at 35s. per cwt. Potashes, owing to small supply, are 22s. per cwt. Saltpetre, 21s. 6d. per cwt.

SODA SALTS.—*Bicarbonate*: £6 15s. per ton. *Caustic*: 76 to 77 per cent., £8 2s. 6d. to £8 5s.; 70 per cent., £7 3s. 9d. per ton. *Borax*: £13 10s. to £14 per ton. *Nitrate*: 7s. 6d. to 7s. 9d. per cwt.

QUILLAYA BARK.—5 tons sold at £18; owing to short supply £19 to £20 is now asked.

Newcastle Chemical Report.

AUGUST 10, 1898.

More orders are passing for heavy goods, yet on the whole now business is slow. The Alkali Syndicate has reduced export prices of caustic soda by 5s. per ton, otherwise late values rule as follows:—Bleaching powder: £6 to £6 5s. Soda crystals: basis price, 45s. Caustic soda: 70 per cent., £7. Alkali: 52 per cent., £5 5s. Soda ash: 52 per cent., £4 5s. Sulphur: £5 per ton.

News in Brief.

THE LAST ACT OF THE SESSION, namely, the prorogation, is fixed for Friday, the 12th. The House will practically have finished business on Thursday, and probably very few commoners will be found in the Upper House when Her Majesty's Commissioners formally put up the parliamentary shutters until next spring.

THE NOBLE AND SELECT COMMITTEEMEN who are charged with the consideration of the Companies Bill (House of Lords), re-assembled for a few minutes on Monday last after a long period of profound rest. The object of the meeting was the purely formal one of agreeing to a report of the usual character for presentation to the Lords in accordance with the procedure of the House. That presentation duly took place on Monday evening, and, all things having thus been regularly accomplished, the purification of companies was comfortably postponed for another year.

MR. THOMAS TICKLE'S NAME appears in the first division of the list of successful candidates at the recent examination for the Intermediate Examination in Science at the London University. Mr. Tickle is the present holder of the Salters' Research Fellowship in the Pharmaceutical Society's Research Laboratory, and has had a distinguished pharmaceutical career in the Society's School. He was Bell Scholar in 1892, and carried off the Pereira Medal in 1893.

THE LORD MAYORALTY OF MANCHESTER.—The deputation appointed at the informal meeting of the Manchester City Council on Wednesday, August 3, interviewed Alderman R. Gibson, the Lord Mayor, on Tuesday last, and presented the unanimous request of the council that he should accept the nomination to the Lord Mayoralty for the ensuing year. The Lord Mayor stated that, feeling very much honoured by the request, and much gratified by the kind feeling entertained towards him by the City Council, he nevertheless was unable to comply with the desire which had been communicated to him.

MR. JOHN HENRY RHODES, second son of Mr. Edmund Rhodes, of Kendal, who served his apprenticeship as chemist with Messrs. Severs and Bateson, and then entered Edinburgh University as medical student, has passed his examinations with distinguished honours. At the recent graduation ceremonial at Edinburgh University, he received the degree of Bachelor of Medicine and Bachelor of Surgery, with first-class honours, and gained the Beane Prize as the most distinguished student in anatomy and surgery, and was awarded also the Buchanan Scholarship. The young student strove hard for the first position in the year, and came out a good second, an Oxford man being in the leading.

THE SPECTACLE MAKERS' COMPANY.—The Court of Assistants to this Company has voted £100 for the purchase of optical instruction instruments to be used at the Technical Classes for Opticians, which are to be held at the Northampton Institute, Clerkenwell, commencing next month. A revised list of regulations with syllabus of examinations held in London next November when diplomas will be granted to capable opticians who become members of the Company, will be sent on application to Colonel Davies Sewell, the Clerk, whose office is at the Guildhall, E.C. Dr. H. Trentham Maw, of Aldersgate Street, has recently been nominated to serve on the Optical Committee. It is the object of the Spectacle Makers' Company to advance the status and knowledge of opticians, and chemists who cultivate this branch of business will do well to acquaint themselves with the facilities offered.

BRIGHTON ASSOCIATION OF PHARMACY.—The annual excursion of the above Association has been fixed for Wednesday, August 24. The arrangements are to visit Horsham, leaving Brighton by 10.15 train, looking over the church and park, dine at "Black Horse" Hotel, drive by Christ Church School and Denne Park to Knepp Castle and Park, afterwards to West Grinstead, tea at the "Burrell Arms," thence to Cowfold, returning to Brighton by the 9 p.m. train. All chemists and friends are invited. Tickets, 10s. 6d. each (inclusive), can be obtained of Mr. J. R. Gwatkin, 49, Grand Parade; Mr. W. H. Gibson, King's Road; Mr. Padwick, Preston Street; or Mr. G. B. Savage, 109, St. James's Street, Brighton.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.—The botanical class of this Association had a most enjoyable outing on Wednesday, August 3. The party journeyed to Mount Edgcumbe Park, where, by kind permission, the orangery, fernery, Italian and tropical gardens were visited. Amongst other plants seen were a very fine specimen of *Dicksonia arborescens* (tree fern); large cedar of Lebanon, 10 feet in circumference; *Magnolia grandifolia*; myrtle and mandarin oranges growing in the open, bearing flower and fruit on the same tree; also some very fine eucalyptus trees. The party then proceeded to Picklecombe Cottage, where (through the kindness of Mr. Jas. Cocks, President) tea was provided.—Mr. O. A. Reade moved a vote of thanks to Mr. Cocks for his kindness in entertaining the party.—Mr. J. D. Turney seconded.—Dr. Smith, R.N. (as one of the visitors), supported.—Mr. Cocks suitably responded.—The party having been photographed, they started for home at 8 p.m., after a most instructive and enjoyable afternoon.

GREAT NORTHERN CENTRAL HOSPITAL.—Sir John Dickson Poynder, Bart., M.P., has been elected Chairman of the Committee of Management of the Great Northern Central Hospital, in succession to the late Mr. C. T. Murdoch, M.P.

MESSRS. AYRTON & SAUNDERS, of Duke Street, Liverpool, have recently fitted up a handsome pharmacy at High Street, Bangor, North Wales, for Mr. John Bowen.

Partnerships Dissolved.

(From the London Gazette.)

S. G. Watson and Alfred M. S. Turner, Surgeons, 1, York Road and San Remo, Hove Park Villas, Hove, Sussex.

John Burton and W. J. Richardson, Aërated Water Manufacturers, etc., Amble, Northumberland. Debts will be received and paid by John Burton, who will continue the business in his own name.

John Girling and J. I. Waite, Physicians and Surgeons, 66, Micklegate, York. Debts will be received and paid by J. I. Waite, who will continue the practice.

Receiving Order in Bankruptcy.

(From the London Gazette.)

George Shears, Photographer and Photographic Printer, residing at Gloucester House, Hexham Road, New Barnet, and carrying on business at Torrington Villa, Bulwer Road, New Barnet.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Photographic mounts, Bristol cartes, 3s.; G.B.E., 10s.; cabinets, 10s.; G.B.E., 15s.; quarter-plates, 6s.; half-plates, 12s. 1000; plate-sunk mounts, 12 by 10, 40s. 1000. Samples free.—Edward Peck, East Dereham, Norfolk.

Magic Lanterns, second-hand; triples and binials; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 52, Mortimer Road, Kingsland, N.

A few gross Iolanthe Hair-curling Fluid, 3d. size, 18s. gross, carriage paid; Camwal Shares wanted.—S. Sugden, Pharmacist, Waterfoot, Manchester.

Moulds.—Suppository, Pessary, Bougie, Capsule, Fumigating Pastille, all Maw's patterns, some new; particulars free.—Warnes, Chemist, 333, Gray's Inn Road, W.C.

Cameras.—Pocket Kodak, new model, 15s.; old model, 10s.; 63s. folding Kodak, 42s.; Griffith's guinea, 14s.; Tylar's stereoscopic, 17s. 6d.; all new.—Griffiths Richards, Hastings.

Overstocked.—2×10 lb. Coppers Superfine Oil of Lemon, 27s. 6d. copper; 1 lb. sample free by post 3s., postal order.—Moss, 34, Avondale Road, Chorley.

Curiosities.—Old china and earthenware syrup jars, ointment pots and vases, or any pharmaceutical antiquities. Good prices given for above by John Austen, Dore, nr. Sheffield.

What offers for 2 lb. Formalin Schering, 1 lb. Menthol, 1 oz. Piperazin, ¼ lb. Battle's Bromidia, 1 oz. Orthoform, 1 oz. Zymaine Fairchild.—Chemist, 156, Green Lanes, Stoke Newington, N.

Stramonium plants, suitable for botanical specimens, 2s. doz.—Williams, 213, High Street, Poole.

WANTED.

Muter's 'Practical Chemistry,' Newth's 'Inorganic Chemistry,' Perkin and Kipping's 'Organic' or Turpin's 'Organic,' Ince's 'Latin Grammar,' Green's 'Botany.'—State lowest cash price, latest editions only, to W. B. Marshall, 203, Edge Lane, Liverpool.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

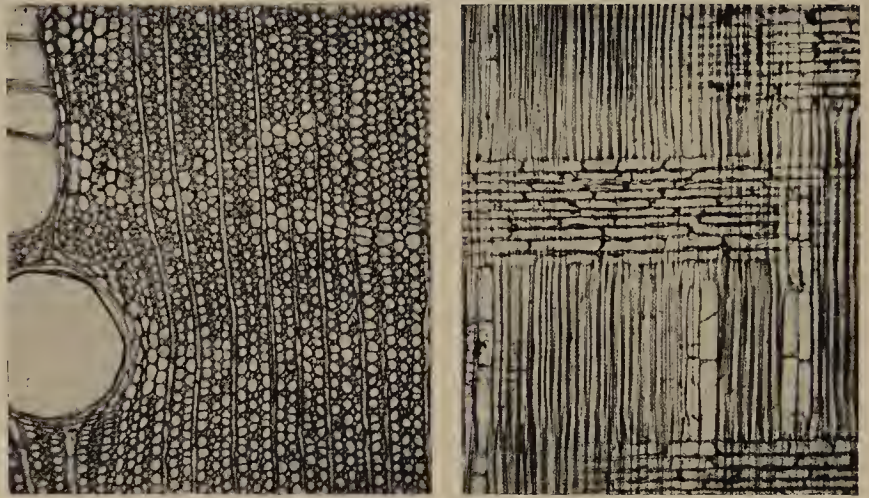
Students' and Chemists' Books wanted for cash or exchange. Please supply following particulars:—Edition, year of publication, condition, and price required.—Gower, Publisher, Waterloo, Liverpool.

Wanted.—Complete set of Shop Rounds and Pots, Recess Labels. Full particulars to—Mr. Hogg, Eagle Pharmacy, York Street, Belfast.

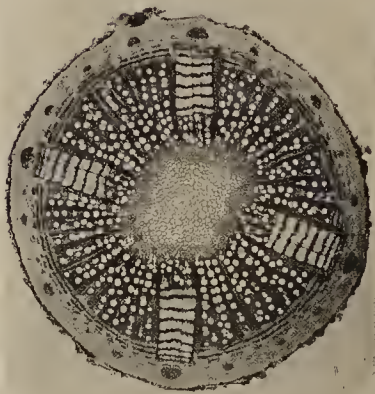
COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Andrews, Bott, Bryant, Center, Cherry, Clarke, Fielden, Forrester, Gadd, Glass, Harrison, Hitchen, Holtan, Johnston, Jowett, Marchant, Nash, Nicholls, Owen, Parry, Peck, Picken, Pickering, Reeve, Renworth, Reynolds, Smith, Thomas, Tredaway, White, Woodman.



1. *JUNCUS LAMPROCARPUS*. T.S. Rhizome x 10.
Planar 50 Mm.



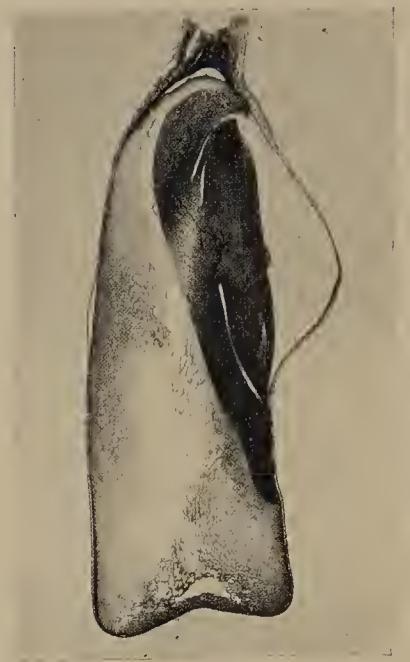
2. *PTEROCARPUS SANTALINUS*.—L.S. Wood x 40. Zeiss 24 Mm.
Apochromat.



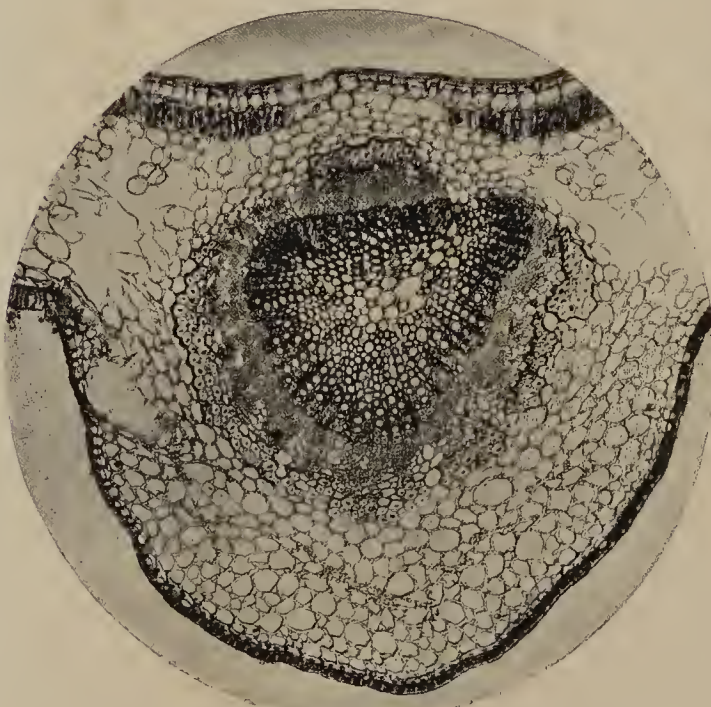
3. *MALLOW*.—T.S. Stem x 9.
Planar 50 Mm.



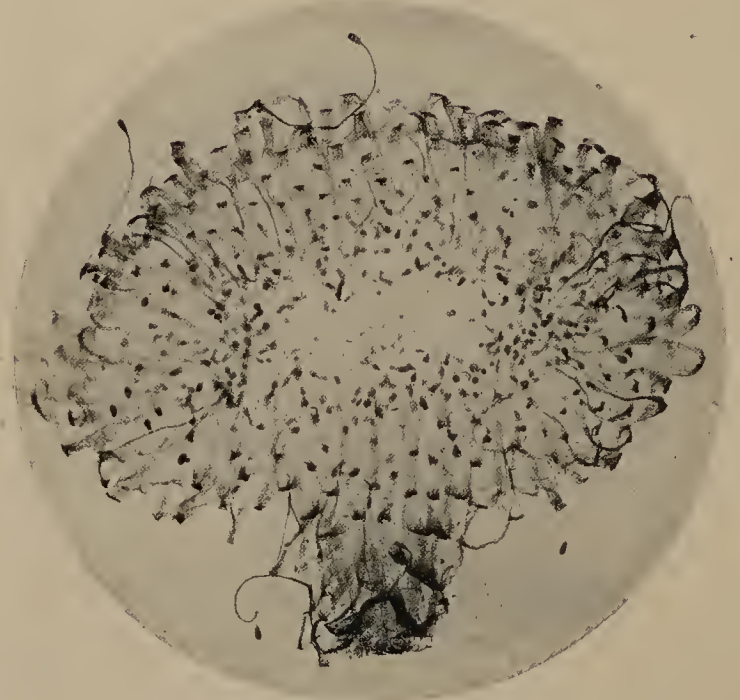
4. *ANCHUSA STRIGOSA*.—Hairs of Leaf x 10. Double
Oblique Light. Planar 50 Mm.



5. *ZEA MAIS*. L.S. Fruit x 4.
Planar 50 Mm.



6. *PILOCARPUS JABORANDI*.—T.S. Leaf x 50. Zeiss
Apochromatic 24 Mm.



7. *DROSEROTA ROTUNDIFOLIA*.—Leaf x 6. Unstained
Specimen. Planar 50 Mm.



London Report.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

AUGUST 18, 1898.

THE past week has resulted in but few changes of importance in the Drug and Chemical Markets. Quinine remains very quiet. Opium, Morphia, and Codeia firm. Sulphate of Ammonia dearer. Acid Tartaric and Cream of Tartar quiet. Acid citric firm. Iodides and Bromides without change. Quicksilver and Mercurials very firm. Acetanilide and Phenacetin steady. Phenazone weaker. Glycerine and Cod-liver Oil quiet. Cascara Sagrada very firm, and likely to be dearer. Cocaine firm. The following prices rule for articles of chief interest:—

ACETANILIDE—Is, if anything, a trifle firmer at 1s. to 1s. 1d. per lb. for quantity.

ACID BORACIC—Quiet at 23s. per cwt. for *Crystals*, and 25s. per cwt. for *Powder*.

ACID CARBOLIC.—Is rather firmer at 6½d. to 6¾d. per lb., according to quantity and brand for 35 to 36° C. *ice crystal* in large bulk packing. Other qualities in proportion. *Liquid*: 95 per cent. of pale straw colour 1s. 2d. to 1s. 3d. per gallon, according to quantity, in 40-gallon casks.

ACID CITRIC—Is quiet, but makers are strong at 1s. 2¼d. to 1s. 3d. per lb. for *English crystals*.

ACID OXALIC—Firm at 3¾d. per lb. on the spot.

ACID TARTARIC.—English on the spot remains steady at 1s. 1d. per lb., Foreign being a shade weaker at 12¾d. per lb.

ALUM.—Loose lump steady at £5 10s. per ton; ground in bags £6 per ton.

AMMONIA COMPOUNDS.—*Sulphate* has advanced rapidly during the week, grey prompt 24 per cent. London being now £10 per ton, Hull prompt £9 17s. 6d. *Carbonate* firm at 3¾d. to 4d. per lb. according to package. *Bromide* firm at 2s. 1d. per lb. *Iodide* steady at 14s. 6d. per lb. *Sulphocyanide* firm at 1s. 2d. per lb. *Sal ammoniac*: Sublimed, "firsts," 35s. per cwt.; seconds, 33s. per cwt.

BLEACHING POWDER—Is fairly active at £6 15s. to £7 15s. per ton, according to brand, packing and quantity.

BORAX—Steady at 14s. per cwt. for lump, and 14s. 6d. per cwt. for *powder*.

BROMIDES—Are unchanged at last week's prices.

CASCARA SAGRADA.—Very firm, with a small business doing at 21s. 6d. per cwt. for new, and 25s. for old bark.

CINCHONA BARK.—At Tuesday's London auctions the supplies were on a small scale, amounting to 1819 packages of all descriptions, as against 1160 packages at the July auctions. The bulk sold at fully the average of last sales rates with good demand. *Ceylon*: 117 bales offered and 86 bales sold, according to analysis: *Succirubra*, stem chips, ordinary to fair 1¾d. to 2¼d., renewed ditto at 2¼d. to 3d. *East India*: Of 812 bales and 16 cases offered 481 bales and 1 case sold: Red stem chips and shavings, fair at 2¼d. to 2¾d.; renewed ditto, fair at 2¼d. to 2¾d., good root at 4¾d., broken quill at 2¾d. to 3¾d. *Officinalis*, chips and shavings,

ordinary to fair at 1½d. to 2¼d.; renewed ditto, fair to good at 2¼d. to 4½d. Ledger, natural stem chips, fair to good rich at 3¾d. to 5d., Ledger branch at 2¾d. 155 bales *Neilgherry* offered and sold, *Officinalis*, renewed quilly chips at 4¾d. to 5¼d. *Java*: 135 bags offered and sold, Ledger stem chips at 3¾d., stem chips and root at 2¾d. to 2¼d., branch at 2¼d. to 2¾d. *South American*: Of 348 bales *Bolivian cultivated Calisaya* 248 bales sold, fair to good quill at 4¼d. to 6d., and flat (country damaged) at 5d. 134 bales soft *Columbian* bought in. *African*: 102 bales offered and sold, broken quill and chips at 3¾d. to 4d.

CLOVES.—Privately *Zanibar* are firm, although quiet; business done comprises spot at 4¾d., October-December delivery 4½d., and January-March delivery at 4¾d. At auction only 8 cases dull *Penang* offered and sold at 8d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: Commercial, 1s. 4d.; pure, 2s. 4d. per gallon. *Benzole*: 50 per cent., 1s. 1d.; 90 per cent., 11d. per gallon. *Solvent Naphtha*: 95 per cent., at 160° C., 1s. 10d. per gallon.

COCAINE—Is firm without any change in price, good brands being still obtainable in 25 oz. tins, and for 100 oz. lots at 9s. 3d. per oz.

CODEIA—Unchanged at 12s. 6d. per oz.

COD-LIVER OIL—Very little doing, price of best new non-congealing *Norwegian* oil remaining nominally 85s. per barrel *f.o.b.*

COLOCYNTH.—Has been in better inquiry and more money is now asked for the better qualities.

CREAM OF TARTAR—Quiet and rather easier. First white *crystals* on the spot, 73s. per cwt.; *powder*, 75s. to 76s. per cwt. High strengths in accordance with the new B.P. requirements; 78s. for *crystals*; *powder*, 81s. per cwt.

GINGER.—*Cochin* continues dull. Of 738 bags rough offered 120 bags *calicut* sold, without reserve, at 23s.; and 239 bags washed rough, the bulk slightly mouldy, at 21s.; 40 cases medium and small limed native, part cut, bought in at 44s. to 46s. Of *Jamaica* 29 barrels sold, common lean 63s. 6d., low middling 68s. to 70s., middling 73s. to 75s.

GLYCERIN—Quiet at 55s. to 65s. per cwt. according to quantity and brand for *German* best white double distilled chemically pure 1.260 quality in tins and cases. *English* being obtainable at rather less money.

GOLDEN SEAL ROOT.—This is reported to be much firmer from the United States, and 1s. 10d. per lb. *c.i.f.* is now the lowest quotation, equal to about 2s. per lb. London terms.

GUM MASTIC.—Supply is now practically exhausted, sales having taken place at 1s. 10d. to 1s. 11d. per lb. for pale drops.

IODIDES.—Without change and in fair demand.

MERCURIALS—Firm at prices quoted last week.

MENTHOL.—Good dry crystals are firm at 7s. 1½d. to 7s. 3d. per lb.

MORPHIA—Without change at 5s. per oz. for the *Hydrochlorate powders* for large quantities and in bulk packing.

OILS (ESSENTIAL).—*Peppermint*: American H.G.H. firm at 5s. 7½d. to 5s. 9d. per lb. Wayne County dealer at 3s. 9d. to 4s. 3d. per lb. *Star Aniseed* steady at 7s. 1¼d. per lb. on the spot. *Cassia* quiet, 70 to 75 per cent. 5s. per lb. *Clove* continues very firm at 3s. 3d. per lb. *Lemongrass* lower, sellers on the spot 3¾d. per ounce. *Citronelle* quiet with small sales on the spot at 1s. 1½d. per lb. in tins, drums 1s. 1d. per lb.

OILS (FIXED) AND SPIRITS.—*Linseed* quiet and the shade easier at £16 15s. for spot, London, pipes, and £17 5s. for barrels. *Rape* lower; ordinary brown on the spot, £21 10s.; refined spot, £23. *Cotton* firm; London crude spot, £13 12s. 6d.; refined spot, £15 5s. to £16, according to make. *Olive*: Green oils rather easier at £30 to £32. *Coconut* quiet, Ceylon on the spot, pipes, £23 5s.; *Cochin* spot, nominal, £28. *Palm*: Lagos on the spot, £22 10s. *Turpentine* dull at 21s. 9d. for American on the spot. *Petroleum Oil* steady; Russian spot, 4¾d. per gallon; American, 5¾d. per gallon; water

white, 6¼d. per gallon. *Petroleum Spirit*: American, 5½d. per gallon; deodorised, 6d. per gallon.

OPIUM—Without change from last week, with but very little doing.

PHENACETIN—Steady at 3s. 9d. to 4s. 3d. per lb. in bulk packing, according to quantity and make.

PHENAZONE—Is quiet with a continued weakening tendency in price. *Antipyrine Knorr* unchanged.

POTASH COMPOUNDS.—*Chlorate* is steady at 3¼d. per lb. on the spot. *Bicarbonate* firm at 30s. per cwt. for foreign crystal or powder, and 35s. for English. *Bromide* unchanged at 1s. 9¼d. per lb. *Iodide* firm at 9s. 9d. to 10s. 3d. per lb. according to quantity. *Bichromate* unchanged at 3¼d. to 3½d. per lb. *Prussiate* quiet at 7d. per lb. on the spot for yellow and 1s. 2d. per lb. for red. *Cyanide* still scarce for spot delivery, and firm in that position at 1s. 2d. per lb. for cake, 98 to 100 per cent. *Permanganate* dull at 62s. 6d. per cwt. for small and 67s. 6d. per cwt. for large crystals.

QUICKSILVER—Very firm at £7 12s. 6d. per bottle from importers, and 6d. less from second hand.

QUININE—Is very sick, and although second hand sellers are a shade easier buyers do not respond. Makers' price remains at 10d. per oz. in bulk packing.

SENEGA ROOT—Comes dearer from New York, and 1s. 3d. per lb. is now asked on the spot.

SHELLAC—Is very quiet, and whilst prices are steady at last quotations, but few transactions have taken place.

SODA COMPOUNDS.—*Crystals* 57s. 6d. per ton in barrels *Bicarbonate* in fair demand at £7 5s. to £7 10s. per ton, according to packing and quantity, for the 97 to 98 per cent., the fully-bicarbonated quality being still quoted 18s. 6d. per cwt. *Ash* steady at £5 5s. to £5 15s. per ton as to strength. *Bromide* unchanged at 2s. 0¼d. per lb. *Iodide* steady, 11s. 7d. per lb. *Caustic* 70 per cent. white £8 per ton.

SPICES (VARIOUS).—*Black Pepper*: Only 25 bags *Tellicherry* offered and sold at 4¼d. *White Pepper*: Only 54 bags offered and mostly sold; *Singapore*, 8¼d. to 9¼d.; *Penang*, 7½d.; *Ceylon* bought in at 9d. *Cinnamon chips*: 9 bags sold at 3½d. *Mace*: 4 cases *Penang* sold; good middling, partly wormy, 1s. 11d. to 2s.; good bold, 2s. 4d. to 2s. 5d.; 19 packages *West India* sold; common mixed to middling, 1s. 3d. to 1s. 6d.; good middling to good, 1s. 8d. to 1s. 11d.; fine bright, 2s. 4d. *Nutmegs* dull; 48 cases *Penang* all bought in; 133 packages *West India* all sold; 76's to 73's, 1s. 10d.; 80's, 1s. 9d.; 87's, 1s. 7d.; 98's to 90's, 1s. 3d. to 1s. 4d. *Pimento*: Of 348 bags only 78 bags sold at 5d.

SULPHATE OF COPPER—Is firm at £16 to £17 per ton, according to brand.

SULPHONAL—Still obtainable from the makers in limited quantity at 7s. 3d. per lb. in bulk.

TURMERIC—Continues very firm but quiet in consequence of high prices asked. *Bengal* quoted 21s. per cwt. *Madras* is very scarce and prices are nominal. *Cochin*: *Split bulbs* are dearer at 10s. 3d. to 10s. 6d. per cwt.

The quantities offered in to-day's drug sales were considerable, and for the season of the year a fair number of sales were effected, the following being the particulars as far as it was possible to give same at time of going to press:—

ACONITE ROOT.—10 bags *Japan* of fair quality were taken out at 27s. 6d. per cwt.

AMBERGRIS—1 tin weighing nett about 11 oz. of good grey spicy avour was held for 98s. per oz.

ANISEED.—50 bags fair *Italian* bought in at 24s. per cwt.

ANTIMONY.—20 cases *Japan* crude held for £23 10s. per ton.

ARGOL.—25 bags *Cape* sold at 50s. 6d. to 53s. per cwt. down to 42s. for low inferior quality.

BALSAM COPAIBA.—55 cases of fair quality part sold at 1s. 4d. per lb. 6 cases good *Maranham* being bought in 1s. 11d. per lb.

BALSAM PERU.—10 cases held for 8s. 6d., which shows a slight decline in value.

BALSAM TOLU.—18 cases, some of which were stated to contain, in addition to their legitimate contents, up to 8 lbs. of stones, sold at 1s. 2d. to 1s. 3d. per lb.

BUCHU LEAVES.—4 bales green rounds sold at 6¼d. per lb. being again dearer—the other lots offering are said to be held for much more than this price. Yellow leaves held for 4¼d. per lb.

CACTUS FLOWERS.—Four bags *Grandiflora* were taken out at 8d. per lb.

CAMPHOR OIL.—60 cases "pure" bought in at 20s. per cwt.

CARDAMOMS.—Fair greyish *Mysore* part rather brown sold at 2s. 3d. to 2s. 6d. per lb. down to 2s. for slightly splitting, fine bold plump ditto realising up to 4s. 1d. per lb. Small brown *Malabars* part sold at 2s. per lb. As a whole prices generally show a reduction of about 2d. per lb. on those previously ruling.

CINCHONA BARK.—28 bales flat *Calisaya* held for 8d. per lb.

CIVET.—5 horns of fair quality and flavour were taken out at 13s. 6d. per oz.

COCA LEAVES.—11 cases *Ceylon* sold without reserve at 9¼d. per lb. for good green part broken.

COLOCYNTH.—Small apple *Turkish*, fairly pale, bought in at 11d. to 1s. 2d., very seedy ditto being held for 11d. per lb. 5 cases selling at 10¼d. per lb. subject to approval.

COLOMBO ROOT.—11 bags picked washed were held at 35s. per cwt., 379 bags fair to good sorts sold freely at 16s. down to 8s. per cwt. for very inferior.

CROTON SEEDS.—7 bags part sold at 90s. per cwt. for good bright fair; darkish being bought in at 65s. per cwt.

CUBEBS.—52 bags somewhat stalky sold at 24s. per cwt.

CUSCUS ROOT.—14 bales of good quality, but more or less weighted with sand, sold at 12s. per cwt.; 3 bales cleaned held for 25s., which shows lower value.

CUTTLE FISH—Good bold pale sold at 5¼d. per lb. down to 4d. for rather darkish, and 3¼d. for small to medium.

DILL SEED.—85 bags good bright sold cheaply at 14s. per cwt.

DRAGON'S BLOOD.—4 cases fair thin *reed* sold at £8 17s. 6d. per cwt.

ERGOT OF RYE.—14 cases fair *Spanish*, slightly weevily held for 8d. per lb.; good sound ditto for 10d. Six bags fair greyish *Russian* sold at 7¼d. per lb., subject to approval.

GAMBOGE.—One case fair pipe sold at £7 5s. per cwt.

GENTIAN ROOT.—Seven bags sound old root were bought in at 22s. per cwt.

GUARANA.—5 cases of fair quality were held for 1s. 4d. per lb., a very low figure, there was, however, no demand.

GUINEA GRAINS.—Four bags [of fair quality] sold at 45s. per cwt.

GUM AMMONIACUM.—1 case dark and blocky sold at 10s. per cwt.

GUM ARABIC.—2 cases sorts were held for 62s. 6d. per cwt.

GUM BENJAMIN.—16 cases low *Siam* part sold at 52s. 6d. per cwt. Fine *Sumatra* was held for £10, medium to fair ditto for £6 to £6 5s. per cwt.

GUM GALBANUM.—15 packages bought in at 1s. 3d. per lb. down to 9d. for low inferior part blocky.

GUM GUAIAIACUM.—Ten cases broken block fair to drossy bought in at 9d. per lb.—6d. would, however, probably have been accepted. Fine glossy block sold at 1s. 10d. down to 11d. for more or less inferior and drossy.

GUM MYRRH.—7 casks good native picked held for 95s. per cwt., rough sorts for 55s.

GUM OLIBANUM.—3 cases siftings held for 15s. per cwt.

HONEY.—74 cases pale to brown crystallising *Honolulu* sold without reserve at 16s. 6d. per cwt., which may be regarded as decidedly cheap; 20 cases fair white *Peruvian* sold also without reserve at 18s. 6d. per cwt.

IPECACUANHA.—Good *Rio* sold at 9s. 2d. down to 8s. 11d. for slightly damaged. Four bales *Carthagena* sold at 4s. 8d. and 4s. 10d. per lb. for 1 and 2 *CCD* respectively.

KAMALA.—4 cases fair bright held for 6d. per lb., which is a decidedly moderate figure.

LIQUORICE ROOT.—50 bales rough *Syrian* bought in at 9s. 6d. per cwt.

MUSK.—Fine thin skin blue *Tonquin*, fair to bold, fairly dry, fine flavour sold at 70s. per oz.; ditto pile 3 pasty pods, few broken, bought in at 42s. 6d.; low, old-fashioned, unsightly and damp at 22s.

NUX VOMICA.—71 bags *Cochin* chiefly bought in at 10s. for good bright; dull selling at 6s. per cwt.

OILS (ESSENTIAL).—10 cases *Cajaputa* held for 3s. 9d. per bottle. 9 cases dementholised *Japan Peppermint Oil* part sold at 3s. 3d. per lb. 2 cases fine *Cinnamon Oil* bought in at 1s. 6d. per oz. 8 cases ditto leaf held for 3¼d. to 4¼d. per oz. 1 case *West Indian Oil of Limes* bought in at 4s., a bid of 3s. 7d. per lb. being refused. 2 cases *West Indian Bay Oil* sold at 5s. 9d. per lb. 23 cases *Cassia Oil* bought in at 5s. 2d. to 5s. 9d. per lb.

ORANGE PEEL.—Four cases good thin cut part sold at 8d., remainder only realising 7d. per lb.

ORRIS ROOT.—58 bales *East Indian* bought in at 10s. per cwt., a bid of 2s. 6d. per cwt. being declined.

OTTO OF ROSES.—4 vases bought in at 21s. per oz.

RHUBARB.—10 chests good bold flat high dried bought in at 1s. 3d. per lb., common selling at 9d. 2 cases fine trimming *Shensi* realised 2s. 10d. per lb., fine small round ditto being held for 3s., good bold round *Canton* held for 1s. 6d. per lb., good small fetching 1s. 5d., and second size rather roughish 1s. 2d. per lb., small flat sold at 1s. 2d. per lb.

SARSAPARILLA.—Fair *Jamaica* sold at 1s. 7d. to 1s. 8d. per lb., fair *Lima* at 1s. to 1s. 1d.; 2 bales 3 *CSD* selling at 11d. per lb., 7 bales good *Honduras* sold at 1s. 6d. per lb.

SENNA.—*Tinnevely* was in fair supply, the bulk being, however, of low quality, which sold well at 1½d. to 2¼d. for low spotty small, and 3d. to 3½d. for a few bales of new crop, the first of the season. In the next auctions it is said about 500 bales will be offered—mainly of new crop. *Alexandrian* variety was as usual mainly bought in, a few bales of siftings selling at 2¼d. per lb. *Mecca*: 47 bales bought in.

SERPENTARY ROOT.—Two bales fair bright part dark held for 1s. 2d. per lb.

TAMARINDS.—59 barrels fair *Antigua* sold at 10s. per cwt.

TONQUIN BEANS.—14 casks dampish *Angostura* were taken out at 5s. per lb., a bid of 3s. 6d. being declined. Fairly crystallised *Paras* were held for 1s. 9d. per lb.

VANILLA.—Rather over 150 tins were offered, the bulk being disposed of at late rates, one fine lot fetching 24s. per lb.

VERMILION.—4 cases *China* bought in at 2s. 1d. per lb.

WAX.—Fair *Madagascar* was brought in at £6 to £6 10s. per cwt., part selling at £5 12s. 6d. to £5 15s.; fair *Jamaica* sold at £6 15s.; 11 cases *Bombay* bought in at £5 10s.; 30 cases *Japan* fair squares held for 32s. per cwt.

Newcastle Chemical Report.

AUGUST 17, 1898.

New business in heavy goods keeps slow. Perhaps the only special feature of moment is the reduced make of Crystal Soda through the warm weather, prices, however, are unchanged all round. Such are: Soda crystals: 45s. to 52s. 6d. Bleaching Powder: £6 to £6 5s. Caustic Soda: 70 per cent., £7 5s. Soda ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. Sulphur: £5 per ton.

Liverpool Market Report.

AUGUST 17, 1898.

The only alterations since last report are in oils, several of which have advanced a shade in price, amongst others being Linseed and Cottonseed Oils and Spirits of Turpentine. Good sales of Ginger, Beeswax, and Cochineal have been effected at fair rates.

BEESWAX.—3 cases of Peruvian sold at auction for £7 7s. 6d. per cwt.

CANARY SEED.—Turkish continues firm at the improvement noted last week. 350 bags sold on private terms, and the nearest rate now is 28s. to 30s. per 464 lbs.

COCHINEAL.—10 bags of Teneriffe grey-black fetched 8½d. per lb.

GINGER.—175 bags sold—Sierra Leone at 18s. 6d., and Monrovia at 16s. 6d. per cwt.

OILS (FIXED) AND SPIRITS.—*Castor* is firm, but not quite so active; Calcutta 3¼d. per lb., Madras 3d., French 1st pressure 3½d., to arrive 5 tons, sold at £25 per ton, *f.o.b.* Brazilian has changed hands at 3½d. per lb. *Olive* maintains its recent advance, but no transactions have been reported in it. *Linseed* of Liverpool make has advanced slightly, and holders demand 18s. 3d. to 18s. 6d. per cwt. *Cottonseed* has also risen a shade, 16s. to 16s. 3d. per cwt. *Spirits of Turpentine* enjoy a fair demand at 22s. 6d. to 22s. 9d. per cwt.

POTASH SALTS.—*Bicarbonate*: 30s. per cwt. *Bichromate*: 3½d. per lb. *Chlorate*: 3½d. to 3¾d. per lb. *Cream of Tartar* is in slow demand at 78s. 6d. per cwt. for finest white. *Pearlashes* only nominal at 35s. per cwt. *Potashes* steady at the full rate of 22s. per cwt. *Saltpetre*: 21s. 6d. per cwt.

SODA SALTS.—*Bicarbonate*: £6 15s. per ton. *Borax*: £13 10s. to £14 per ton. *Caustic*: 76 to 77 per cent., £8 2s. 6d. to £8 5s. per ton. *Crystals*: £2 17s. 6d. to £3. *Nitrate* easier in price and slow in demand at 7s. 6d. to 7s. 7½d. per cwt.

Manchester Chemical Report.

AUGUST 17, 1898.

There is little now to report on home accounts, heavy chemicals being fairly firm, and it is reported that things have taken a turn for the better in regard to the States. It is sincerely to be hoped this is the case, as the margin of profit has for some time past been exceedingly small. Soda Crystals and Ammonia Alkali are still firm, but Bleaching Powder is dull at £5 per ton for soft wood casks on rails. Sulphate of Ammonia is variable, but makers here report a full order book forward, and do not seem disposed to offer. Brown Acetate, notwithstanding reports to the contrary, is dull, and low figures rule for firm orders. Ordinarily £4 17s. 6d. to £5 is the price. Sulphate of Copper is practically stationary at £17 per ton for best brands delivered Manchester. Benzols are, perhaps, a trifle firmer at 9½d. for 50's, 90's, and Naphthas are unchanged. Arsenic is very low comparatively, ranging from £14 to £14 10s. per ton, ex ship, Graston. Pitch is improving. Yellow Prussiate is still scarce and firm at 6¼d. to 7d. In Green Copperas local makers are fully booked for some time. Both Glauber and Epsom Salts are scarce owing to the hot weather, and there is an upward tendency. Epsoms are quoted 55s. and Glaubers 40s., in bags, on rails.

News in Brief.

MISS MARIAN J. NEWBIGIN, daughter of Mr. L. J. Newbigin, of Alnwick, and Lecturer in Zoology in the Edinburgh College of Medicine for Women, has recently obtained the degree of Doctor of Science from London University. Her subject was zoology, the title of her thesis being "On Certain Green (Chlorophylloid) Pigments in Invertebrates."

A MANUFACTURER'S MISTAKE.—Three Birmingham shopkeepers were summoned on the 6th inst. for selling adulterated borax. In two cases the samples contained 35 per cent. of sodium bicarbonate and in the third case the percentage was 25. Defendants informed the Bench that they sold the borax in the same state as it was received from the manufacturer, Mr. Josiah Austin, Excelsior Chemical Works, Nechells. It was pointed out that, finding a mistake had been made, Mr. Austin had sent circulars out to his customers asking for the return of all recent consignments of borax. Defendants were fined 5s. and costs each, and Mr. Austin undertook to pay the money.

FIRE AT A CHEMIST'S.—On Thursday morning, August 4, about one o'clock, a fire was discovered at the rear of the branch establishment of Mr. D. Davison, pharmaceutical chemist, Fakenham. The fire originated in a carpenter's shop adjoining Mr. Davison's premises, and spread to his warehouses, which were stored with very inflammable material. The contents of one warehouse and part of another were destroyed, and also some of the private belongings of the manager, Mr. J. C. Holton. The local fire brigade was summoned, and quickly got the flames under control. Everything was covered by insurance.

A NEW EDITION is announced for September of 'King's American Eclectic Dispensatory' in two volumes royal 8vo. It is entirely re-written and enlarged by Dr. Harvey W. Felter and Professor J. Uri Lloyd, the talented author of 'Etidorhpa.' Messrs. Potter & Clarke, of Artillery Lane, will be the British agents for the book.

WE UNDERSTAND that the projected amalgamation of several firms in the mineral water trade—comprising H. D. Rawlings, Ltd., Ray & Son, Ltd., Fleet & Co., Hooper, Struve & Co., and others—is indefinitely postponed. The share and debenture capital were fixed at £600,000, but the recent disclosures anent company promotion have probably convinced the promoters that the present time is scarcely opportune for the proposed flotation.

DEFICIENT GREGORY'S POWDER.—At Lambeth, on August 4, Thomas Tijou, of Upper Kennington Lane, was summoned at the instance of the Lambeth Vestry for selling a drug which was not of the nature, substance, and quality of the article demanded by the purchaser. Mr. W. J. Perrin, an inspector in the service of

the Vestry, said he purchased some Gregory's powder at the defendant's shop and submitted it to the public analyst, who certified the constituents to be rhubarb and ginger, 33'4; official carbonate of magnesia, 66'6. The analyst added the following note to his certificate:—"This article has been made with official carbonate of magnesia instead of the more expensive light magnesia required by the British Pharmacopœia." Mr. Hopkins remarked that it was most important that drugs should be kept pure, and ordered the defendant to pay a penalty of 40s. and 12s. 6d. costs.

MR. THOMAS STUART BARRIE, pharmaceutical chemist, enters the Glasgow and West of Scotland School of Pharmacy on September 1, as Lecturer in Chemistry and Pharmacy.

ACCIDENTAL POISONING CASES.

CARBOLIC ACID.—Emma Whale (50), of Stoke Newington, died on Friday, August 12, from the effects of carbolic acid poisoning. It appeared from the evidence at the inquest that she complained to her husband of the intense heat, and while he was gone for some supper beer, she evidently drank from a bottle containing carbolic acid, which stood on a table together with several others. A verdict of "death by misadventure" was returned.

LAUDANUM.—Bernard Beville Gilpin, of Sheerness, *locum tenens* for one of the regular staff of the Royal Naval Hospital, Yarmouth, was found at the Victoria Hotel, Yarmouth, on Monday, August 15, suffering from narcotic poisoning. A bottle containing whisky and an empty six-ounce laudanum bottle were found by his side. It was stated at the inquest that he was troubled with internal pain. The jury thought he had taken the laudanum to lull pain or to produce sleep, and that he inadvertently took an over-dose.

THE EXMOUTH CORONER AND THE CHEMIST.—Just before going to press a correspondent informs us that he has learnt from an authoritative source that Mr. Coroner Cox on Wednesday afternoon waited upon Mr. Bickford and apologised to him for making use of the remarks he made at the inquest, also expressing regret that he should have overlooked the provisions of the Pharmacy Act of 1869. Mr. Cox further undertook that at the next inquest held at Exmouth he would publicly repeat the apology to the jury summoned on that occasion.

OPIUM.—An inquiry was held at Bethnal Green on Saturday, August 6, respecting the death of Annie Parker, 40, domestic servant, of Cambridge Heath. From the evidence it appears that she suffered from diarrhoea, and applied to the parish doctor for medicine. He prescribed an opium mixture, which was supplied by the dispenser in a pint and a half bottle, with directions to take two tablespoonfuls as a dose. Shortly afterwards twelve doses had disappeared from the bottle, and the woman died from the effects of an overdose of opium. The jury thought it was a case of misadventure, and added to the verdict as a rider "That the authorities should not supply such powerful medicines in such large bottles."

A DOSE OF EMBROCATION was given to a young child at Brighton on Thursday, August 4, by its father, who got out of bed "half asleep" to give it medicine, but took up the wrong bottle. The embrocation contained in the bottle, which was not labelled "poison," had been procured at a local chemist's. The jury subsequently returned a verdict of "Death by misadventure," with a rider that chemists should be more careful in supplying embrocation.

Partnerships Dissolved.

(From the London Gazette.)

Edward A. Hearn and Sidney H. R. Wright (trading as Hearn, Wright & Co.), Glass Bottle Manufacturers, Eclipse Glass Works, Chatsworth Road, Lower Clapton. Debts will be received and paid by Edward A. Hearn.

E. Downes and A. Harper, Medical Practitioners, Mollerstein, Eastbourne. Debts will be received and paid by A. Harper.

S. B. Fairley and J. C. S. Matthews, Physicians and Surgeons, 159, Lichfield Road, Aston, Warwickshire.

Receiving Orders in Bankruptcy.

(From the London Gazette.)

Joseph H. J. Frye, Surgeon, 78, Camden Road, London, N. W.
R. J. Whitehead and John Cox (trading as Whitehead & Cox),
Camera Makers, 54, Irving Street, Birmingham.
James Cooke, Herbalist, etc., 71, Mill Road, Battley Carr,
Dewsbury.

Photographic Notes.

THE DOUBLE TRANSFER PROCESS is often thrown over in disgust, because of the trouble workers experience in getting the final support to leave the temporary. If only after the former has been squeegeed on to the latter, the two supports be placed on the rack of the kitchener, the finished print will peel off by itself very speedily, and with the utmost readiness, without a flaw, provided the heat from the fire be not too fierce.—M. E. M. D., in *Photo News*.

A VARNISH FOR WET NEGATIVES can be made as follows:—Dissolve 120 grains of borax and 30 grains of carbonate of soda in 5 ounces of warm water; add 480 grains of broken gum lac, and shake till dissolved; filter, and then add about 20 minims of glycerin, and water to make a total bulk of 10½ ounces. Stand aside for a few hours; filter, and varnish is ready for use. Varnish by soaking negative in liquid, the coating of gum being afterwards removed from glass side with a rag wetted with alcohol.—G. E. B., in *Photo News*.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Photographic mounts, Bristol cartes, 3s.; G.B.E., 10s.; cabinets, 10s.; G.B.E., 15s.; quarter-plates, 6s.; half-plates, 12s. 1000; plate-sunk mounts, 12 by 10, 40s. 1000. Samples free.—Edward Peck, East Dereham, Norfolk.

Magic Lanterns, second-hand; triples and binials; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

A few gross Iolanthe Hair-curling Fluid, 3d. size, 18s. gross, carriage paid; Camwal Shares wanted.—S. Sugden, Pharmacist, Waterfoot, Manchester.

Overstocked.—2×10 lb. Coppers Superfine Oil of Lemon, 27s. 6d. copper; 1 lb. sample free by post 3s., postal order.—Moss, 34, Avondale Road, Chorley.

Moulds.—Suppository, Pessary, Bougie, Capsule, Fumigating Pastille, all Maw's patterns, some new; particulars free.—Warnes, Chemist, 333, Gray's Inn Road, W.C.

WANTED.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

Advertisement.

(Received too late for Classification.)

ENGAGEMENT wanted as **MANAGER**. Age 28. Good general experience. Highest references. **CHEMIST**, 5, Geddes Rd., New Wandsworth, S.W.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Culmer, Dewhurst, Farr, Forret, Haigh, Herbert, Hill, Hollick, Hyslop, Jack, Jowett, Kirkby, Lake, Matthews, Miller, Napier, Newbiggin, Owen, Sharp, Smyth, Spooner, Stamp, Stewart, Symes, Umney, Wardleworth, Warrell, Wells, Whitby, Wilkinson.



London Report.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

AUGUST 25, 1898.

As might be expected at the season of the year, and partly also in consequence of the excessive heat of the weather, business has been very dull during the past week, and this applies more especially to the drug trade, while chemicals have also been decidedly quiet. There have also been practically no changes of importance to record. Quinine dull. Opium, morphia and codeia unchanged. Quicksilver and mercurials firm. Bleaching powder very firm. Bromides and Iodides steady. Sulphate of Ammonia again dearer. Acid Citric firm. Tartaric steady. Borax and Acid Boracic quiet. Acid Carbolic in good demand and steady. Cascara Sagrada very firm and expected to further advance. Cocaine firm. Acetanilide, Phenacetin, and Sulphonal unchanged. Glycerin firm. Cod-Liver Oil very quiet. Phenazone weak. Ipecacuanha firm. The following are the ruling prices for articles of chief interest:—

ACETANILIDE—Steady at 1s. per lb. for ton lots.

ACETIC ACID—Is unchanged. 1 to 7, 14s. 3d. per cwt.; *B.P.*, 15s. 6d. per cwt.; 50 per cent., 21s. 6d. per cwt.; 74 per cent., 30s. per cwt.; 85 per cent., 34s. per cwt.; *Glacial* 39s. 6d. per cwt.

ACID BORACIC.—A fair business passing at 23s. per cwt. for *Crystals*, and 25s. per cwt. for *Powder*.

ACID CARBOLIC—Is steady at 6½d. to 6¾d. per lb. for 35° to 36° C. *ice crystals* in large drums and overcasks. *Liquid*: 95 per cent. of pale straw colour, 1s. 2d. per gallon in 40-gallon casks.

ACID CITRIC.—Makers are firm at 1s. 3d. per lb. for *Crystals*, from second-hand round lots can be obtained at rather below this figure.

ACID OXALIC—Steady at 3½d. per lb. on the spot.

ACID TANNIC—Is steady at 1s. 9½d. per lb. for light *Crystals*, and 1s. 3½d. per lb. for *Powder*.

ACID TARTARIC—Steady at 1s. 1d. per lb. for English *Crystals*, and 12¾d. per lb. for foreign.

ALUM.—Loose lump is firm at £5 10s. per ton; ground, in bags, £6 per ton.

AMMONIA COMPOUNDS.—*Sulphate* is again dearer at £10 5s. per ton for grey prompt 24 per cent. London. Hull prompt £10 2s. 6d. per ton. *Carbonate* firm at 3½d. to 4d. per lb. according to package. *Bromide* steady at 2s. 1d. per lb. *Iodide* unchanged at 14s. 6d. per lb. *Sulpho-cyanide* in good demand at 1s. 2d. per lb. *Sal ammoniac*: Sublimed firsts 35s. per cwt., seconds 33s. per cwt.

ARSENIC—Firm at 19s. per cwt. for *powder*, and 34s. per cwt. for *lump*.

BALSAM CAPIVI.—Since last week's auctions, sales have been made of fair Central American, rather mixed in colour, at 1s. 3½d. to 1s. 4d. per lb.

BALSAM PERU—Remains quiet at 8s. 6d. per lb.

BLEACHING POWDER—Very firm at £6 15s. to £7 15s. per ton, according to brand, quantity, and packing.

BORAX—Steady at 14s. per cwt. for *lump*, and 14s. 6d. per cwt. for *powder*.

BROMIDES—Are without change at 1s. 9½d. per lb. for *Potass Bromide*.

CASCARA SAGRADA.—Reports from San Francisco state that very little has been gathered this season, and prices are sure to be considerably above present rates. Very little is offering for shipment. On the spot two year old bark is offered at 22s. 6d. per cwt., and four year old bark at 25s. 6d. per cwt.

CENTAURY HERB.—Ordinary is offered at 30s. per cwt., finest 42s. 6d. per cwt.

CHAULMOOGRA Oil—Is inquired for, and 2s. to 2s. 3d. per lb. is the general quotation for bulk packing.

CLOVES.—Privately the market for *Zanzibar* is flat, with little business doing; quotation for October to December delivery 4¼d. At auction 100 bales *Zanzibar* bought in; of 10 cases good picked *Penang*, 2 cases sold at 11d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: Commercial 1s. 5d., pure 2s. 4d. per gallon. *Beuzole*: 50 per cent., 1s. 1d.; 90 per cent., 1s. per gallon. *Crude Naphtha*: 30 per cent. at 120° C., 5d. per gallon. *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 9d. per gallon.

COCAINE.—Makers' price for best brands is 9s. 3d. per oz. for 100 oz. lots in 25-oz. tins, there being practically nothing available from second hand below this figure.

CODEIA—Without change and firm at 12s. 6d. per oz. for the *pure* and 1s. per oz. less for the salts.

COD-LIVER OIL.—Market is exceedingly quiet at nominally 85s. per barrel, *f.o.b.*, for best new non-freezing *Norwegian* oil in tin lined barrels of 25 gallons.

COLCHICUM SEEDS—Are very firm, 45s. per cwt. being asked on the spot.

GENTIAN ROOT—Is firm at 22s. per cwt. on the spot for good dry red root.

GINGER.—With an improved demand rather better prices ruled for *Cochin*. Of 901 bags rough about 650 bags sold, low shrivelled pickings, 12s.; cuttings, 14s.; ordinary small rough, 19s. 6d. to 20s.; small and lean brown rough, 23s.; fair to good washed rough, 24s. 6d. to 26s. Of 143 cases about 40 cases sold, medium and small native limes, partly cut, 42s. 6d. to 43s. 6d. 60 bags *Japan* bought in at 20s. *Jamaica* in fair demand and firm. Of 190 barrels about 130 barrels sold, middling to good middling washed at 72s. 6d. to 76s.; good to fine, 79s. to 90s.

GLYCERIN.—It is reported that an arrangement has been come to between the English makers of the refined article not to unduly cut the price; they would, however, still sell at 52s. 6d. per cwt., while 55s. to 65s. per cwt. according to quantity and brand, is quoted for the best *German* white double distilled chemically pure, 1260 quality, in tins and cases.

GUM MASTIC—Only inferior offering, clean pale tear wanted, nominal value 1s. 10d. to 2s. per lb.

HONEY.—*Californian* crop is reported to be short, and decidedly higher prices are anticipated. Good white is quoted 40s. per cwt.

IODIDES—Firm at 9s. 9d. to 10s. 3d. per lb. for *Potass. Iodide*, and 13s. 4d. for *Iodoform*.

IPECACUANHA.—*Rio* is very firmly held at 9s. per lb. for ordinary, whilst *Carthagena* is becoming scarce, and 5s. to 5s. 3d. per lb. is asked, according to quality.

JAPAN WAX—Is difficult of sale, although holders of good squares would be prepared to take 33s. per cwt.

MENTHOL—Firm at 7s. 1½d. to 7s. 3d. per lb. on the spot.

MERCURIALS—Are steady at 2s. 5d. per lb. for *Corrosive sublimate*

MORPHINE—Makers quote the *Hydrochlorate powder* 5s. per oz. for quantity and bulk packing, *crystal* being 2d. per oz. higher. and 2s. 10d. per lb. for *Calomet* in ½-cwt. lots.

OILS ESSENTIAL.—*Star Aniseed* is in good demand at 7s. 1½d. to 7s. 3d. per lb. *Cassia* quiet at 5s. to 5s. 9d. per lb., as to quality. *Lemongrass* quiet at 3¾d. per oz. *Citronelle* steady at 1s. 2d. per lb. *Peppermint*: *American* is steady; H.G.H. 5s. 7½d. to 5s. 9d. per lb. *Wayne County* 3s. 9d. to 4s. per lb., as to quality. *Japanese* is dearer in all positions; quotations from the other side come at 3s. 11d. per lb. *c.i.f.* for dementholised, and 4s. 11d. per lb. *c.i.f.* for 40 per cent. On the spot dementholised has been done at 3s. 3d. and 40 per cent. at 5s. per lb.

OILS (FIXED) AND SPIRITS.—*Linseed* dearer, closing firm at £17 for pipes, London; barrels, £17 7s. 6d. *Rape* firm at higher rates; ordinary brown on the spot £22 to £22 10s.; Refined £23 10s. to £24. *Cotton* slightly dearer at £15 15s. for London Crude spot; refined £15 7s. 6d. to £16, according to make. *Olive* steady at £29 to £32 for green oils and 5s. 6d. to 6s. 6d. per gallon for feeding oils. *Coco-nut* dearer at £23 10s. for Ceylon on the spot. *Cochin* being still quoted £28 nominally. *Palm Lagos* on the spot £22 10s. *Turpentine* quiet at 22s. per cwt. for spot American. *Petroleum Oil* firm. Russian spot 4¾d. per gallon; American 5¾d. per gallon; water white 6¾d. per gallon. *Petroleum Spirit*: American 5¾d. per gallon; deodorised 6¾d. per gallon.

OPIUM—Practically nothing doing, prices remaining nominally unchanged.

ORRIS ROOT—Is steady, best picked *Florentine* being quoted 42s. 6d. per cwt. *t.o.b.*

PHENACETIN—Without change at 3s. 9d. to 4s. 3d. per lb. according to quantity, for both *crystals* and *powder*.

PIHENAZONE—Quiet with a weak tendency at 9s. per lb. for *crystals* and *powder* for quantity and bulk packing. *Dr. Knorr's antipyrine* remains unchanged.

PODOPHYLLUM—Is in fair inquiry at 12s. 6d. per lb. for B.P. quality.

POTASH COMPOUNDS.—*Chlorate* unchanged at 3½d. per lb. on the spot. *Bromide* steady at 1s. 9½d. per lb. *Bicarbonate* steady at 30s. per cwt., for Foreign, 35s. per cwt. for English in crystal or powder. *Prussiate* quiet at 7d. per lb. for yellow 1s. 2d. for red. *Bichromate* firm at 3½d. to 3¾d. per lb. *Iodide* quiet at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Cyanide* the spot at 1s. 2d. per lb. for cake, 98-100 per cent. *Permanganate* very dull at 62s. 6d. per cwt. for small, and 5s. per cwt. more for large crystals.

QUICKSILVER—Firm at unchanged values, first hand £7 12s. 6d. per flask, secondhand £7 12s.

QUININE.—Very quiet, makers' price remaining unchanged at 10d. per oz. for best *German* brands of sulphate in 100-oz. tins and 1000-oz. lots.

SALICINE—Remains firm at 10s. 6d. per lb. for fair lots.

SENNA.—There has been a fair demand for *Tinnevelly* since last week's sales, and several lots bought thereat have been resold. It is anticipated that prices for new crop will remain steady.

SHELLAC.—At the auctions on Tuesday only small supplies were offered, but, notwithstanding this, demand was very slow, and only about one-fourth found buyers at about previous rates. Of a total of 426 cases 102 cases sold. *Second Orange*: Ordinary red flat free sold 61s. per cwt., dark red Rangoon hard block at 50s. to 53s. per cwt. *Garnet*: Hard block Rangoon sold 52s. to 53s. per cwt. *Button*: Genuine sold at 89s. to 92s. per cwt. Privately the demand is slow, and sales are quite unimportant. *TN Orange* basis fair quoted 63s. per cwt.

SODA COMPOUNDS.—*Crystals*, 57s. 6d. per ton in barrels. *Bicarbonate* steady at £7 5s. to £7 10s., according to quantity and packing. *Bichromate*, 2¾d. to 3d. per lb. *Bromide* unchanged at 2s. per half pound. *Ash* firm at £5 5s. to £5 15s. per ton, according to strength. *Caustic*: 70 per cent. white, £8 per ton; 60 per cent., £7 per ton. *Nitrate*: Refined, £8 per ton; ordinary, £7 12s. 6d. per ton.

SPICES.—*Black Pepper*: nearly all bought in, Penang at 4¾d. to 5d., Lampong 4¾d., Singapore 4¾d. to 4½d., Aleppy 4¾d., and Wynaad at 5d., 8 bags Malabar sold at 4¾d. *White Pepper*: also almost all bought in; 54 bags Singapore sold at 8¾d. to 9½d., and 5 cases extra fine bold at 10½d. *Cassia Lignea*: of 390 boxes 140 sold at 54s. to 54s. 6d. *Cassia Buds*: 18 bags wild Bombay bought in at 35s. *Mace*: Of 6 cases Penang only 1 case pickings sold at 1s. 4d.; 13 packages West India sold at 1s. 4d. to 1s. 6d. *Nutmegs*: Quiet at about previous rates. *Pimento*: Quiet but steady; of 522 bags only 75 bags sold at 4¾d. to 5d.

STAR ANISEED.—*China* continues very firm on the spot at £6 per cwt.

STRYCHNINE—Steady at 2s. 1d. per oz. for pure crystals, 2s. for precipitated, and 1s. 9d. for sulphate or nitrate.

SULPHATE OF COPPER—Steady at £16 to £17 per ton according to brand.

SULPHONAL.—Makers still quote 7s. 3d. per lb. in bulk for limited quantity for immediate delivery, declining, however, to book for later delivery.

TURMERIC—Is quiet but mainly owing to the scarcity of offers. *Bengal* quoted 20s. per cwt. *Cochin*: Split bulbs 10s. 6d. per cwt. *Madras*: None offering.

Newcastle Chemical Report.

AUGUST 24, 1898.

Steadiness prevails on this market, but mostly for heavy goods. Shipments to the Baltic are on a larger scale; but the weather preventing the making of Soda Crystals is causing that article to be slightly scarce. General prices go unchanged. Such are: Soda Crystals: 45s. to 52s. 6d. Bleaching powder: £6 to £6 5s. Caustic Soda: 70 per cent., £7 5s. to £7 10s. Soda ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. Sulphur: £5 per ton.

Manchester Chemical Report.

AUGUST 24, 1898.

There is little activity in heavy chemicals, although a certain amount of contract business over next year is being put through. Bleaching Powder is quoted at £5 per ton, soft wood casks, on rails, for home consumption, but for export there is a great falling off in values. The new processes in Caustic Soda and Soda Ash are evidently telling a tale, and it is evident that great changes are impending. Values, however, cannot fall much lower, or even under improved methods of production the margin will be unremunerative. For prompt delivery Sulphate of Copper remains at £17 per ton best brands here, but for spring delivery much higher figures are quoted, and at these makers are not inclined to sell great quantities. Brown Acetate of Lime is dull, but without material change, at £4 17s. 6d. to £5 2s. 6d. per ton *c.i.f.* Ship Canal or station, Manchester. Benzols are firmer, and it is thought that a syndicate to regulate production in the future may have some effect in improving prices. Anthracene values are low, but the outlook for Pitch is better. Naphthas continue firm. In Saltcreek a considerable business over next year is reported at 25s. to 26s. per ton in bulk on rails. Yellow Prussiate is well sold for local make at 6¾d. to 7d. per lb.

Liverpool Market Report.

AUGUST 24, 1898.

The only special point about this week's market is that the spot price for Spanish Olive Oils is below that asked at present in Spain, a state of things brought about by the prospect of shortage in the Spanish olive harvest, due to the young fruit dropping off with the extreme heat. Chilian Honey and Spermaceiti have been selling in some quantity at fair rates.

AMMONIA SALTS.—*Carbonate*: 3d. per lb. *Sal ammoniac*: 33s. to 35s. per cwt. *Sulphate* is firm and dearer, £10 to £10 12s. 6d. per ton.

CANARYSEED.—Turkish commands more attention, and 800 bags of old crop seed sold at 28s. 6d. per 464 lbs.

COPPERAS.—Lancashire, 39s. per ton. Welsh, 37s. per ton, has risen considerably.

COPPER SULPHATE—Closes very firm at £17 to £17 10s. per ton.

HONEY.—250 barrels of Chilian found buyers at 22s. per cwt. for Pile 1, 22s. for Pile 2, and 21s. for Pile 3. Lots of Pile 3 have since sold for 21s. 6d.

LINSEED.—Transactions have been limited, owing to extreme figures asked by holders. 100 bags of Calcutta sold, ex-quay, at 36s. 6d. per 416 lbs., and 30 tons of River Plate at 33s.

OILS (FIXED) AND SPIRITS.—*Castor* is unchanged in price from last week. Calcutta, 3¾d. per lb., French 1st pressure, 3½d. per lb.; Madras, 3d. to 3½d. per lb. *Olive* has been selling here at £30 10s. to £31 10s. per tun for Malaga, and £30 to £30 10s. for Seville. The price in Spain for shipment is, Malaga £32 to £34 10s.

per tun and Seville £31 10s. to £32 10s. Holders here having disposed of the cheaper lots are withdrawing their stocks in anticipation of higher prices. *Linseed* of Liverpool pressure is steady at 18s. to 18s. 6d. per cwt. *Cottonseed* continues at 16s. to 16s. 3d. per cwt. with fair demand. *Spirits of Turpentine* are again at 22s. 6d. to 22s. 9d. per cwt., after dropping 3d. per cwt. early in the week.

POTASH SALTS.—*Bichromate*, 3½d. per lb. *Chlorate*, 3¾d. to 3¼d. per lb. *Cream of Tartar* is unchanged. *Pearlashes* are slow of sale at 35s. per cwt. *Potashes*, 22s. per cwt. *Prussiate* quiet, 6½d. to 6¼d. per lb.

SODA SALTS.—*Bicarbonate*, £6 15s. per ton. *Borax*, £13 10s. to £14 per ton. *Caustic*: 76 to 77 per cent., £8 per ton. *Crystals*, £2 17s. 6d. to £3 per ton. *Hyposulphite*, £4 17s. 6d. per ton. *Nitrate*, 7s. 7½d. to 7s. 9d. per cwt.—a slight improvement.

SPERMACEYL.—20 cases of Chilian refined changed hands at 1s. 1d. per lb.

THE BRITISH ASSOCIATION.

The President of the Association at the Bristol meeting, which commences next week, will be Sir William Crookes, under whose supervision arrangements for the meeting are steadily progressing, and in many of the sections the programme is practically complete. The President of the Geological Section is Mr. W. H. Hudleston, F.R.S., and in his presidential address he is expected to deal mainly with certain points in the geology of the south-west of England east of Dartmoor. In the Chemical Section Professor F. R. Japp, F.R.S., will preside, and it is expected that his address will deal principally with stereo-chemistry and vitalism.

A joint meeting of Sections A and B will be held on Monday, September 12, to discuss the results of the recent eclipse expeditions, when Captain Abney and Dr. T. E. Thorpe will probably be present to represent the chemists. Professor W. Ramsay and Dr. Morris Fraser are to communicate an account of their recent discoveries in a paper entitled "On the Extraction of Argon and on Neon." The spectra of those new constituents of the atmosphere will be exhibited at the *soirée* at Clifton College. Dr. W. J. Russell will read a paper on his recent photographic work, which deals with peculiar radiations emanating from metallic surfaces, and which are capable of affecting a photographic plate. "Some Researches on the Thermal Properties of Gases and Liquids" is the title of a paper by Professor Sydney Young, which will include, among other points of interest, an account of his work on practical distillation and its application to the separation of pure hydrocarbons from American petroleum. Mr. Wertheimer is to read a paper on "The Influence of Examinations on the Teaching of Chemistry." Several other papers of a technical character have also been accepted, which, together with the reports of Committees, give promise of good and plentiful work for the section.

The President of the Anthropological Section is Mr. E. W. Brabrook, C.B., F.S.A. He will deliver his address on Friday, instead of on Thursday, so that it shall not clash with those of the other sections. The section will, however, meet on Thursday, September 8, to discuss papers on subjects relating to China and Eastern Asia generally. The Botanical Section will be presided over by Professor F. O. Bower, F.R.S., whose address will probably be devoted to discussing present views as to the classification of the members of plants. There will also be a discussion on alternation of generations, which will be opened by Dr. W. H. Lowé. In the Economic Science Section the President is Professor Bonar, LL.D. He will deliver his address on Thursday, Sept. 8. One of the most important meetings of world-wide interest to experts will be that of the International Conference on Terrestrial Magnetism. To attend this Conference delegates from a great number of foreign countries are expected.

Partnerships Dissolved.

(From the London Gazette.)

Robert Chase and Robert W. Chase (trading as Robert Chase & Son), Brush Manufacturers, Upper Dean Street, and 9, Spiceal Street, Birmingham. Debts will be received and paid by Robert W. Chase, who will continue the business under the old style.

Carlton H. Riches and Herbert C. Riches, Dentists, 24, Dumfries Place, Cardiff, 22, Windsor Terrace, Penarth, and at Bridgend.

Trade Notes.

A NOVEL HAND LAMP.

THE SIMPLEX-SALUS LAMP Co., 13, Walness Road, Lower Broughton, Manchester, sends a specimen of the "Simplex-Salus" hand lamp. As the name implies, it is simple in construction, but at the same time perfectly safe. The metal container, which is packed with absorbent material, is filled with petroleum oil and then inverted so as to allow the oil to drain away, after the style of the old-fashioned benzoline lamps. A round spirit wick (¼ in. diameter) is used, the flame being protected by a metal reflector. Thus there is nothing to break, to spill, or to explode, and the lamp can be employed for reading or as a night lamp. It should be very useful for all purposes where candles have formerly been used, while the cost is exceedingly small.

NOTICE OF REMOVAL.

MESSRS. AYRTON & SAUNDERS, of LIVERPOOL, in consequence of increased business, have vacated their warehouse in Duke Street, and have removed to larger and more centrally situated premises in Hanover Street and Campbell Street, which have been specially designed and built to suit the requirements of their business. Messrs. Ayrton & Saunders employ nearly 400 hands and manufacture on their own premises such articles as boxes, menthol cones, abdominal belts and trusses. We have received from them an advance copy of their new illustrated price current, which contains nearly 400 pages and more than 2000 illustrations. It is of convenient size, cloth bound, with rounded edges, and it certainly is one of the most useful and comprehensive price-lists of druggists' sundries that we have yet seen. To afford some idea of the profuse way in which it is illustrated, there are 169 illustrations of bottles, forty-six patterns of baby comforters, 114 patterns of forceps, sixty illustrations of pessaries, forty-three specimens of burnt-in pots for cold cream, etc., and many other interesting features, but as Messrs. Ayrton & Saunders will forward a copy to any of our readers who may write for one, there is no need for us to particularise further.

News in Brief.

THE STUDENTS' NUMBER.—The usual annual students' number of the Journal will be published on September 10 next. Secretaries of technical schools and principals of schools of pharmacy are therefore invited to send particulars of courses of instruction suitable for pharmaceutical students. Such particulars should be summarised on the lines of what was published in the Journal of September 11, last year, and should reach the Editor, 17, Bloomsbury Square, W.C., as early as possible next week. The Editor will also be pleased to receive any other information that may prove useful to students.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.—The monthly botanical ramble on Wednesday, August 31, is to Bickleigh, Shargh, and Wickford Down. Train leaves Millbay, at 3.5 p.m.

BORACIC ACID IN FOOD.—The prosecutions recently instituted by the Birmingham Health Committee in respect of boracic acid used as a food preservative have given rise to a good deal of anxiety amongst members of the grocery trade. The local Grocers' Association met on Monday evening and passed a resolution deploring any such action, whilst the subject of food adulteration is still under the consideration of the Government, and requesting the Members of Parliament for the district to impress upon the Government the urgent necessity of setting up a national standard of the percentage of boracic acid that may be used by traders without fear of a conviction for adulteration.

THE LOCAL GOVERNMENT BOARD FOR IRELAND has directed the attention of the Irish Boards of Guardians to the issue of a new British Pharmacopœia, and to the fact that contractors for medicine are obliged by the terms of their bond to supply all drugs in accordance with the standard prescribed by the latest edition of the Pharmacopœia. The Local Government Board considers that the Guardians should instruct the clerks of the unions to com-

municate with the medicine contractors, reminding them of their obligation under their bond, and that the clerks should also write to each dispensary and workhouse Medical Officer of the unions, pointing out that in future all medicines will be in accordance with the standard prescribed in the new British Pharmacopœia. The Board thinks that this latter course is inadvisable, inasmuch as considerable alterations in the doses of important medicines have been made in the recent edition of the Pharmacopœia. The Board requests, at the same time, that the Guardians will be so good as to direct each of their medical officers to send, periodically, samples of drugs to the clerks of the unions, to be forwarded by them to the county analysts for analysis and report, in accordance with the terms of the medicine contract and bond prescribed by the Local Government Board's General Order of February 9, 1892. The analyst's reports are, in each instance, to be recorded fully on the Guardians' minutes for the information of the Local Government Board.

A CHINESE PRESCRIPTION.—As is well-known, the Chinese use a large and varied assortment of products in the preparation of their medicines, and Mr. J. B. Davy says that in the drug stores of China Town one can usually obtain a panacea for all ills, varying in the number of ingredients according to the price paid (25, 35, or 50 cents). Such a prescription usually contains a few slices of the root of glycyrrhiza, dried flower-heads of a composite plant, dried cockroaches, dried cockchafers, and the skin, head, and tail of a lizard stretched on thin sticks; an extra 5 cents will procure a dried "sea-horse"; and yet another 5 cents a dried fish of peculiarly narrow shape and about four inches in length. All these are boiled together and the decoction drunk as a remedy for heartburn, toothache, cough, dimness of sight and almost any other ailment. The vegetable portion of one of these mixtures has been examined at Kew. Among the drugs recognised were the fruit-heads of a species of *Eriocaulon*. This plant has a reputation in China for various diseases, such as ophthalmia, especially in children, as a styptic in nose-bleeding and in affections of the kidney. Another ingredient consisted of the spiny hooks from the stems of the Gambier plant (*Uncaria gambier*, Roxb.). Transverse sections of the stem of *Akebia quinata* were found in small quantities, as well as the bark of *Ericornia ulmoides*, known as "Tu Chung." Tonic and invigorating properties are assigned to it, and it is said to be valued at from 4s. to 8s. per pound. Though the bark is very thin, it is abundantly charged with elastic gum, which can be drawn out in silvery threads when it is broken apart. Among other ingredients which have not been identified are crushed flower-heads of a composite plant and slices of a slender, twig-like stem, probably a willow.—*Kew Bulletin*.

Accidental Poisoning Cases.

CHLORAL HYDRATE.—On Saturday, August 20, a young lady named Eliza Kent, of Rathmines, Ireland, took a dose of chloral hydrate in mistake for salts. An inquest was held and a verdict of "Death by Misadventure" was returned.

LAUDANUM.—Francis Mason (58), wife of Isaac John Mason, joiner, of Newcastle, died on Saturday, August 13, from the effects of an overdose of laudanum taken to relieve pain. A jury subsequently returned a verdict to the above effect.—Evan McDonald, plasterer, of Johnstone, N.B., took an overdose of laudanum on the night of August 16, and died in hospital the next morning from the effects of the drug.

CARBOLIC ACID.—Thoughtlessness in keeping carbolie acid in bottles similar to and together with bottles containing beer and other beverages has been the cause of still another death from carbolie acid poisoning: This time the victim was John Thomas Thompson (63), a storekeeper of Wolverhampton, who, on Monday, August 22, asked his daughter for a cup of tea, but before it could be procured, drank a quantity of carbolie acid from a bottle in mistake for beer. It was stated at the inquest that there were two bottles in the room, one of which was used for beer and the other to contain carbolie acid. "Death by Accidental poisoning" was the verdict returned.

Marriages.

PRIESTLEY—MYRING.—On August 20, at St. Peter's Church, East Bridgford, Notts, by licence, by the Rev. A. Du Boulay Hill, Lawrence Priestley, pharmaceutical chemist, to Kate Myring, both of Newark-on-Trent.

BILLINGTON—BARLEY.—On August 11, at St. Anne's, Stanley, Liverpool, Thos. Herbert, second son of the late Thos. Billington, of Roy Towers, Co. Mayo, Ireland, to Maude, youngest daughter of Mr. J. Ogden Barley, of Fairfield.

Publications Received.

DISEASES AND REMEDIES. A concise survey of the most modern methods of medicine, written expressly for the drug trade by physicians and pharmacists. Pp. viii. + 228. London: *Chemist and Druggist Office*, 42, Cannon Street, E.C. 1898.

RADIATION: AN ELEMENTARY TREATISE ON ELECTRO-MAGNETIC RADIATION AND ON RÖNTGEN AND CATHODE RAYS. By H. H. FRANCIS HYNDMAN, B.Sc. (Lond.), with a preface by Professor Silvanus P. Thompson, D.Sc., F.R.S. Pp. xviii. + 307. Price 6s. London: Swan, Sonnenschein & Co., Ltd. 1898. From the Publishers.

Receiving Orders in Bankruptcy.

(From the London Gazette.)

Ernest Ellis, Photographer, Westgate, Cleckheaton.
Charles Long, Photographer, 103, Union Street, Plymouth.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Photographic mounts, Bristol cartes, 3s.; G.B.E., 10s.; cabinets, 10s.; G.B.E., 15s.; quarter-plates, 6s.; half-plates, 12s. 1000; plate-sunk mounts, 12 by 10, 40s. 1000. Samples free.—Edward Peck, East Dereham, Norfolk.

Magic Lanterns. second-hand; triples and binials; oxyhydrogen microscope; marvellous pampengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

A few gross Iolanthe Hair-curling Fluid, 3d. size, 18s. gross, carriage paid; Camwal Shares wanted.—S. Sugden, Pharmacist, Waterfoot, Manchester.

Moulds.—Suppository, Pessary, Bougie, Capsule, Fumigating Pastille, all Maw's patterns, some new; particulars free.—Warnes, Chemist, 333, Gray's Inn Road, W.C.

Honey.—New season English, fine flavour, 28-lb tins, 9d. per lb.; 1 cwt. 8d. per lb., carriage paid.—Faraday, Chemist, Saffron Walden.

WANTED.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

Two Specie or Show Jars for window, with stands, height about 18 ins.—Mason, Broadway, West Norwood.

Empty Tin-lined Cod-liver Oil Barrels in good condition for immediate, September and October delivery, against prompt cash. Offers to—F. Shearing & Co., 21, Water Lane, London, E.C.

Wanted, cheap for cash, 'Pharmacopœia Londinensis,' 1851 Edition.—Hunt, 129, Rose Hill Road, Ipswich.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Alcock, Allen, Andrews, Atkinson, Bennison, Burgoyne, Burroughs, Center, Churchill, Clayton, Coleman, Cowley, Cruickshank, Davis, Dodd, Dudderidge, Duncan, Dunne, Evans, Fairley, Flovd, Gardner, Green, Griffith, Griffiths, Grimshaw, Haigh, Harrison, Hearon, Hewlett, Horniblow, Hough, Jack, Johnson, Kirkby, Lothian, Mackenzie, Proctor, Rees, Reynolds, Bhead, Smyth, Stewart, Taplin, Thomas, Thwaites, Warrell, Watson, Wright.



London Report.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

SEPTEMBER 1, 1898.

Business continues exceedingly quiet in the drug and chemical trade, and no changes of importance have taken place during past week in any of the articles of chief interest. Acid Citric remains firm. Tartaric and Cream of Tartar steady. Quicksilver and Mercurials firm. Bromides, Iodides, Bismuth and Salts without change. Quinine very dull. Opium quiet but firm, and with the reported small crops we should, if same proves correct, see a further important advance in value of this article, which would no doubt also make itself felt as regards price of Morphia and Codeia, which remain also at present quiet but firm. Phenazone weak. Acetanilide, Phenacetin and Sulphonol quiet and unchanged. Cocaine firm and expected to advance. Same applies to Cascara Sagrada. Menthol rather dearer. Glycerine firm. Cod-liver Oil quiet. The following are prices actually ruling:—

ACID BORACIC.—In fair demand at 23s. per cwt. for *Crystals*, and 25s. per cwt. for *Powder*.

ACID CARBOLIC.—Rather firmer at 6½d. per lb. for 35-36° *ice crystal* in large bulk packing. *Liquid*: 95 per cent. of pale straw colour 1s. 2d. per gallon in 40-gallon casks.

ACID CITRIC.—Makers still ask 1s. 3d. per lb. for *crystals*, but some few second-hand parcels can still be obtained below this figure.

ACID OXALIC.—Quiet but steady at 3½d. per lb. on spot.

ACID TARTARIC.—Steady at 1s. 1d. per lb. for English *crystals*, and 12¼d. per lb. for *foreign*.

ALUM.—Is quiet. Loose lump, £5 7s. 6d. per ton; ground, in bags, £6 per ton.

AMMONIA COMPOUNDS.—*Sulphate* is quiet at £10 5s. per ton for grey prompt 24 per cent., London; Hull, £10; Leith, £10 1s. 3d. *Carbonate* steady at 3½d. to 4d. per lb., according to package. *Bromide* unchanged at 2s. 1d. per lb. *Iodide* quiet at 14s. 6d. per lb. *Sulpho-cyanide* firm at 1s. 2d. per lb. *Sal Ammoniac*: A good business doing in firsts sublimed at 35s. per cwt.; seconds, 33s. per cwt.

BISMUTH.—Unchanged at 5s. per lb. for the *metal* and 4s. 10d. per lb. for the *subnitrate* in 5-cwt. lots.

BLEACHING POWDER.—Steady at £6 15s. to £7 10s., according to brand, quantity, and packing.

BORAX.—Is steady at 14s. per cwt. for *Lump*, and 14s. 6d. per cwt. for *Powder*.

BROMIDES.—Are in fair demand at unchanged prices.

CAMPHOR.—*Crude* continues quite. *China* on the spot sold at 84s. per cwt., to arrive, 82s. per cwt., *c.i.f.* *Japan*, to arrive, quoted at 90s. per cwt., *c.i.f.* *Refined* quiet but unchanged.

CASCARA SAGRADA.—Market is very firm, buyers are however holding off, in hopes of doing better later on, expectations which

will hardly be realised. Present price for good old bark is still nominally 25s. per cwt.

CINCHONA BARK.—At the Amsterdam sales on the 26th ult. there was a very good demand, and fully three-fourths of the large supply offered (7503 packages) sold at a reduction of about 4 per cent. in the unit value. The bark offered was estimated to contain nearly a million and a quarter ounces of quinine.

CINNAMON.—The quarterly auctions were held on Monday. 1517 bales *Ceylon* were offered as compared with 959 bales in June. The demand was very slow and less than half sold, unworked at a decline of 1d. per lb. and worked at a decline of ½d. to 1d. per lb. 546 bales worked *Ceylon* were chiefly sold: 162 bales first sort, medium to fine 11d. to 1s. 2d., superior 1s. 3d. to 1s. 4d.; 147 bales second sort, medium to fine 9½d. to 1s., superior 1s. 3d.; 98 bales third sort, fair to good 10d. to 11½d., superior 1s. 1d. to 1s. 2d.; and 141 bales fourth sort, ordinary to good 7d. to 10d., superior 11½d. to 1s. 964 bales unworked partly sold, first sort 8d. to 10d., good 11½d. to 1s., second sort 8d. to 8½d., woody 7d. to 7½d., third sort 6½d. to 8½d., fourths 7d. to 8d.

CLOVES.—Privately *Zanzibar* are quiet; spot, 4½d.; September to November delivery, 4¾d.; October to December, 4¼d. to 4¾d. At auction 117 bales of *Zanzibar* bought in at 4½d. 20 bags *Amboyna* sold without reserve at 4½d. to 5d. Of 95 cases of *Penang*, 60 cases ordinary unpicked, 1897 import, sold without reserve at 5½d. to 5¾d. 30 bales clove stems sold without reserve at 1½d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: Commercial, 1s. 4d.; refined, 2s. 3d. per gallon. *Benzole*: 50 per cent., 1s.; 90 per cent., 11d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C., 5d. *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 8d. per gallon.

COCAINE.—Market is decidedly firm, best brands are, however, still obtainable from the makers, in limited quantity, however, at 9s. 3d. per oz. for 100-oz. lots in 25-oz. tins, there being practically no sellers from secondhand below this price.

CODEIA.—Is still quoted at 12s. 6d. per oz.

COD LIVER OIL.—Is quiet and without change.

CREAM OF TARTAR.—A very fair business doing at steady rates. First white crystals on the spot, 74s. per cwt.; powder, 76s. to 77s. per cwt., B.P. strength crystals 80s. per cwt.; powder, 82s. 6d. per cwt.

GINGER.—*Cochin* found slow demand; of 992 bags rough 200 bags sold, fair washed 23s. 6d. to 24s., a few small and ends 18s.; of 88 cases 79 sold, fine brown Calicut 42s. 6d., small limed native part cut 33s., medium and small 44s. 6d., B-cut 58s.; 100 bags *Japan* bought in at 20s. *Jamaica* met fair demand, 120 packages out of 158 sold, good common and low middling 66s. to 71s., middling to good middling bright 75s. to 80s. 6d.

GLYCERIN.—Market is firm with an upward tendency, at, however, nominally unchanged prices from last week.

ISINGLASS.—The periodical auctions which took place on Tuesday passed off very quietly, and prices were mainly on the down grade. *Penang* was the exception, selling well at previous rates. One lot *Russian* mixed leaf sold 4s. 11d. per lb.

IODIDES.—In good demand at prices lately quoted.

JAPAN WAX.—Is again weaker, sellers being willing to accept 32s. to 33s. per cwt. for good squares.

MENTHOL.—Steady at 7s. 1½d. to 7s. 3d. per lb. for good dry *crystals*.

MERCURIALS.—Steady and unchanged.

MORPHIA.—Remains without change at 5s. per oz. for the *Hydrochlorate* powder in quantity and bulk packing.

OILS (ESSENTIAL).—American *Peppermint* is steady, and with a little improvement in the demand must go dearer. *H.G.II.* 5s. 7½d. to 5s. 9d. per lb. *Wayne County* 3s. 10d. to 4s. 3d. per lb. *Japanese* firm at 3s. 3d. per lb. for dementholised and 5s. per lb.

for 40 per cent. *Star aniseed* firm on the spot at 7s. 3d. to 7s. 4½d. per lb. *Cassia* in better demand, prices range from 5s. to 5s. 9d. per lb. as to quality. *Citronelle* steady but quiet; tins on spot quoted 1s. 2d. per lb., drums 1s. 1½d. *Cinnamon* of good quality continues scarce; common kinds in large supply and difficult of sale. *Lemongrass* slow of sale at 3¾d. to 4d. per oz.

OILS (FIXED) AND SPIRITS.—*Linseed*: Firm spot pipes, London, £16 17s. 6d.; barrels, £17 5s. *Rape* steady; ordinary brown spot, £22 to £22 5s.; refined, £23 10s. *Cotton* quiet; London crude spot, £13 12s. 6d. to £13 15s.; refined, £15 7s. 6d. to £16, according to make. *Olive*: Spanish, £29; Levant, £29 to £32; Mogador, £29 to £32. *Coconut Oil*: Ceylon spot, £23 15s.; Cochin spot, £27 10s. to £28. *Palm*: Lagos spot, £22 10s. *Turpentine* decidedly firmer in all positions, with more inquiry; American spot, 21s. 9d.; September to December, 21s. 9d.; January to April, 22s. 3d. *Petroleum Oil* quiet but steady; Russian spot, 4½d. to 4¾d.; American spot, 5½d. to 5¾d.; water white, 6¾d. *Petroleum Spirit*, 5½d.; deodorised, 6¾d. per gallon.

OPIUM.—Market is quiet but firm at nominally unchanged prices. Reports as to the crop state that same will not exceed 2,800 cases, which, if it prove correct, can hardly fail to produce a further advance in price of *opium* and also of its products.

PHENACETIN.—Unchanged at 3s. 9d. to 4s. 3d. per lb., according to quantity and make, *Bayer's* article being still quoted 5s. 6d. per lb.

PHENAZONE—Is quiet, and weak at nominally 9s. per lb., for both crystals and powder in quantity and bulk packing. Dr. Knorr's *Antipyrine* is firm at unchanged price.

POTASH COMPOUNDS.—*Chlorate* firm at 3¾d. to 3¼d. per lb. *Bromide* quiet at 1s. 9½d. per lb. *Bicarbonate* firm at 30s. per cwt. for foreign and 35s. per cwt. for English, in crystal or powder. *Prussiate* steady at 7d. per lb. for yellow, 1s. 2d. per lb. for red. *Bichromate* steady at 3¾d. to 3¼d. per lb. *Iodide* firm at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Cyanide* very firm on the spot at 1s. 2d. per lb. for the 98-100 per cent. cake. *Permanganate* quiet at 62s. 6d. per cwt. for small and 67s. 6d. per cwt. for large crystals.

QUICKSILVER—Steady at £7 12s. 6d. per bottle from first hands, and 6d. less from second hands.

QUININE—Is exceedingly dull, and in the absence of business prices are quite nominal. *B. & S.* and or *Brunswick* quoted from second-hand, makers' price remaining 10d. per oz., 9½d. per oz. for 1000-oz. lots in bulk.

SHELLAC—Is distinctly firmer, and prices of *Second Orange* are rather dearer. There is a fair inquiry on the spot and moderate sales have been made at 64s. per cwt. for *TN* basis, fair and cakey *AC Garnet* at 65s. per cwt. There is also more doing in both the speculative and arrival markets.

SODA COMPOUNDS.—*Crystals* steady at £2 17s. 6d. per ton. *Bicarbonate* quiet at £7 10s. *Bichromate*: 2¾d. to 3d. per lb. *Bromide* in fair demand at 2s. *Crustic*: White 70 per cent., £8; 60 per cent., £7 per ton. *Nitrate* quiet at £7 12s. 6d. for commercial and £8 per ton for refined.

SPICES (VARIOUS).—*Black Pepper*: Only 46 bags Singapore offered, and bought in at 4¾d. *White Pepper*: Only 144 bags offered, and also all bought in; Siam, 8¾d.; Singapore, 8¾d. to 9½d., and 5 cases extra fine at 10½d. *Chillies*: 80 bales Zanzibar bought in at 35s. *Cassia Lignea*: Of 100 bales broken 50 bales sold at 34s. *Cinnamon*: 150 bags common Ceylon chips bought in at 3¾d.; 14 bags bark sold, subject, at 4¾d.; 28 bags broken quill, etc., sold at 8d. to 8½d. *Mace*: Of 25 cases Penang 4 cases sold; pickings, 1s. 4d.; good bold red, partly wormy, at 2s. 4d. to 2s. 5d.; 27 packages West India sold, ordinary to good fair, 1s. 4d. to 1s. 8d.; one lot pale, 2s. *Nutmegs* quiet at about previous rates. *Pimento* flat, 709 bags being all bought in at 4¾d. to 5½d.

STRYCHNINE.—With a view of meeting American competition here the combined European makers reduced their price 3d. per oz. to 1s. 9d. per oz. for the *pure crystals* in 1000-ounce lots.

SUGAR OF LEAD.—Foreign continues very firm at 27s. 6d. per cwt.; English, 31s. per cwt.

SULPHATE OF COPPER—Is easier. Quotations, £15 15s. to £17 per ton, according to brand.

SULPHONAL—Is still obtainable from the makers in limited quantity at 7s. 3d. per lb. for bulk packing.

SULPHUR—Firm. Foreign roll, 6s. 6d. per cwt.; foreign flowers, 7s. per cwt.; English roll, 7s. 6d. to 8s. per cwt.; flowers, 11s. per cwt.

To-day's drug auctions passed off quietly. *Senna* sold with good demand, otherwise there are no changes of any particular importance to record; the following being the particulars:—

ALOES.—17 boxes good bright livery *Curacao* part sold at 30s. per cwt.; 108 packages *Capey Curacao* realised 12s. 6d. to 13s. 6d. per cwt.; 36 cases *Cape* sold at 26s. per cwt. for good hard bright down to 19s. 6d. for inferior rather drossy; 4 cases common ditto bought in at 18s.; 45 kegs and 10 cases fair *Socotrine* were held for 75s. per cwt.

AMBERGRIS.—1 tin dark undeveloped heavy and of weak flavour was bought in.

ANNATTO SEEDS.—18 bags were bought in at 5½d. per lb. for the medium bright quality.

ARGOL.—7 bags *Cape* part sold at 49s. per cwt.

ASAFETIDA.—136 cases of low to medium quality were offered, the broker announcing that he was prepared to accept decidedly less than his late limits, but the few bids made were so much lower that he was unable to sell more than a few cases of fair quality, which realised 50s. per cwt.

BALSAM PERU.—5 cases were bought in at 8s. 6d. per lb.

BALSAM TOLU.—Ten cases were bought in at 1s. 6d. per lb.

BUCHU LEAVES.—Fine green round sold at 6¾d. per lb., fair grey ditto being bought in at 6¼d. and very yellow ditto at 4½d. per lb.

CARDAMOMS.—Fair bold long *Mysore*, slightly brownish, were taken out at 2s. 10d. per lb. Ditto second size and somewhat browner in colour selling at 2s. 1d. down to 1s. 8d. per lb.; 4 cases lean small wild were held for 2s. 6d. and fair pale *Tellichelly* for 3s. 9d. per lb. Good seed sold at 2s. 9d. per lb.

CASTOR OIL.—20 cases fair *firsts* were held for 4¼d. per lb.

CASTORUM.—4 packages were all bought in at 35s. per lb. for skinny pickings, 45s. per lb. for oily thirds, and 50s. per lb. for dry thirds.

CINCHONA BARK.—70 serons *crown and grey* sold at 10½d. per lb. down to 6¾d. for *CD* and *SD*. 17 bales *yellow* realised 3d. to 4¼d. down to 1d. per lb. for 1 bale in bad condition. 2 packages *red* were bought in at 6s. and 10s. per lb. respectively. 1 case *Madras Cinchona* was withdrawn.

CIVET.—2 horns of somewhat low quality, rather thin, brought in, a bid of 5s. per oz. being declined.

COLOCYNTH.—8 cases *Turkey apple* rather darkish in colour were taken out at 1s. 1d. per lb.

COLOMBO ROOT.—Seven bales fine washed were bought in at 40s. per cwt.; 50 bags fair sorts at 14s. per cwt.; 101 bags dark sorts all sold at 9s. to 10s. per cwt.

COWAGE.—1 case with beans bought in at 1½d. per oz.

CUBEBS.—105 bags, quality of which was not all that could be desired, were held for 24s. to 25s. per cwt.

CUMMIN SEEDS.—44 bags fair *Malta* were taken out at 30s. per cwt.

CUS CUS ROOT.—Seven bales good cleaned were taken out at 35s. per cwt.

CUTTLE FISH.—24 mats taken out at 2½d. to 3d. per lb. for rather dark to pale small.

DILL SEED.—85 bags of good quality were held for 14s. 6d. per cwt.

DRAGON'S BLOOD.—1 case consisting of dull slabs was taken out at £8 per cwt.

ERGOT OF RYE.—Fair sound *Spanish* part sold at 8d. per lb. balance being taken out at 9d. 17 bags fair *Continental* were held for 8¾d. per lb.

ESSENTIAL OILS.—*Citronella*: Ten cases labelled "Prime Quality" were held for 1s. 4d. per lb.; 6 cases of *Cinnamon* for 1s. 6d. to 1s. 8d. per oz.; 4 cases of *Cedarwood* for 1s. per lb.; 5 cases of *Cassia* part sold at 5s. 6d. per lb.; 6 cases of *Nutmeg leaf* sold without reserve at 1½d. to 1¾d. per oz.; 1 barrel *Cedarwood* bought in at 1s. per lb.

GALLS.—19 cases *China* held for 55s. per cwt.

GAMBOGE.—Bright, soft, broken pipe part run, was held for £7 15s. to £8 15s. per cwt.

GENTIAN ROOT.—11 bales fair dry bought in at 22s. per cwt.

GUAZA.—23 robbins, brown tops, held for 6d. per lb.

GUM AMMONIACUM.—Fair, clean, small seed to bean size, part sold at 35s. per cwt. down to 25s. for dark blocky and mixed, and 12s. per cwt. for dark, blocky, and sandy.

GUM ARABIC.—3 serons *Turkey* sorts held for 70s. per cwt. 3 cases picked gum bought in at £13 per cwt. for good yellow grain.

GUM BENJAMIN.—61 cases *Siam* bought in at £16 per cwt. for small to bold free almonds down to £9 for small pea size, part friable block, fair *Palembang* held for 35s., fair *Penang* for 54s., 12 cases selling without reserve at 48s. to 49s. per cwt. *Sumatra*: 7 cases fair almondy seconds sold cheaply at £5 per cwt.

GUM KINO.—1 case genuine of fair quality was taken out at 12s. 6d. per lb.; 5 cases African held for 2s. 6d. for blocky, and 4s. 6d. per lb. for small grain.

GUM MYRRH.—7 casks were bought in at 110s. per cwt. for picked and 41s. for fair bright siftings. Fair sorts were held for 55s. per cwt.

GUM TRAGACANTH.—11 cases were bought in at £7 per cwt.

HONEY.—111 packages fair *Jamaica* part sold at 18s. to 20s. 6d. per cwt. 108 barrels *Chilian* sold at 21s., down to 18s. per cwt. for inferior.

IPECACUANHA.—Ten bags good *Carthagera* were held for 5s. 3d. per lb.; 20 bales fair *Rio* sold at 9s. per lb.

KAMALA.—8 cases fair bright were bought in at 9d. per lb.

KOLA NUTS.—Three bags dull *African* sold at 1d. per lb. subject to approval; 10 bags cut were bought in at 2d. per lb.

LIME JUICE.—1 hogshead sold at 9d. per gallon subject to approval; 4 packages concentrated *West Indian* were bought in at £17 per 108 gallons.

MATICO.—19 bags fair leaves were bought in at 7d. per lb.

MUSK.—1 bottle *Nepaul* grain bought in at 40s. per oz. 4 caddies *Tonquin* good thin skin medium to bold were held for 70s. per oz.; 4 tins ditto, thin skin, damp, one or two pasty, 30s. per oz.

NUTMEG PASTE.—Two cases were bought in at 2½d. per oz.

NUX VOMICA.—177 bags part sold at 5s. 6d. to 7s. per cwt. for small dull, good bold sound bright being held for 10s. per cwt.

ORANGE PEEL.—Medium quality, thin cut, was held for 6½d. up to 8d. per lb. for good; 3 cases sold cheaply without reserve at 3½d. per lb.

ORRIS ROOT.—Five bales *Mogador* sold without reserve at 15s. per cwt.

QUINCE SEED.—11 bags sold at 1s. per lb. for good bright, down to 10d. per lb. for slightly dull.

RHUBARB.—Bold light coated flat, high dried, half grey, half dark was bought in at 1s. 2d. per lb.; common at 7d. to 8d.; bold round *Shensi* pinky and grey at 2s. to 2s. 6d.; good bold round *Canton*, part slightly rough, at 1s. 3d.; 1 case small ditto, part trimming, selling at 1s. 2d. per lb.; good bold flat ditto held for 1s. 6d. per lb.; good pickings for 1s.

SAFFRON.—20 tins, quality of which did not meet approval, were bought in at 32s. per lb.

SCAMMONY ROOT.—167 bags were bought in at 30s. per cwt. 85 bags held for 23s. per cwt.

SENNA.—*Tinnevely*, about 650 bales, mainly of new crop, were offered and sold with good competition at full to rather dearer prices. Medium green leaf sold up to 3¼d. per lb. Small green 2¼d. to 2½d. per lb. Small spotty leaves were most keenly competed for, and were fully ¼d. lb. dearer at 1½d. to 2d. per lb. *Mecca* kind held for ½d. lb. *Alexandrian* all withdrawn at 7d. for fair whole leaf, and 6d. for darkish ditto, and 3d. for siftings.

SQUILLS.—42 bags were bought in at 3d. to 3½d. per lb.

TAMARINDS.—31 bales good *Antigua* were taken out at 10s. per cwt.

TONQUIN BEANS.—12 casks fair *Angostura*, slightly damaged, were bought in at 4s. 6d. per lb., an offer of 3s. 10d. per lb. being declined. 2 cases common *Para* bought in at 6d. per lb.

TURMERIC.—500 bags fair bright *China* bought in at 17s. per cwt.

WAX.—26 packages fair *Jamaica* part sold at £6 12s. 6d. per cwt. Fair *Zanzibar* realised £5 12s. 6d. to £6. *Bombay* bought in at £6. Fair *Madagascar* fetched £5 5s. to £5 12s. 6d. Fair *Italian* £6 10s. per cwt.

WEST INDIAN MOSS.—4 barrels sold without reserve at 5s. per cwt.

Newcastle Chemical Report.

AUGUST 31, 1898.

This market moves steadily, but more on old contracts than extra new business. Prices are practically unchanged, and as follow:—Bleaching Powder: £5 10s. to £6. Soda Crystals: Basis price £7 to £7 10s. Soda Ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. Sulphur: £5 per ton.

Liverpool Market Report.

AUGUST 31, 1898.

AMMONIA SALTS.—*Carbonate*: 3d. per lb. *Sal ammoniac*: 33s. to 35s. per cwt. *Sulphate*: £10 5s. to £10 7s. 6d. per ton.

BEESWAX.—10 sacks Peruvian at £7 2s. 6d. to £7 10s. per cwt.

BLEACHING POWDER.—£5 7s. 6d. to £5 15s. per ton.

CANARYSEED.—Is steady at the advanced rate of 29s. 6d. to 30s. per 464 lbs. for Turkish seed. 400 bags sold early in the week at 29s. to 29s. 6d.

COPPERAS.—38s. per ton for Lancashire and 37s. for Welsh.

GINGER.—150 bags of Cochin sold privately. 28s. to 30s. per cwt. now asked.

LINSEED.—There have been no sales of spot parcels. A little business has been done in Calcutta "to arrive" at 35s. 6d. per 416 lbs.

OILS (FIXED) AND SPIRITS.—*Castor* commands steady prices on the spot with a fair business. Some 500 cases of Calcutta were sold at an advance "to arrive," but particulars are not forthcoming as to the figure. Calcutta, 3¼d. per lb., French, 3½d. per lb., Madras, 3d. to 3½d. per lb. *Olive* is inquired for to a moderate extent, and the price for Malaga is £30 10s. to £32 per tun. *Linseed* is quiet at 18s. to 18s. 6d. per cwt. *Cottonseed* offers at 16s. to 16s. 3d. per cwt. for Liverpool refined. *Spirits of Turpentine* are selling slowly at 22s. 6d. per cwt.

POTASH SALTS.—*Bichromate*, 3¼d. per lb. *Chlorate* 3½d. to 3¾d. per lb. *Cream of Tartar* is steady, supplies limited, and offering at 78s. 6d. per cwt. for best white. *Pearlashes* are nominal at 35s. per cwt. *Potashes* are only in slow demand at 22s. per cwt. *Prussiate*, 6¼d. to 6½d. per lb.

SODA SALTS.—*Bicarbonate*, £6 15s. per ton. *Borax*, £13 10s. to £14 per ton. *Caustic*, 77 per cent., £8 per ton, 70 per cent. £7 2s. 6d. per ton. *Crystals*, £2 17s. 6d. to £3 per ton. *Nitrate*, 7s. 7½d. to per cwt.

Manchester Chemical Report.

AUGUST 31, 1898.

Owing to the festivities known as "Wakes" in this part of Lancashire, whole districts are given over to holiday making, with the result that there are great complaints of a paucity of orders in the drysaltery departments. In heavy chemicals the consumption continues light locally, although some few contracts are being put through at £3 17s. 6d. per ton, in bags, on rails, for 58 per cent. Ammonia Alkali over next year. Stocks of Caustic Soda are reported to be heavy, and holders readily concede 2s. 6d. to 5s. per ton on current rates for firm orders. In miscellaneous chemicals, Sulphate of Copper is variously quoted £16 15s. to £17 5s., according to brand, delivered Manchester. Acetate of Soda has advanced to £11 10s. per ton, on rails, and tends upwards. Brown Acetate of Lime is stiffening, and ranges from £4 17s. 6d. to £5 2s. 6d. per ton, according to quantity, Manchester. Glaubers and Epsom Salts continue scarce, and prices are firm. Green Copperas is in smaller demand, and about 1s. to 1s. 6d. per ton less would be accepted on last week's rates.

News in Brief.

TRADE MARK CASE.—In the Chancery Division of the High Courts of Justice, before Mr. Justice North, the case *Roberts v. R. Hovenden & Sons*, came on for hearing last week. This was an action in which George William Roberts, veterinary surgeon, Corve Street, Ludlow, asked for an injunction to restrain the defendants, R. Hovenden & Sons, London, from infringing the plaintiff's registered trade mark, No. 25,422, and advertising or exposing for sale, or procuring to be sold, any medicinal preparation not compounded or prepared by, or for the plaintiff, under the name of "Koptica."—Mr. Swinfen Eady, Q.C., was leading counsel for the plaintiff, and Mr. Macnaghten, Q.C., for the defendants.—From the statement of counsel it appeared that this preparation belonged at one time to a gentleman named Harness. He sold it to a person called French many years ago. Mr. French did not register the title, and the defendants sold it as the agents for Mr. French. In February, this year, the preparation was sold to the plaintiff, and he registered the title. The defendants went on selling it as agents for Mr. French, but they admitted now that

the plaintiff had the proper title to the goods, and they were quite prepared to give the undertaking.—Judgment was given for the plaintiff with costs and damages, and direction given that defendants hand over all the bottles, labels, wrappers, boxes, and other articles in their possession, custody, or power relating to the registered trade mark, "Koptica."

MR. G. H. NICOL has opened another business at 73, St. Paul's Road, Seacombe, Cheshire. Messrs. Ayrton and Saunders, of Liverpool, have supplied the mahogany fixtures for this pharmacy.

MR. J. RYMER YOUNG, of Warrington, member of the Council of the Pharmaceutical Society, is expected to deliver the annual address to the Sheffield School of Pharmacy, which is now affiliated to Sheffield University College, in October next.

MR. F. W. DOWNES, has recently opened the Broadheath Pharmacy, Manchester Road, Altrincham. A new town has practically sprung up in this neighbourhood during the past two or three years, and as Mr. Downes is the first in the field with a handsome and well-stocked establishment, he will no doubt reap the fruits of his enterprise in the future.

MR. STEPHEN HARRIS, chemist, Droitwich, was on Monday last elected Vice-Chairman of the Droitwich School Board, and a vote of thanks was accorded to him for his past services.

Trade Notes.

MESSRS. TAYLOR, TAYLOR & HOBSON, of Leicester, are offering a handsome new silk-lined morocco-covered casket containing a Cooke lens of 7.5 inches focus ($f/6.5$) and a single lens of longer focus, both designed for use on half-plates. Each lens has its own iris diaphragm, and, being complete in itself, is ready for immediate use; they each fit the same standard flange as the other; their hoods each receive the same shutter or cap; while the total weight and cost of the complete instrument (£7 13s.) are actually less than some of the more complicated anastigmats alone.

MESSRS. ARMBRECHT, NELSON & Co., of Duke Street, Manchester Square, have adopted quite a novel idea in connection with their products. They offer to purchasers of one gross of their coca wine framed copies in oils of some of the celebrated paintings in the public galleries. Copies of several of Turner's masterpieces can be had, also replicas of pictures by Clarkson Stanfield, Müller, Constable, and others.

MESSRS. BURGOYNE, BURBIDGES & Co., of London, have been appointed agents for the sale of "Ammonol," which they put up in various suitable and convenient forms. "Ammonol" (ammoniated phenyl-acetamide), a coal tar derivative, has lately come into much favour as a stimulant, antipyretic and analgesic, and, judging from the reports from various reliable sources, bids fair to occupy a very prominent position as a nerve sedative, especially in cases of nervous exhaustion brought on by over-study or protracted worry and anxiety. It has, according to various medical reports, been extensively tested by many eminent physicians of America and the Continent; the results have all been of a highly satisfactory nature. It differs from other medicinal coal tar products in being purely a stimulant and not exercising any injurious effects on the heart or other organs. According to reports from trustworthy sources it is a safe and reliable remedy in cases of neuralgia, dysmenorrhœa, dyspepsia, gastralgia, hyperacidity of the stomach, and atonic dyspepsia. Its action on the respiratory tract is very marked, and in cases of chronic asthma it has a palliative action. In the various painful and inflammatory conditions which come under the care of the dental surgeon "Ammonol" has proved to be of singular value.

MESSRS. MOTTERSHEAD AND Co., of Manchester, have produced a new and much enlarged edition of their 'Pharmacy Notes,' for the use of the medical profession. It includes well-arranged particulars about many new remedies, synthetic and others; then there is a useful table, in which the preparations of the new Pharmacopœia are compared with those of its predecessor. The latter part is interleaved with blank pages, and altogether the little book constitutes a very handy pocket guide to modern materia medica.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Photographic mounts, Bristol cartes, 3s.; G.B.E., 10s.; cabinets, 10s.; G.B.E., 15s.; quarter-plates, 6s.; half-plates, 12s. 1000; plate-sunk mounts, 12 by 10, 40s. 1000. Samples free.—Edward Peck, East Dereham, Norfolk.

Magic Lanterns, second-hand; triples and binials: oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, S2, Mortimer Road, Kingsland, N.

Moulds.—Suppository, Pessary, Bougie, Capsule, Fumigating Pastille, all Maw's patterns, some new; particulars free.—Warnes, Chemist, 333, Gray's Inn Road, W.C.

Microscope by Mottershead, mahogany lock-up case, 1 inch and $\frac{1}{4}$ inch objectives, almost new, cost £5 10s.; what offers? Squire's 'Companion,' latest, 3s. 6d.; Bentley's 'Manual,' latest, 5s. 6d.—Gower, Publisher, Waterloo, Liverpool.

Toilet Recipes.—Etherised lavender water, exquisite aroma, superior dental essence recipes, with directions, Belgravia-relish recipe (profit 150 per cent.), 2s. each.—"Galen," 1, St. John Street, Westminster, S.W.

WANTED.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

'Pharmaceutical Journal,' January 1, 1898. Full price will be paid for clean and complete copies by the Publishers, 5, Serle Street, London, W.C.

Publication Received.

PRACTICAL PHARMACY. By E. W. LUCAS, F.C.S. Pp. 528, with 283 illustrations. Price 12s. 6d. London: J. & A. Churchill. 1898.

Partnerships Dissolved.

(From the London Gazette.)

Sarah Merry and Thomas P. Sims (trading as J. S. Merry and Co.), Assayers and Analytical Chemists, Swansea. Debts will be received and paid by Thomas P. Sims, who will continue the business under the same style.

Alfred T. Thompson and Edward B. Thompson (trading as Thompson Brothers) Wholesale Druggists, 8, King Charles Street, Leeds.

Receiving Orders in Bankruptcy.

(From the London Gazette.)

George J. Eady, Surgeon, Juglans Lodge, Enfield.
Dr. David Robertson, Amberley House, Mold Green, Huddersfield.

George J. Garwood, Chemist and Druggist, lately carrying on business at Rosary Corner, Thorpe Hamlet, and Earlham Road, Heigham Road, Norwich.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Allen, Ashton, Austen, Bottle, Burrell, Cowie, Cruickshank, Davis, Dickinson, Dudderidge, Ebbage, Eberlin, Field, Gadd, Greaves, Greenwood, Henderson, Ireland, Isenthal, Keen, Kirkby, McCarthy, McKnight, McWalter, Maddison, Mumbray, Pater, Peck, Proctor, Reade, Roberts, Skerry, Smith, Swinbank, Turner, Wamsley, Weddell, Whysall.



London Report.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

SEPTEMBER 8, 1898.

Business in drugs and chemicals has been very quiet during past week, while there are no changes of importance to record. Acid Citric remains firm. Same may be said of Opium, Morphia and Codeia, as also of Glycerin and Cascara Sagrada. Quinine dull. Acid Tartaric and Cream of Tartar quiet but fairly steady. Sulphate of Ammonia quiet and weak. Borax and Acid Boracic steady. Quicksilver rather easier from second hand. Mercurials unchanged. Iodine and Iodides, Bromine and Bromides, Lithia, and Bismuth unaltered. American Oil of Peppermint firm and expected to advance. Cocaine dearer. Camphor steady. Chamomiles dearer. Shellac and Ipecacuanha firm. The following are some of the prices actually ruling:—

ACETANLIDE—Quiet at 1s. 1d. to 1s. 2d. per lb., according to quantity.

ACID ACETIC—Has been in fair demand; 28 per cent. at 13s. 9d. per cwt.; 30 per cent. (1 to 7), 14s. 3d.; 33 per cent. (B.P.), 15s. 6d.; 40 per cent., 18s.; 50 per cent., 21s. 6d.; 60 per cent., 25s.; 70 per cent., 28s. 9d.; 74 per cent., 30s.; 80 per cent., 32s. 3d.; 85 per cent., 34s.; 90 per cent., 35s. 9d.; 95 per cent., 37s. 9d.; and 98-100 per cent. (glacial), 39s. 6d. per cwt.

ACID BORACIC—Unchanged at 23s. per cwt. for *crystals* and 25s. per cwt. for *powder*.

ACID CARBOLIC—Quiet but firm at 6½d. per lb. for 35-36° C. *ice crystal*, 7d. for 39-40° C. ditto, and 7½d. per lb. for 39-40° C. *detached crystals* in large bulk, other packing in proportion. *Crude*: 60° F., 2s. 1d. per gallon; 75° F., 2s. 7d. *Liquid*: 95 per cent., of pale straw colour, 1s. 2d. to 1s. 3d. per gallon, according to quantity, in 40-gallon casks.

ACID CITRIC—Is fairly steady at 1s. 2¾d. to 1s. 3d. per lb., makers asking the latter figure.

ACID OXALIC—Firm at 3½d. per lb. on the spot.

ACID TARTARIC.—English *crystals* are firm at 1s. 1d. per lb. Foreign slightly easier at 12¾d. per lb.

ALUM—Is firm at £5 7s. 6d. per ton for loose lump, and £6 10s. for ground in bags.

AMMONIA COMPOUNDS.—*Sulphate* quiet and rather easier at £10 2s. 6d. per ton for grey prompt, 24 per cent. London; Hull, £9 17s. 6d.; Leith, £10 1s. 3d. *Carbonate* firm at 3½d. to 4d. per lb., according to package. *Bromide* quiet at 2s. 1d. per lb. *Iodide* unchanged at 14s. 6d. per lb. *Sulpho Cyanide* steady at 1s. 2d. per lb. *Sal ammoniac* 35s. per cwt. for firsts, 33s. for seconds.

AMBERGRIS—Is very scarce, and quotations are firm at 85s. to 110s. per oz., according to quality.

APOMORPHIA—Is firm at 17s. 6d. to 18s. per oz., according to quantity.

ASAFETIDA.—With a desire on the part of holders to meet the views of buyers, more business has been done this week at from 40s. to 50s. per cwt. It is probable a further quantity will be offered in next week's drug auctions.

ATROPIN—Is very firm at 15s. 6d. per oz. for the *Sulphate*, good raw material continuing scarce and dear.

BISMUTH—Is still quoted 5s. per lb. for the metal, and 4s. 10d. per lb. for the *Subnitrate* in 5 cwt. lots.

BLEACHING POWDER—Unchanged at £6 15s. to £7 10s., according to brand, quantity, and packing.

BORAX—Firm at 14s. per cwt. for *lump*, and 14s. 6d. per cwt. for *powder*.

BROMIDES.—Makers' prices are unchanged at 1s. 9½d. per lb. for *Potass. Bromide*; 2s. 1d. per lb. for *Ammon. Bromide*; and 2s. ½d. per lb. for *Sodii Bromide*.

CAMPHOR.—The market quotations for crude are firm, but there is little doing. German refined is dearer at 1s. 1¾d. per lb. for bells, with the usual advances for the various sized tablets.

CASCARA SAGRADA.—There are several buyers of new bark on the market at 20s. per cwt., but no sellers thereat. Prime old bark held for 25s. to 27s. 6d. per cwt.

CHAMOMILES—Are reported 5s. per cwt. dearer, in consequence of shortage of the crop, caused, no doubt, by the prevailing drought.

CLOVES.—Privately *Zanzibar* are firm but quiet. Business comprises October to December delivery at 4¾d., and January to March steamer, London, at 4½d. At auction 60 bales *Zanzibar* bought in. 76 cases *Penang* sold, without reserve, unpicked 5d. to 5½d., fair dull picked 6½d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: Commercial 1s. 4d., pure 2s. 4d. per gallon. *Benzole*: 50 per cent. 1s. 1d., 90 per cent. 10½d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C., 5d., *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 9d. per gallon.

COCAINE.—The agents for the brand most in favour here have raised their price to 9s. 6d. per oz. for 100-lots in 25 oz. tins, it being stated that this is only the commencement of a more important advance; there are, however, still a few second-hand sellers at 9s. 3d. per oz.

CODEIA—Is very firm at 12s. 6d. per oz., with prospect of higher prices when the autumn and winter demand sets in.

COD-LIVER OIL—Is very quiet nominally at 85s. per barrel *f.o.b.* for best new non-congealing Norwegian oil in tin-lined barrels of 25 gallons each. It is, probable, however, that we shall see more doing in the article shortly.

CREAM OF TARTAR—Is quiet, first white *Crystals* 73s. to 78s. per cwt., according to strength, on the spot, with corresponding *Powders* at 75s. to 81s. per cwt.

GINGER.—Of 1376 bags *Cochin* offered 694 bags sold, partly without reserve, ordinary to fair washed, rough mouldy, 21s. 6d. to 23s.; ordinary sound ditto, 22s.; brown rough, 23s. 6d. to 24s. 36 cases native limed, part cut, bought in at 46s. 98 bags *Japan* bought in at 19s. *Jamaica* all bought in at 68s. to 85s.

GLYCERINE—Is firm at £52 10s. per ton for best *English* makes for large quantity. *German* brands are quoted 54s. to 65s. per cwt. for best white, chemically pure, double distilled 1260° quality, in tins and cases.

IODIDES without change at 9s. 9d. to 10s. 3d. per lb. for *Potass. Iodide*, and 13s. 4d. to 13s. 7d. per lb. for *Iodoform cryst.*, *powder*, and *Precip.*

IPECACUANHA.—There has been some inquiry this week. Holders are very firm at 9s. per lb. for *Rio* and 5s. per lb. for *Carthagena*.

JAPAN WAX.—There has been more business doing, the market closing quiet but firm at 32s. per cwt. for good squares.

MENTHOL—Steady at 7s. 1½d. to 7s. 3d. per lb. for good dry *crystals*.

Monthly Statement of Drugs, etc., Warehoused in London.—September 1, 1898.

Articles.		August, 1898.		Stocks, August 31.		Articles.		August, 1898.		Stocks, August 31.	
		Arrivals.	Deliveries.	1898.	1897.			Arrivals.	Deliveries.	1898.	1897.
Aloes (all kinds).....	packages	256	43	5,800	5,706	Gum, Mastic	packages	—	7	16	8
Balsams „	„	182	60	516	438	Myrrh	„	32	24	471	516
Cinchona Bark	„	1,953	1,659	21,150	20,619	Olibanum	„	449	271	3,907	1,842
Quinine Sulphate	ounces	79,776	57,712	1,719,136	1,369,056	Tragacanth	„	311	667	2,199	3,842
Beeswax	packages	856	749	2,387	3,088	Ipecacuanha	„	22	76	245	292
Camphor	„	321	503	9,417	11,609	Jalap	„	—	6	340	334
Cardamoms	„	499	203	1,714	862	Nux Vomica	„	149	127	264	271
Cochineal	„	181	213	2,725	2,179	Oils, Castor	„	111	108	501	334
Calumba Root	„	368	205	1,189	145	Olive „	„	70	209	1,061	866
Cubebs	„	53	26	1,937	478	Aniseed	„	10	21	142	85
Dragon's Blood	„	11	6	16	104	Cassia	„	10	2	95	106
Galls (all kinds)	„	284	449	6,212	4,973	Rhubarb	„	305	121	714	655
Gum, Ammoniacum ..	„	19	16	29	33	Saltpetre	tons	1,505	1,244	2,815	5,183
Arabic, all kinds ..	„	1,063	681	10,807	13,811	Sarsaparilla	packages	154	65	463	260
Asafetida	„	6	16	470	501	Senna	„	725	165	1,171	1,066
Benjamin	„	198	151	3,113	3,524	Shellac	„	3,117	3,420	57,185	53,648
Galbanum	„	—	—	15	—	Terra Japonica, Gambier	tons	800	318	1,471	1,391
Gamboge	„	45	16	319	315	Cutch ..	„	25	52	1,105	1,561
Gualacum	„	13	13	104	107	Turmeric	„	43	22	305	646
Kino	„	9	1	43	21						

The stocks of camphor, oils of aniseed and cassia are incomplete, some warehouses not making returns.

MERCURIALS—Without change at 2s. 5d. per lb. for *Corrosive Sublimite*, and 2s. 9d. per lb. for *Calomel* in $\frac{1}{2}$ -cwt. lots.

MORPHIA.—Makers are still quoting 5s. per oz. for the *Hydrochlorate powder*; in view, however, of the position of *Opium*, an advance is considered highly probable in the not too distant future.

NITRATE OF SODA—Steady at £7 12s. 6d. to £7 15s. per ton for *Commercial*, and £8 per ton for *Refined*.

OILS (ESSENTIAL).—*Star Aniseed* is quiet at 7s. 1½d. to 7s. 3d. per lb. on the spot. *Cassia* is firm, 70 to 75 per cent. 5s. per lb.; 75 to 80 per cent. 5s. 3d. per lb.; 80 to 85 per cent. 5s. 6d. per lb., on the spot. *Lemongrass* steady at 3½d. to 4d. per oz. *Peppermint*: American, H.G.H., is quiet but firm, and the tendency is certainly towards higher prices. On the spot 5s. 7½d. per lb. is asked. *Wayne County* 3s. 9d. to 4s. per lb., according to quality. *Japanese dementholised* 3s. 3d. per lb.; 40 per cent. 5s. per lb. *Lavender*: English firm at 47s. per lb.

OILS (FIXED) AND SPIRITS.—*Linseed* firm, but unchanged at £16 17s. 6d. for spot pipes, London; barrels, £17 5s. *Rape* quiet and easier at £21 10s. for ordinary brown on the spot; refined, spot, £23. *Colton* firm at £13 15s. for London crude, spot, and £15 7s. 6d. to £16 for refined, according to make. *Coconut*: Ceylon, on the spot, £24; Cochin nominally £27 10s. *Palm*: £22 10s. *Turpentine* quiet; American, spot, 21s. 7½d. per cwt. *Petroleum Oil* unchanged; Russian, on the spot, 4½d. per gallon; American, 5½d. per gallon; water white, 6½d. per gallon. *Petroleum Spirit*: American, 5½d. per gallon.

OPIUM—Market is very firm, quotations remaining nominally unchanged, there is, however, practically nothing doing in this article at the moment.

PHENACETIN—Without change at 3s. 9d. to 4s. 3d. per lb. for *Powder* and *Crystals*, according to quantity and packing.

POTASH PERMANGANATE—Is rather weaker, there being sellers of *small crystals* at 57s. 6d. per cwt. for ton lots.

POTASH COMPOUNDS.—*Chlorate* continues firm at 3½d. to 3¾d. per lb. *Bicarbonate* steady at 30s. per cwt. for foreign crystals or powder. *Bromide* quiet at 1s. 9½d. per lb. *Prussiate Yellow*, English slightly easier at 7d. per lb.; *Red* firm at 1s. 2d. per lb. *Bichromate* unchanged at 3½d. to 3¾d. per lb. *Iodide* unchanged at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Permanganate* quiet at 60s. per cwt. for small crystals, and 65s. per cwt. for large. *Cyanide* is in fair inquiry for immediate delivery, for which position prices are maintained.

QUICKSILVER—Is quiet, although importers are firm at £7 12s. 6d. per bottle. Second hands are, however, lower at £7 11s. 6d.

QUININE—Continues in the same inactive state as for some time past, but quotations are nominally unchanged from second hands at 9½d. per oz. in large bulk and for not less than 1000-oz. lots. London stocks are still on the increase.

RHUBARB.—A fair inquiry since the auctions, and a certain quantity has been sold for export at steady rates. *Shensi* continues scarce and is firmly held.

SENNA.—Since the auctions there has been a strong demand for common small leaf at 1½d. per lb., but the bulk of the orders have

remained unexecuted for want of sellers. A Bombay steamer is just in with about 150 bales, which will probably be included in next week's auctions.

SHELLAC—Is very firm, but business is restricted owing to firmness of holders. Since the auctions a moderate business has been done on a basis of 65s. per cwt. for fair *TN*. At the auctions on Tuesday only a small quantity was offered, demand was slow, but sales showed an advance of 1s. per cwt. A total of 484 cases were offered and 143 cases sold, 15 cases fine pale *Octagon B* bought in at 95s., and 75 cases *AA* in circle, red of the mark at 72s. to 74s. Of 191 cases *TN Orange* 84 cases sold, palish flat flimsy free at 64s. bright red flat ditto at 64s., and *Rangoon* red flint block at 52s. to 53s. *Garnet*: Of 54 cases 29 sold, *Rangoon* hard block at 53s. *Button*: Of 149 cases 33 sold, dark *BL 2* at 65s., pale flint block at 71s., cakey to blocky 2's at 65s. to 66s., hard block 4's at 39s.

SODA COMPOUNDS.—*Crystals* remain at 57s. 6d. per ton, ex ship, Thames. *Ash*: £5 5s. to £5 15s. per ton, according to strength. *Bicarbonate*: £7 5s. to £7 10s. per ton for the 97 per cent. and 18s. 6d. per cwt. for the fully bicarbonated chemically pure article. *Caustic*: 70 per cent., £8 per ton; 60 per cent., £7 per ton. *Bichromate*: 2¾d. to 3d. per lb. *Bromide*: Steady at 2s. per lb. *Nitrate*: £7 12s. 6d. per ton for ordinary and £8 per ton for refined.

SOY—Is quiet but firm at 1s. 4½d. to 1s. 5d. per gallon.

SPICES (VARIOUS).—*Black Pepper*, 234 bags Penang bought at in 4¾d.; of 505 bags Singapore 34 bags sold at 4¾d. to 4¾d. *White Pepper*: 150 bags Siam bought in at 8¾d., and 203 bags Singapore at 8¾d. to 8¾d. *Cassia Lignea*: 60 boxes old sold at 55s.; 535 bales broken bought in at 35s. to 37s. 6d. *Mace*: 14 cases Penang sold, ordinary to low middling red 1s. 6d. to 1s. 7d., good, 2s., fine bold palish, 2s. 6d.; 16 packages West India sold at 1s. 6d. to 1s. 8d., good bright, 1s. 10d. to 2s.; 1 case red Java sold at 1s. 6d. *Nutmegs* quiet. *Pimento* flat; of 314 bags only 83 sold, middling of old import, 4½d., good firm 4½d.

SUGAR OF LEAD.—*English* steady at 31s. per cwt. *Foreign* firm at 27s. 6d. per cwt.

SULPHATE OF COPPER—Is quiet, but quotations remain at £15 15s. to £17 per ton, according to brand.

SULPHONAL—Is still obtainable in limited quantity from the makers at 7s. 3d. per lb. for bulk.

SULPHUR—Firm. *English*: Roll, 7s. 6d. to 8s. per cwt.; flowers, 11s. *Foreign*: Roll, 6s. 6d. per cwt.; flowers, 7s. per cwt.

Manchester Chemical Report.

SEPTEMBER 7, 1898.

There is absolutely no improvement to report on last week, except that soda crystals continue very scarce, although there is no advance in price. Caustic soda is in a trifle better request for export, and Bleaching Powder is in fair consumptive demand. Acetate of Soda has advanced to £12 10s. per ton spot. Brown Acetate of Lime continues on the up grade, and is quoted generally £5 to £5 2s. 6d., although some holders refuse to sell under £5 5s.

Sulphate of Copper is firm at £16 15s. to £17 5s. per ton, according to brand, delivered Manchester. Lancashire-made Green Copperas is rather better at 32s. to 33s. *f.a.s.*, Ship Canal, and 38s. to 40s. *f.o.b.*, Liverpool. Yellow Prussiate is well sold, prompt, and forward. Epsom Salts, 50s. to 55s.; Glauber's, 25s., in bags, Manchester. The direct oil trade with Manchester is in a flourishing condition, and should result in those members of the profession—and there are a large number who have a good connection in this department—receiving considerable advantage in the way of cheap and prompt deliveries. The steamer "Bonjorn" is due with about 1,000,000 gallons, and this will be followed by the "Rocklight" with 1,250,000 gallons.

Newcastle Chemical Report.

SEPTEMBER 7, 1898.

Business moves slowly. Baltic shipments are fairly good against old orders. Soda Crystals, through the warm weather, are on the scarce side, but values unchanged. Prices are: Bleaching powder, £6 to £6 5s. Soda crystals, 45s. to 52s. 6d. Soda ash: 70 per cent. £7 5s. Alkali: £5 5s. Durham salt, 9s. 6d. per ton.

Liverpool Market Report.

SEPTEMBER 7, 1898.

Although the articles dealt in have this week been more varied than of late, business as a whole has been quiet, without either considerable rises or falls in price to chronicle. Considerable sales of Chilian Honey and Peruvian and Gambia Beeswax (this latter at easier rates) have been effected, as well as of Carnuba Wax of various grades. Higher prices are asked and obtained for Quillaya Bark, of which the stock here is almost exhausted. In chemicals the inquiry is said to be better, but actual sales have not been more than average.

AMMONIA SALTS.—*Carbonate*: 3d. per lb. *Sal ammoniac*: 33s. to 35s. per cwt. *Sulphate* is easier; £10 2s. 6d per ton.

BEESWAX.—25 sacks Peruvian, £7 2s. 6d. to £7 10s. per cwt., and 26 packages of Gambia at somewhat easier rates.

BLEACHING POWDER—Is depressed. £5 5s. to £5 15s. per ton.

CANARYSEED.—The revival which recently took place seems to have spent itself, for though quotations are still 29s. to 30s. per 464 lbs. for Turkish seed, buyers are few and there are no sales to report.

CARNAUBA WAX.—Sales of about 1000 bags have taken place at 27s. 6d. per cwt. to 55s. Higher prices are now ruling.

COPPERAS—Is very firm, and closes at 37s. to 38s. per ton.

COPPER SULPHATE—Is firmly held for £6 12s. 6d. to £6 15s. per ton.

FENUGREC.—81 bags sold at auction at 7s. 6d. per cwt.

HONEY (CHILIAN).—About 100 barrels sold at 24s. 6d. per cwt. for Pile I. and 28s. per cwt. for Pile X.

LINSEED.—Calcutta and River Plate seed are firm, but there is not much doing, as American is so cheap, 32s. 9d. per 416 lbs., September to October delivery.

OILS (FIXED) AND SPIRITS.—*Castor* is selling fairly well, Calcutta spot 3½d. per lb. quay and 3¼d. store, to arrive 3½d. per lb.; French, Madras and Brazilian being 3½d. per lb. spot prices. *Olive* is very firm, but high prices asked in Spain restrict transactions, holders here not being anxious for business. *Linseed* of Liverpool pressure is still firm and unchanged at 18s. to 18s. 6d. per cent. *Cottonseed*: Liverpool refined is in fair demand at 16s. to 16s. 3d. per cwt. *Spirits of Turpentine* are in moderate demand at 22s. 6d. per cwt.

POTASH SALTS.—*Bicarbonate*: 30s. per cwt. *Bichromate*: 3¼d. per lb. *Chlorate*: 3¼d. per lb. *Cream of Tartar*: 5 casks of Spanish were sold privately; Best White 78s. 6d. per cwt. *Pearlash*: 35s. per cwt. *Potashes* very slow of sale at 22s. per cwt. *Prussiate* is firmer at 6¼d. to 7d. per lb. *Saltpetre*: 21s. per cwt. *Quillaya Bark* £19 10s. per ton for Chilian; prices rising.

SODA SALTS.—*Bicarbonate*: £6 15s. per ton. *Borax*: £13 10s. per ton, powder £14. *Caustic* 76 per cent. to 77 per cent. £8 per ton. *Crystals*: £2 17s. 6d. to £3. *Nitrate*: 7s 7½d. to 7s. 9d. per cwt.

Trade Notes.

THE LIEBIG COMPANY'S BONUS SCHEME is announced. The Company is allowing a cash bonus of 5 per cent. on orders received under certain conditions between September 15, and October 15, which will doubtless be an inducement to the trade to give an impetus to the already extensive sales of this old-established Company's preparation.

MESSRS. C. E. MÜLLER & Co., of 148, High Holborn, W.C., call attention to a new patent double surface condenser, lately introduced by them. It is designed to take the place of the Liebig condenser, and being only one-fifth of the size and of greater efficiency will recommend itself to every worker who has only a limited amount of bench room. It uses a minimum amount of cooling water, no expensive clamp is required to support it, and it can be fixed to the same retort stand as the distilling flask, thus making a very compact apparatus. Full particulars may be had on application to the above firm.

News in Brief.

MESSRS. DAVIDSON & HARDIE'S pharmacy in Castle Place, Belfast, is being at present overhauled by Messrs. Sage, shop-fitters, London. A new set of shop rounds is also added.

MR. SAMUEL HOGG, L.P.S.I., is opening a new pharmacy on the Shankhill Road, Belfast. It will be known as the Albert Hall Pharmacy. Messrs. Ayrton & Saunders, Liverpool, have received the order for fitting it up, and Mr. Hogg hopes to open about the middle of October.

MR. GRAY, L.P.S.I., is also opening a new pharmacy in Belfast, on the Ormeau Road. For some time past he has been dispensing for Dr. James Graham.

MANCHESTER PHARMACEUTICAL SOCIETY.—The winter Session of this Society will commence on the 12th of next month. Already two or three Council meetings have been held to complete arrangements for various meetings, and we are assured by the energetic hon. sec. (Mr. A. Blackburn) that the programme will be one of the most interesting and practical which has probably been known in the annals of this Society. It only remains for the members to support the Council by large attendances and thus show appreciation of the efforts put forth for their benefit.

EDINBURGH PHARMACY ATHLETIC CLUB (SWIMMING SECTION).—The third of the series of summer handicaps (50 yards) took place in Dalry Baths on Monday, September 5, with the following result: G. H. G. Rowland, 1; L. S. Lamb, 2; J. Grieve, 3; J. Lockerbie and A. G. Paterson (dead heat), 4.

MR. JOHN H. MORRIS, chemist and druggist, Branksome, Bournemouth, was granted a wine licence at the Licensing Session held at Wimborne on September 2.

MR. T. E. EASTWOOD, chemist and druggist, on Wednesday, August 31, at the Ashton County Licensing Sessions, was granted a licence to sell spirits and wine off the premises at Ashton Old Road, Droylsden.

BOTANY RAMBLE.—On Friday, September 2, the students of the Sheffield College of Pharmacy, accompanied by the principal (Mr. J. Turner) took train to Masbro', and walked four miles through fields, woods, meadows, and park to Wentworth House, the residence of Earl Fitzwilliam, K.G., whose home is said to be the largest private house in England—at any rate, the longest frontage. A halt was made at the Wentworth Arms, in the picturesque village of the same name. On the return journey one of the landmarks, Keppel's column, was ascended (200ft. high), from which a fine view of the surrounding country was obtained. Over forty botanical specimens were collected and described.

DEWSBURY AND DISTRICT CHEMISTS' ASSOCIATION.—A meeting of the above Association was held on Monday evening, September 5, in the Town Hall, Dewsbury, the President, A. Foster, Esq., in

the chair. It was resolved to ask the proprietors of patent medicines to join the P.A.T.A. It was also resolved to take action against persons who are not qualified, but are retailing drugs which they have no right to do. It was also decided to forward a letter of congratulation to the Pharmaceutical Society on the passing of the Pharmacy Acts Amendment Act.

EMPLOYÉS OUTING.—On Saturday the 3rd inst., the employés of Messrs. Jewsbury & Brown, Manchester, made their annual picnic to Matlock Bath, where they arrived about half-past ten o'clock. After viewing the unique beauties of the town they sat down to an excellent dinner, provided by the firm, under the chairmanship of Mr. John Bardsley. A vote of thanks to Mr. Stones and Mr. Bardsley (the partners) was carried with acclamation. Among those who took part in the proceedings were Messrs. Hayes, Haslam and Archer. In the afternoon the party broke up into detachments to navigate the river; to scale the Heights of Abraham and the High Tor; to visit Cromford, Darley, and Haddon Hall, and other places of interest in the neighbourhood. At the close of the day the unanimous opinion was that a more enjoyable day had never been spent. The party returned to Manchester about half-past seven o'clock.

LONDON UNIVERSITY INTERMEDIATE SCIENCE EXAMINATIONS.—Two Bell scholars have taken high places in this examination. Mr. T. Anderson Henry, Bell's scholar, 1893, Redwood scholar, 1894, who had a distinguished career in the Pharmaceutical Society's School in 1893-4, obtained first-class honours in Inorganic Chemistry, but was disqualified by age for an exhibition. Mr. J. Irwin Scott, senior Bell scholar, 1898, was placed in the first-class honours Inorganic Chemistry and second-class honours Physics. In addition to this Mr. Scott recently obtained a Science Scholarship at Merton College, Oxford, whilst studying at the Royal College of Science. Mr. C. A. Bentley, who served his apprenticeship to Messrs. Cousins, Thomas & Co., of Oxford, and was until recently assistant to Mr. Anthony S. Buck, of Liverpool, had the title M.B.C.M. conferred upon him lately at the Edinburgh University Graduation ceremony.

SPIRIT OF SALTS.—Elizabeth Annie Pickering (30), a single woman of Pond Lane, Wolverhampton, suffered from fits, and on Tuesday, August 30, after one of the seizures she drank by mistake the contents of a bottle of spirit of salts. At a subsequent inquest a verdict of "Accidental death" was returned.

DIPHTHERIA ANTITOXIN.—According to the report of the medical department of the French army it would appear that since the introduction of the serum treatment of diphtheria the mortality amongst cases of that disease has fallen from 11.3 per cent. to 6 per cent.

CHARLES S. COWE, son of Dr. Cowe, proprietor of the Medical Hall, Dame Street, Dublin, whilst cycling last week in that city, was knocked down by a hackney car and seriously injured. The lad was on the wrong side of the road, and in the circumstances Dr. Cowe declined to take any proceedings in the matter.

A WELL GOT-UP PAMPHLET, entitled "Notes on High Explosives," has been issued by Messrs. Kynoch, chemical manufacturers, Arklow. The pamphlet gives an elaborate account of the modern high explosives which have been brought into existence by the development of mining industries, and an analysis of kynite is also given. The little volume is worth perusal.

Marriages.

CURTIS—SCOTT.—At St. George's, Bloomsbury, on September 1, Mitchael Curtis, of 51, High Holborn, to Margaret, eldest daughter of Augustus Scott, of Oxford Street.

WILSON—HANBURY.—On September 2, at Chefoo, China, William Wilson, M.B., C.M., third son of the late William Wilson, of Kendal, to Elizabeth, second daughter of Cornelius Hanbury, of Richmond, Surrey.

Partnerships Dissolved.

(From the London Gazette.)

E. F. Gartskell and H. M. Green, General Medical Practitioners, Sydenham, Kent.

C. W. Jenkinson and John Green (trading as J. Green & Co.), Drysalters, etc., Powis Street, Woolwich. Debts will be paid by J. Green.

C. W. Krohne, H. F. Sesemann, Chas. H. Sesemann, H. J. Sesemann (trading as Krohne & Sesemann), 8, Duke Street, Manchester Square, London, W. Debts will be received and paid by C. H. Sesemann and H. J. Sesemann, who will continue the business under the whole style.

W. H. Brooke and Percy Haley, Aërated Water Manufacturers, Lancaster. Debts will be received and paid by Percy Haley.

Receiving Orders in Bankruptcy.

(From the London Gazette.)

Thos. B. Barnby, Dental Surgeon, 3, Manningham Lane, Bradford.

J. H. Preece (trading as John Henry), Photographer, 62A, Bold Street, Liverpool.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Photographic mounts, Bristol cartes, 3s.; G.B.E., 10s.; cabinets, 10s. G.B.E., 15s.; quarter-plates, 6s.; half-plates, 12s. 1000; plate-sunk mounts, 12 by 10, 40s. 1000. Samples free.—Edward Peck, East Dereham, Norfolk.

Magic Lanterns, second-hand; triples and binoculars; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Moulds.—Suppository, Pessary, Bougie, Capsule, Fumigating Pastille, all Maw's patterns, some new; particulars free.—Warnes, Chemist, 333, Gray's Inn Road, W.C.

Microscope (Browning), splendid instrument, body entirely of brass and gun-metal, mechanical stage forward and lateral movements, rack motion and fine screw adjustment, two achromatic objectives, 1 inch 10°, ¼ inch 75°, large complete polarising apparatus mounted in brass cells, large stand condenser and swing adjustable substage condenser, live cage, hand-plier, stage forceps, fitted in lock mahogany cabinet; price £7 7s., originally cost £12 10s.—Day, Chemist, Hither Green, S.E.

Six Pieces Perfume Ribbon, each 36 yards long (216 yards), assorted colours; post free, 5s.—Edward Peck, East Dereham, Norfolk.

Honey.—New English fine flavour, 28lbs., 9d. lb.; 1 cwt., 8d. lb.; tins free; carriage paid.—Faraday, Chemist, Saffron Walden.

Books.

'**Pharmaceutical Journals**,' unbound, 1872 to 1893; 'Chemist and Druggist,' 1886 to 1891. Offers of exchange, books, drugs, surgical and dental instruments, etc.—Lytton, 136, Gt. Portland Street, London, W.

Second-Hand Books by Atfield, Bentley, Cripps, Ince, Jago, Martindale, Oliver, Ostwald, Quain, Remsen, Squire, Thomé, Thorpe, Wagner, Watts, Wills, Wootton, and others. Also good microscope. List.—Gower, Waterloo, Liverpool.

WANTED.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

London Latin Pharmacopœia, edition of 1851, at once; state price and condition of book to E. Evans, 59, Bridge Street, Chester

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Culmer, Davies, Dickinson, Dowdard, Durrant, Gilligan, Gunn, Guthrie, Hart, Hogg, Hooper, Ince, Ingham, Jack, Jesper, Kenny, King, Kirkby, Lloyd, Morris, Newsholme, Nunn, Parson, Pickering, Polkinghorne, Proctor, Rodman, Rowland, Smith, Southall, Spence, Templeton, Turner, Vizer, Walton, Wyatt, Yewdall.



London Report.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

SEPTEMBER 16, 1898.

Business has been somewhat quiet during the past few days, and there are no changes of any great importance to record. Acid Citric remains firm, Quinine has hardened somewhat, while Quick-silver looks as if price might shortly make a start in a downward direction. Cocaine firm, as are also Opium, Morphia, and Codeia. Sulphate of Ammonia weak. Iodides and Bromides steady. Ipecacuonha firm and dearer. Shellac is also very firm. The following are prices actually ruling for articles of chief interest :

ACETANILIDE—Quiet but steady at 1s. to 1s. 1d. per lb. for quantity and bulk packing.

ACID BORACIC—Quiet at 23s. per cwt. for *crystals*, and 25s. per cwt. for *powder*.

ACID CARBOLIC—Is steady at 6½d. to 6¾d. per lb. for the 35-36° C. *ice crystal* in large bulk packing, other packing and quality being quoted in proportion. *Crude* : 60° F., 2s. 1d. per gallon; 75° F., 2s. 7d. *Liquid* : 95 per cent., of pale straw colour, 1s. 2d. to 1s. 3d. per gallon, according to quantity, in 40-gallon casks.

ACID CITRIC.—Makers continue firm at 1s. 3d. per lb. for immediate delivery, but second hands shade this price.

ACID OXALIC—Steady at 3½d. per lb. on the spot.

ACID TARTARIC.—*English crystals* are firm at 1s. 1d. per lb., *foreign* being lower at 12½d. per lb.

AMMONIA COMPOUNDS.—*sulphate* is dull and lower at £10 for grey prompt 24 per cent. London; Hull same price; Leith prompt £10 2s. 6d. per ton. *Carbonate* firm at 3½d. to 4d. per lb., according to package. *Bromide* steady at 2s. 1d. per lb. *Iodide* unchanged at 14s. 6d. per lb. *Sal ammoniac* : Sublimed "firsts" 35s. per cwt., "seconds" 33s. per cwt. *Sulpho-cyanide* firm at 1s. 2d. per lb.

BLEACHING POWDER.—Is fairly active at £6 15s. to £7 5s. per ton on the spot, according to packing.

BORAX.—A steady business doing at 14s. per cwt. for lump and 14s. 6d. per cwt. for powder.

BROMIDES—Are firm at unchanged prices.

CAMPHOR.—*Crude*, whilst little is doing, is dearer, and 85s. per cwt. is asked by importers for *China*, and 92s. 6d. for *Japan*, *c.i.f.* terms. *Refined* is firm, but unaltered.

CASCARA SAGRADA.—This market is harder, and nothing under 22s. per cwt. for new and 25s. per cwt. for old can be obtained.

CINCHONA BARK.—The London monthly auctions took place on Tuesday, when about 2200 bales of all descriptions were offered. The demand was good, notwithstanding general expectation, owing to the large Java shipments, and a fair quantity sold at fully last rates. *Ceylon* : 350 bales and 17 bags offered and 313 bales and 17 bags sold, according to analysis; *Succirubra* stem chips, fair at 2¼d., mixed at 1¾d., renewed chips and shavings, ordinary to fair, at 1¾d. to 2¼d.; *Officinalis* natural stem chips, fair to good at 2½d. to 3½d.; *Ledger* rather mixed stem chips, part renewed at 3¼d., good *Hybrid* natural chips at 2¼d.

East Indian : Of 355 bales and 2 cases offered 189 bales sold, red chips and shavings, ordinary to fair at 1½d. to 2¼., branch at 1d. to 1¾d., good root at 2¾d.; renewed chips and shavings, middling at 2d. to 2¼d.; *Officinalis*, chips and shavings, fair to good at 2d. to 2¾d.; renewed ditto, good at 3¾d.; *Ledger*, natural stem chips at 2¾d., ditto branch at 2¼d. Java : 143 bags offered and sold, fair *Ledger* stem chips at 3¼d. to 3¾d., *Ledger* branch at 2¼d. to 3¼d., and good *Ledger* root at 4½d. South American : Of 657 bales *Calisaya* 215 bales sold, chiefly *Bolivian* cultivated quill medium to bold at 4d. to 5d., broken, 3d. to 3¾d., flat cultivated, damaged at 5d. to 5¼d.; 14 bales *Carthagena* offered and sold at 1¼d. to 1¾d.; 101 bales soft *Columbian*, new import, sold at 1¾d. to 1¾d. African : 572 bales offered and sold, fair quill at 3½d. to 4d., broken quill and chips at 3½d. to 3¾d.; mixed chiefly thin quill at 2½d.

CLOVES.—Privately *Zanzibar* extremely quiet; quotations are, October-December delivery 4½d., and January-March 4¾d. At auction of 140 bales *Zanzibar* 60 bales sold, fair 4½d., good bright 4¾d., 47 cases *Penang* sold, without reserve, unpicked, at 6d. to 6½d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol* : Commercial 1s. 4d., pure 2s. 3d. per gallon. *Benzole* : 50 per cent. 1s.; 90 per cent. 10½d. per gallon. *Crude Naphtha* : 30 per cent. at 120° C., 5d. *Solvent Naphtha* : 95 per cent. at 160° C., 1s. 9d. per gallon.

COCAINE—Is very firm with prospect of higher prices, makers' being willing to sell in limited quantities only at their advanced price of 9s. 6d. per oz. for 100-oz. lots in 25-oz. tins.

CODEIA—Is firm at 12s. 6d. per oz.

COD-LIVER OIL.—Market is quiet, best brands of *Norwegian* non-freezing oil, in 25-gallon tin-lined barrels, being quoted nominally 82s. 6d. to 85s. per barrel *f.o.b.*

CREAM OF TARTAR—Is quiet. First *White Crystals* on the spot are quoted at 72s. 6d. to 77s. 6d. per cwt. *Powder* 75s. to 81s. per cwt.

GINGER.—*Cochin* quiet, 441 bags sold; cuttings 13s. 6d., ordinary small and ends part shrivelled 14s. to 14s. 6d., fair rough small and ends 18s., common small wormy rough 16s. 6d. Of cut kinds 75 cases sold, small native part cut 29s. to 29s. 6d., ordinary small dull C cut 34s. 6d., bold A 80s. 179 bags *Bengal* bought in at 20s. No *Jamaica* offered.

GLYCERIN.—*English* is quoted 52s. 6d. to 54s. per cwt., while maker's price for *German* brands of the white double distilled chemically pure 1260° quality in tins and cases varies from 55s. to 65s. per cwt.

IODIDES—Remain without change as quoted last week.

IPECACUANHA.—A fair business has been done this week in *Rio* at 9s. per lb., and in *Carthagena* at 5s. per lb.

JAPAN WAX.—Good white squares on the spot have been done at 32s. per cwt. For arrival more money is asked.

MENTHOL—Is firm at 7s. 1½d. to 7s. 3d. per lb. for good dry *crystals* on the spot; price to arrive is firmer.

MERCURIALS—Are without change from last week.

MORPHIA—Is very firm, makers, however, still quote *Hydrochlorate Powder* 5s. per oz. for quantity and bulk packing.

OILS (ESSENTIAL).—*Peppermint* : American H.G.H. is firm at 5s. 7½d. per lb., and from New York the article is quoted dearer. *Wayne County* : 3s. 10d. to 4s. 1d. per lb. is quoted, according to quality. *Japanese* is quiet but unchanged at 3s. 3d. per lb. for dementholised, and 5s. per lb. for 40 per cent. *Star Aniseed* quiet at 7s. 1½d. per lb. *Cassia* quiet, with but little doing; 4s. 9d. per lb. is quoted for 65 to 70 per cent.; 5s. 1½d. per lb. for 75 to 80 per cent.; 5s. 1½d. for 80 to 85 per cent., all *c.i.f.* terms. *Citronella* is also quiet at 1s. 1½d. per lb. on the spot. *Lemongrass* quiet at 3½d. per oz. *Patchouli* rather easier, 24s. per lb. being asked for English drawn. *Lavender* : Foreign is quoted 6s. to 9s. per lb. as to quality.

OILS (FIXED) AND SPIRITS.—*Linseed* firm and rather dearer at £17 for spot pipes, and £17 10s. for barrels. *Rape* quiet but unchanged at £21 10s. for ordinary brown on the spot, refined remaining steady at £23. *Cotton* slightly dearer at £14 for crude on the spot, and £15 10s. to £16 for refined on the spot, and according to make. *Olive Green Oils* are easier at £29 to £32. *Cocoa Nut* in better demand. *Ceylon* on the spot £24. *Cochin* £27 10. *Palm* quiet and tending easier at £22 10s. *Turpentine* rather dearer at 21s. 9d. per cwt. *Petroleum Oil* dearer at 4½d. per gallon for Russian, and 5½d. per gallon for American; water white 6½d. per gallon. *Petroleum Spirit*: American dearer at 6d. per gallon. Deodorised 6½d. gallon.

OPIUM—Remains quiet for all descriptions, and only retail sales have been made, but prices are very firm. For good to fine *Smyrna* 11s. 6d. to 12s. per lb. is asked. Second “druggists” 10s. 9d. to 11s. 3d. per lb.

PHENACETIN—Can still be bought at 3s. 9d. to 4s. 3d. per lb., price of *Bayer's* article remaining 5s. 6d. per lb. for bulk.

PHENAZONE.—Some very low prices have been named by agents, who are apparently desirous of pushing a doubtful quality. Buyers will do well to remember that the lowest priced article does not always prove to be the cheapest in the long run. Price of *Dr. Knorr's Antipyrine* remains unchanged.

POTASH COMPOUNDS.—*Chlorate* steady at 3½d. to 3¾d. per lb. for crystals on the spot. *Bromide* steady at 1s. 9½d. per lb. *Bicarbonate* firm at 30s. per cwt. for foreign crystals and powder. *Yellow Prussiate* quiet at 6¾d. to 7d. per lb. *Red Prussiate* firm at 1s. 2d. per lb. *Bichromate* steady at 3½d. to 3¾d. per lb. *Iodide* firm at 9s. 9d. to 10s. 3d. per lb., according to quantity. *Permanganate* is dull at 60s. per cwt. for small, and 65s. per cwt. for large crystals.

QUICKSILVER.—First hands continue to ask £7 12s. 6d., but second hands are easier at £7 7s. 6d. per bottle. An official decline may therefore be expected.

QUININE—Is nominally firmer, but no business has taken place. Second-hand holders ask 9¾d. per oz. for the *Sulphate* in 100 oz. tins, and lots of 1000 ozs. as a minimum.

SENNA.—There has been a fair demand for the lower qualities of *Tinnevelly* at 1¾d. per lb., and a moderate business has been done thereat this week. For *Alexandrian* the demand is for really fine whole leaf, which, however, is scarce.

SHELLAC.—A firm market, and a continued steady demand for spot goods at full to slightly dearer rates. *Second Orange* has been done on the basis of 65s. per cwt. for fair *TN*.

SODA COMPOUNDS—*Crystals* in barrels are still quoted 57s. 6d. per ton ex-ship, London. *Ash*, £5 5s. to £5 15s. per ton, according to strength. *Bicarbonate* steady at £7 5s. to £7 10s. for the commercial and 18s. 6d. per cwt. for the fully bicarbonated quality. *Caustic*, 70 per cent., £8 per ton. *Bichromate*, 2¾d. to 3d. per lb. *Bromide* unchanged at 2s. per lb. *Nitrate*, £7 12s. 6d. for ordinary and £8 2s. 6d. for the refined on the spot.

SPICES (VARIOUS).—*Black Pepper*: 1671 bags all bought in; Penang, 4¾d. to 4½d.; Lampong, 4¾d.; Singapore, 4¾d. to 4½d. *White Pepper* also mostly bought in; Siam, 8¾d.; Singapore, 8¾d. to 8½d., with fine bold, 9½d. to 10½d. *Capsicums*: 1 bale Natal sold, subject, at 65s. *Cassia Lignea*: 110 boxes bought in at 55s.; 100 bales broken sold at 34s. *Cinnamon*: 60 boxes China bought in at 40s. per cwt.; 12 bags Ceylon chips partly sold at 5d. per lb. *Mace*: 62 cases Penang pickings bought in at 1s. 4d. to 1s. 5d.; 2 cases undescribed sold at 1s. 8d. to 2s.; 27 packages West India sold; ordinary to fair, 1s. 4d. to 1s. 7d.; low, 1s. 3d.; good, 1s. 9d. *Nutmegs* steady. *Pimento*: Of 262 bags only 30 bags sold at 4¾d.

STRYCHNINE—Is steady at the late reduction.

SUGAR OF LEAD.—English firm at 31s. per cwt., and 27s. 6d. per cwt. for foreign.

SULPHATE OF COPPER—Is steady but quiet at £15 15s. to £17 per ton according to brand.

SULPHONAL—Is still obtainable in limited quantities from the makers at 7s. 3d. per lb. in bulk packing.

SULPHUR—Steady. English, roll, 7s. 6d. to 8s. per cwt.; flowers, 11s. per cwt. Foreign, roll, 6s. 6d. per cwt., flowers, 7s. per cwt.

To-day's drug auctions passed off quietly, a large number of the lots offered being bought in. Chief feature of the sales was the firmness of *Ipecacuanha* and *Senna*. The following are the particulars of prices paid and required:—

ALOES.—25 kegs good softish *Socotrine* sold at 75s. per cwt., 10

cases of ditto of fair quality being held for same price (an offer of 70s. per cwt. being declined), 4 boxes watery ditto for 40s., 2 cases soft and rather drossy *Cape* realised the comparatively high price of 26s. per cwt. 23 boxes dark livery *Curacoa* bought in, only 13s. per cwt. being offered.

AMBERGRIS.—1 case heavy undeveloped sold at 8s. per oz., 1 tin fair quality, at 45s., while good fair grey was bought in at 80s. per oz.

ANATTO SEED.—77 bags fair bright held for 4d. and dark dull for 3d. per lb.

ANISEED.—21 bags fair *Spanish* held for 28s. per cwt.

ASAFETIDA.—99 cases were put up “without reserve,” but the broker's fears were shown when, before the sale, he stated that “without reserve” must be subject to paying freights and charges. As it proved, however, the demand was good, and the prices realised must have been satisfactory on the whole to importers. Slight pinky to fair and part almond block but heavy sold at 41s. per cwt., a fall on last rates of about 10s. per cwt. The lower grades sold well, down to 31s. for common.

BALSAM COPAIBÆ.—2 cases *Bahia* sold at 1s. 2d. per lb.

BALSAM TOLU.—4 packages were taken out at 2s. per lb.

CACTUS FLOWERS.—4 bags *Grandiflora* bought in at 8d. per lb.

CAMPHOR.—20 cases, each 112 lbs. Japan refined, in 1 oz. tablets were bought in at 1s. 3d. per lb.

CARDAMOMS—Were in good supply, and with a fairly active demand the bulk sold at and after the auctions at about steady rates. Decorticated were dearer at 3s. 1d. per lb. Good bold pale *Mysore* realised 3s. 4d. per lb., medium ditto 2s. 11d. to 3s. per lb. Wild, rather shelly, held for 2s. per lb.

CASCARA SAGRADA.—100 bags of fair quality were held for 22s. per cwt.

CASTOR OIL.—20 cases fair *Italian* held for 4¾d. per lb.

CHALMONGRA OIL.—3 cases of rather dark oil sold at 1s. 9½d. per lb.

CINCHONA BARK.—Of 40 serons *Crown*, good Huanuco was held for 8½d. per lb.; 1 seron dull *Loxa* selling at this figure. 60 serons *Guayaquil Loxa* bought in at 7½d. per lb., 4 serons only selling at 7d. per lb. 24 bales yellow bark fetched 1s. to 1s. 1d. per lb., down to 7d. per lb. for damaged and inferior.

CIVET.—12 horns good fair quality were held for 10s. 6d. per oz.

COLOCYNT.—11 packages medium *Turkey Apple* held for 1s., fair small ditto selling at 10½d. per lb.

COLOMBO ROOT.—10 bags fair washed were held for 35s., good ditto being bought in at 40s. per cwt.

CONDIMENTS.—25 cases, viz., 6 cases *Sweet Mango Chutney*, 6 cases *Green Mango Chutney*, 7 cases *Slice Chutney*, and 6 cases *Mango Chutney*, all sold at 8s. per dozen.

CUBEBS.—54 bags of fair quality were held for 24s. per cwt., 74 bags also being taken out at 27s. per cwt.

CUMMIN SEED.—41 bags fair Malta held for 27s. to 28s. per cwt.

CUSCUS ROOT.—8 bales were held for 45s. per cwt. for good.

CUTTLEFISH BONE.—9 cases small dark bought in at 4d. per lb. 40 mats fair pale broken to medium held at 3d., 3 mats small dark selling at 1d. per lb. subject to approval. 16 cases all sold at 5¾d. for good bold, down to 2½d. per lb. for small.

DAMIANA LEAVES.—9 bales were bought in at 10d. per lb. for fair quality.

DILL SEED.—32 bags of inferior quality were held for 10s. per cwt., good selling at 14s.

ERGOT OF RYE.—7 cases fair *Spanish* were bought in at 7d. per lb., weevily *Russian* being held for the fancy price of 9d. per lb.

ESSENTIAL OILS.—16 cases *Cinnamon Leaf Oil* held for 4d. per oz.; 2 cases *Dodge and Olcott's Oil Wintergreen* for 5s. per lb.; 1 case *Aniseed Oil* for 7s. 2d. per lb.; 4 cases *Cassia Oil* for 5s. 9d. per lb.; 3 cases fair commercial *Eucalyptus Oil* bought in at 10d. per lb.; 8 cases *Lime Oil* part sold at 3s. 4d. per lb., balance being bought in at 3s. 10d. per lb.

FENNEL SEED.—15 bags of fair quality were taken out at 12s. per cwt.

GENTIAN ROOT.—Good dry red root was bought in at 25s. per cwt., lower quality at 20s.

GAMBOGE.—2 cases bright pickings were held for £7 15s. per cwt. 8 cases fair bright softish part drossy were held for £8 5s. per cwt.

GUAZA.—23 robbins, brownish tops, were held for 6d. per lb.

GUM AMMONIACUM.—35 cases, good clean, mixed, part blocky, were bought in at 35s. per cwt.

GUM ARABIC.—2 cases sorts were bought in at 65s. per cwt.,

5 cases good grain at £6 15s., 35 packages *Aden* gum at 45s. per cwt.

GUM BENJAMIN.—19 cases *Siam* bought in at £15 per cwt., for fair small to medium free almondy down to £9 10s., for small part friable block; *Sumatra* seconds for £6 10s., ditto dark fracture for £5 per cwt.

GUM ELEMI.—7 cases yellow sold at 21s. per cwt.

GUM EUPHORBIIUM. 9 serons held for 10s. per cwt.

GUM GALBANUM.—15 packages bought in at 1s. 4d. per lb. for good, down to 9d. per lb. for dark, part blocky, and 4d. per lb. for woody.

GUM GUAIAIACUM.—10 boxes fair drop sold at 4½d. per lb.

GUM MYRRH.—25 packages chiefly bought in at £5 per cwt. for good pale sorts, pea siftings fetching 55s., dusty ditto, 43s., and pickings 25s. per cwt.

GUM KINO.—4 cases fair *African* were bought in at 2s. 6d. to 4s. per lb.

GUM TRAGACANRH.—5 cases of very low quality sold at 7s. per cwt.

HONEY.—36 cases pale *Peruvian* sold partly without reserve at 19s. 6d. to 20s. 6d. per cwt. 13 packages *Jamaica* offered on same terms realised 20s. to 20s. 6d. per cwt. 20 cases *West Indian* sold at 20s. 30 cases *Honolulu* at 22s. 11 cases *Queensland* at 20s.

IPECACUANHA.—There was a strong demand for *Rio*, presumably for the United States and after a considerable quantity had been sold at 9s., the brokers put up the prices and sold further lots at from 9s. 1d. to 9s. 3d. per lb. for fair quality. For *Carthage* there was no demand, importers asking 5s. to 5s. 3d. per lb.

KAMALA.—7 cases good bright were bought in at 10d. per lb.

KOLA NUTS.—10 bales washed were held for 3d. per lb.

LIME JUICE.—22 casks *South Island* bought in at 8½d. per gallon.

LIQUORICE ROOT.—40 bales rough *Syrian* bought in at 9s. 6d. per cwt.

MENTHOL.—1 case good dry crystals, *Kobayashi* brand held for 7s. per lb.

MUSK.—3 caddies *Tonquin*, old-fashioned, small to medium, well-trimmed, part rather dampish, were held for 50s. per oz. 1 caddy genuine skinny, untrimmed, fairly dry for 40s.; 4 caddies, fair pile 3, for 21s. per oz.; 4 caddies, thin skin blue, medium to bold, slightly broken, for 70s. per oz.

ORANGE PEEL.—8 packages dark thin cut were held for 7d. per lb.

ORANGE FLOWERS.—5 cases bought in at 2s. 6d. per lb.

PATCHOULI LEAVES.—9 bales rather dark in colour and somewhat damaged were held for 3d. per lb.

RHATAMA ROOT.—4 packages bought in at 10d. per lb.

RHUBARB.—10 chests flat high-dried, somewhat wormy, were held for 1s. 1d., small ditto selling at 10d. to 1s. per lb., good rough and horny ditto at 6½d. per lb. 4 cases bold round *Canton*, quality of which, however, left much to be desired, were bought in at 1s. 6d. per lb. 4 cases small ditto, part trimming, at same price, small to medium selling at 1s. Good bold flat *Canton* was bought in at 2s. 6d. per lb., smaller ditto being held for 1s. 3d. to 1s. 4d. 4 cases flat *Shensi* for 1s. 6d., 1 case round selling at 1s. 2d., and 2 cases round flat *Shensi* pickings at 1s. 1d. per lb.

ROSE LEAVES.—1 bale of old crop held for 1s. 5d. per lb.

ROSE OIL.—14 pots were taken out, price required being 4d. to 5d. per oz.

SAFFRON.—1 case bought in at 37s. per lb.

SARSAPARILLA.—9 bales *Jamaica* part sold at 1s. 8d. per lb. 4 bales part *red native* part *red* and *grey* sold at 10½d.; 2 bales *grey* selling at 9½d. per lb.; 6 bales *Lima* realised 1s. 1d. to 1s. 3d. per lb.; 9 serons fair *Honduras* held for 1s. 6d. to 1s. 7d. per lb.

SCAMMONY.—11 cases were all bought in at 30s. per lb. *firsts*, for and 24s. per lb. for *seconds*.

SCAMMONY ROOTS.—80 bales were held for 25s. per cwt.

SENEGA ROOT.—5 bales fair *Minnesota* sold at 1s. 2½d. per lb.

SENNA.—*Tinnevelly* was in good demand, especially for the better qualities which sold at an advance of fully 1d. per lb. on the prices obtained in the last auctions. Medium qualities sold at 2d. to 2½d. per lb. Bolder and greener leaves realised up to 4½d. per lb. *Alexandrian* leaves were all of lower and medium qualities only, whilst such demand as exists is for good leaf.

SOY.—10 casks *China* were held for 1s. 4½d. per gallon.

SQUILLS.—42 bags held for 2½d. to 3d. per lb.

STAR ANISEED.—3 cases held for 25s. per cwt.

TONQUIN BEANS.—6 casks *Angostura* of fair quality, slightly

damaged, were held for 3s. 9d. per lb.; 10 cases black *Paras* for 1s. per lb.

TURMERIC.—20 cases *China* were bought in at 22s. per cwt.

VANILLOES.—Were in small supply. *Tahiti* are firmly held at 8s. 6d. per lb., a rise on late rates. Good frosted *Bourbons*, 4½ to 5 inches, sold at 19s. per lb.

WAX.—Fair to good *Madagascar* was bought in at £5 15s. to £6 10s. per cwt., *East Indian* at £7, fair *Jamaica* selling at £6 10s. to £6 12s. 6d. *Italian* was held for £6 10s., and *Spanish* for £6 15s. to £7 per cwt. 1 case *Assam* fetched £5. 9 packages fair *Australian* part sold at £5 15s. to £6. Bleached *Calcutta* bought in at £6 12s. 6d. Fair *Zanzibar* sold at £6 per cwt.

Manchester Chemical Report.

SEPTEMBER 14, 1898.

Alkalies continue quiet, with the exception of bleaching powder, which is reported scarce. Difficulty is also experienced in filling orders for Soda Crystals, and Glauber and Epsom salts, both of which are firm. In miscellaneous articles there is much firmness. For prompt delivery, Sulphate of Copper is quoted £17 per ton best brands, delivered Manchester, £17 10s. October, and £18 November delivery, and makers are disinclined to quote for spring except at much higher prices. Brown Acetate of Lime is steady at £5 2s. 6d. to £5 5s. per ton, delivered here. Naphthas are steady, and Benzols are unchanged, the latter tending slightly upwards. Pitch is firmer and about a shilling higher. Anthracene is stagnant, but Creosote is steady. Arsenic is higher, being quoted £15 5s. per ton, ex ship, Garston. Green Copperas is firmer for Lancashire make. Yellow Prussiate unchanged. Glycerin, for local make, is active at £54 to £56 per ton *f.o.b.*, or on rails Manchester district, and £49 to £51, naked. The tank oil trade is still progressing. Messrs. Bagnall & Co. are building two more large storage tanks, each of 1,000,000 gallons holding capacity. When finished this firm will have half-a-dozen tanks, with a total holding capacity of 6,000,000 gallons. In the same vicinity a number of smaller tanks are erected, two belonging to the Manchester Corporation Gas Department. A tallow refinery is to be erected behind the lairages, in which the whole of the fat from the cattle slaughtered there will be dealt with, and this will be followed by the construction of a seed-crushing establishment.

Newcastle Chemical Report.

SEPTEMBER 14, 1898.

This market is steadying down. New orders for heavy chemicals are fewer now than the Baltic shipping season is working to close. Prices are practically unchanged and keep as follow:—Bleaching Powder: £6 to £6 10s. Soda Crystals: Basis, 45s. to 52s. 6d. Caustic Soda: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. Sulphur: £4 15s. to £5 per ton.

Liverpool Market Report.

SEPTEMBER 14, 1898.

AMMONIA SALTS.—*Sulphate* slightly lower in price, £10 1s. 3d. to £10 2s. 6d. per ton.

BEESWAX.—10 cwt. of *Chilian* made prices between £6 12s. 6d. and £7 2s. 6d. per cwt., and 11 packages of *Peruvian* sold at £6 15s. to £6 17s. 6d. per cwt.

CANARY SEED.—Though quoted at 29s. to 30s. per 464 lbs. for *Turkish* seed this is only nominal, for there have been no transactions upon which to base prices, and inquiries are few.

KOLA NUTS.—30 bags of dried sold at 1¼d. to 1½d. per lb.

LINSEED.—200 bags of "feeding" *Turkish* made 39s. 6d. per 416 lbs. *American* is 9d. dearer for September, October shipment, viz., 32s. 9d. per 416 lbs. *Calcutta* same dates 35s. 9d.

OILS (FIXED) AND SPIRITS.—*Castor* has enjoyed a fair share of attention during the week, and good sales of *Calcutta* and *French* have been effected. *Calcutta* now is not to be had under 3¼d. per lb. ex store, none ex quay. *French* 1st pressure 2½d. per lb. ex quay and 3d. to 3¼d. ex store. *Madras* 3¼d. *Olive* is only in retail demand, prices for shipment are *Malaga* £30 10s. per tun cost and freight and *Seville* £29 to £30 ditto. *Linseed* is steady at 18s. to 18s. 6d. per cwt. *Cottonseed* is quiet at 16s. to 16s. 3d. per cwt. *Spirits of Turpentine* is in fair demand at 22s. 6d. per cwt.

Marriages.

JEEVES—ADAMS.—On September 6, at St. Paul's Church, South Hampstead, Arthur T. Jeeves, A.P.S., of Brighton, to Nellie Adams, youngest daughter of Thomas Weldon Adams, of Dublin.

MAIR—URQUHART.—At Tayport, Fifeshire, on September 14, by the Rev. H. R. Mackintosh, Ph.D., assisted by the Rev. James M. Brown, brother-in-law of the bride, and the Rev. R. S. Warren, William Mair (representative for Scotland of Messrs. Fletcher, Fletcher & Co.) to Isabella Jane, daughter of the late John Urquhart, Errol Park, Perthshire. Among other interesting and valuable presents was a handsome silver tea service and tray, bearing the following inscription, "presented by Mr. Mair's many friends in the Scottish community in Calcutta."

News in Brief.

PROCEEDINGS UNDER THE PHARMACY ACT (IRELAND).—At the Belfast Summons Court on Tuesday, September 13, several interesting cases were heard at the instigation of the Council of the Pharmaceutical Society of Ireland. Mr. F. G. Hodder, R.M., was the presiding magistrate, and was assisted by Mr. J. J. M'Donnell, J.P., and Mr. Wm. Masterton, J.P.—Mr. W. B. Galway, solicitor, conducted the prosecutions for the Society.—The first case was that against Hugh M'Intyre, in the employ of Messrs. Clarke and Co., Belfast, who was summoned in that on July 11 he did compound a certain medical prescription for one Stewart M'Williams, contrary to the provisions of Statute 38 and 39 Vict., cap. 57, sec. 30, he not being a person qualified in that behalf according to law.—Mr. Galway pointed out that a portion of the Pharmacy Act of 1875 had been repealed, but section 30 was still in full force, and under that section for each offence transgressors were liable to a penalty of £5.—After a lengthy hearing the magistrates decided that there was no evidence to sustain the case against the defendant, or to show that he did compound the medicine, and it would be dismissed without prejudice. He was also granted 12s. 6d. costs.—The next case was brought under Section 30 of the 1875 Act, against David Monson, employed by the Ulster Chemists, Limited, Peter's Hill, Belfast, for that on July 6 he did compound a certain medicine, he not being qualified so to do.—On hearing the evidence in the case, which was to the effect that defendant promised to compound a prescription and have it ready for the Society's inspector in three-quarters of an hour, and that at the expiration of that time he handed the medicine to him, the presiding magistrate said these prosecutions were very serious, and if fully proved he would impose a high penalty, but the prosecution appeared to be throwing cases at the Court and not calling evidence.—The case was dismissed without prejudice, with 12s. 6d. costs.—James Hogg, York Street, Belfast, was then summoned for keeping open shop, and also for compounding a medical prescription on July 7, he not being duly qualified.—The evidence was that defendant carried on the business of a druggist, but was not qualified, and that his son, Samuel Hogg, a registered pharmaceutical chemist, conducted a dispensing business in his shop. It was proved that the prescription was compounded by Samuel Hogg, and not by the defendant.—The Chief Magistrate said the prosecution against James Hogg for compounding must go by the board, as the inspector got his prescription filled by a pharmaceutical chemist. The next charge was that he kept open shop; but it was shown that he kept a qualified man there.—Mr. Galway said, with all respect, he did not agree with Mr. Hodder, but he would bow to his ruling.—Both cases were then dismissed with 10s. 6d. costs in one case. Subsequently, however, on Mr Galway stating that he should serve notice in the ordinary way for a case to be stated, the Chief Magistrate said that in the two cases against James Hogg he would adjourn both until Thursday for further argument.—On again coming before the Court both cases were dismissed with 20s. costs against the Society.

GEORGE B. PICKWORTH, chemist and druggist, has purchased the branch business of Mr. C. O. Wain, at 72, Victoria Street, Blackburn, of which he was formerly manager.

Advertisements.

(Received too late for Classification).

WANTED by a firm of Surgeons, a qualified DISPENSER and BOOKKEEPER, not a member of the Medical Profession. Apply, 6.30 p.m., 143, Hammersmith Rd., West Kensington, W.

ASSISTANT. Tall. 7 years good experience. WILBURN, 4, Spring Gardens, Buxton.

Receiving Orders in Bankruptcy.

(From the London Gazette.)

G. W. Burrell, Aerated Water Manufacturer, Crown Works, Birstall.

Dr. W. J. M. Barry, 4, Cambridge Road, Hove, Sussex.

Publications Received.

DEFECTIVE SIGHT AND ITS OPTICAL CORRECTION. By W. D. MASON, M.P.S., A.S.A. Second edition. Pp. 30. Price 6d. Grimsby: Carr & Forman, 88A, Cleethorpe Road. 1898. From the Author.

THE FUTURE WATER SUPPLY OF BIRMINGHAM. By THOMAS BARCLAY. Third edition, revised and enlarged. Pp. 240. Price 3s. 6d. net. Birmingham: Cornish Bros., 37, New Street. 1898. From the Publishers.

DIE HEILPFLANZEN DER VERSCHIEDENEN VÖLKER UND ZEITEN. IHRE ANWENDUNG, WESENTLICHEN BESTANDTHEILE UND GESCHICHTE. Ein handbuch für ärzte, apotheker, botaniker, und droguisten. Von Dr. GEORG DRAGENDORFF. Pp. vi. + 245. Price six marks. Stuttgart: Verlag von Ferdinand Enke. 1898. From the Publisher.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Honey.—New English fine flavour, 28lbs., 9d. lb.; 1 cwt., 8d. lb.; tins free carriage paid.—Faraday, Chemist, Saffron Walden.

Photographic mounts, Bristol cartes, 3s.; G.B.E., 10s.; cabinets, 10s. G.B.E., 15s.; quarter-plates, 6s.; half-plates, 12s. 1000; plate-sunk mounts, 12 by 10, 40s. 1000. Samples free.—Edward Peck, East Dereham, Norfolk.

Magic Lanterns, second-hand; triples and binoculars; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Six Pieces Perfume Ribbon, each 36 yards long (216 yards), assorted colours; post free, 5s.—Edward Peck, East Dereham, Norfolk.

Surplus Stock.—1 lb. Potass. Iodid. Pur., 10s.; 2 lbs., 19s.; 4 lbs., 36s. Williams' Pink Pills, original boxes, 23s. 7d. doz.; taking three, carriage paid.—Cash, or London reference.—Eastman, Forest Lane, Stratford.

WANTED.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

Herbaria wanted, specimens must be in good condition. Will give Magneto electric machine, or six dozen good microscope slides (chiefly botanical) in exchange.—"Botanist," Hall Quay Pharmacy, Great Yarmouth.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Adams, Alcock, Ayre, Beard, Brigham, Dowzard, Dunlop, Ferrall, Flux, Freeman, Garbett, Gibbard, Guthrie, Hendry, Holmes, Ingham, Ingle, James, Jeeves, Kemp, Lander, Lothian, Mair, Martin, Mason, Moon, Parry, Parsons, Pater, Pickworth, Poppelreuter, Proctor, Smith, Spitta, Tylar, Walker, Walther, Wendon, White, Williams.



London Report.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

SEPTEMBER 22, 1898.

Business has been very quiet during the past week, and many complaints have been heard that there was so little doing. Changes in value have been unimportant. Shellac is firm and higher. Acid Boracic also dearer. Borax firm. Cream of Tartar and Tartaric Acid dull. Acid Citric steady. Camphor dearer. Quicksilver and Mercurials lower. Iodides and Bromides unchanged. Quinine fairly steady. Cocaine firmer. Phenacetin, Sulphonal, and Acetanilid unaltered. Cod-liver Oil quiet. Glycerin steady at firm prices. Sulphate of Ammonia lower. The following are prices actually ruling for articles of chief interest:—

ACETANILIDE—Is quiet at 1s. to 1s. 2d. per lb., according to quantity and package.

ACID ACETIC—In fair demand, prices being steady. Quotations are as follows:—30 per cent. or 1 to 7, 14s. 3d. per cwt.; 33 per cent. or B.P., 15s. 6d. per cwt.; 40 per cent., 18s. per cwt.; 50 per cent., 21s. 6d. per cwt.; 60 per cent., 21s. 6d. per cwt.; 70 per cent., 28s. 9d. per cwt.; 80 per cent., 32s. 3d. per cwt.; 85 per cent., 34s. per cwt.; 90 per cent., 35s. 9d. per cwt.; 95 per cent., 37s. 9d. per cwt., and glacial 39s. 6d. per cwt.

ACID BORACIC—Dearer at 24s. per cwt. for *Crystals* and 26s. per cwt. for *Powder*.

ACID CARBOLIC—Is quiet but firm at 6½d. to 6¾d. for 35-36° C. ice crystal in 2½-cwt. drums and overcasks, other qualities and packing in proportion. *Crude*: 60° F., 1s. 11d. per gallon; 75° F., 2s. 4d. *Liquid*: 95 per cent. of pale straw colour, 1s. 2d. to 1s. 3d. per gallon in 40-gallon casks.

ACID CITRIC.—The position of this article remains steady at 1s. 3d. per lb. from makers and 1s. 2¾d. per lb. from second hands.

ACID OXALIC.—A fair business passing at 3½d. per lb. on the spot.

ACID TARTARIC.—*English Crystals* continue firm at 1s. 1d. per lb. on the spot, whilst *Foreign* are quiet at 12½d. per lb.

ALUM.—Loose lump, £5 7s. 6d. per ton; ground, in bags, £6 per ton.

AMBERGRIS—Is in good enquiry and is scarce. Prices range from 75s. to 110s. per oz. as to quality.

AMMONIA COMPOUNDS.—*Sulphate* is again lower at £9 18s. 9d. per ton for grey prompt, 24 per cent., London; Hull, prompt, £9 17s. 6d.; Leith, same price. *Carbonate* unchanged at 3½d. to 4d. per lb., according to package. *Muriate*: 22s. 6d. per cwt. for rough, and 26s. to 27s. 6d. per cwt. for best white. *Sal ammoniac*: Sublimed No. 1, 35s. per cwt.; No. 2, 33s. per cwt.; crushed, 2s. per cwt. more. *Sulphocyanide* steady at 1s. 2d. per lb. *Bromide*: 2s. 1d. per lb. *Iodide*: 14s. 6d. per lb.

ARSENIC.—*Powder* 19s. per cwt., *Lump* 34s. per cwt.

ASAFETIDA—Shows an improvement since the auctions, some 10 cases having been resold at an advance of about 4s. per cwt.

ATROPIN—Very firm at 15s. 6d. per oz. for the *Sulphate B.P.*, and 17s. 11d. per oz. for the *Pure*.

BALSAM TOLU.—Since the auctions sales have been made privately at 1s. 4d. per lb. The price is now 1s. 6d. per lb. in large bulk.

BISMUTH—Unchanged at 5s. per lb. for *metal*, and 4s. 10d. per lb. for *Subnitrate* in 5 cwt. lots.

BLEACHING POWDER—Is in good inquiry at £6 15s. to £7 5s. per ton, according to quantity and packing.

BORAX—Very firm at 14s. per cwt. for lump and 14s. 6d. per cwt. for powder.

BROMIDES—Steady at 1s. 8½d. per lb. for *Potass. Bromide* in half-ton lots, and *Bromine* 1s. 11d. per lb. for not less than 20 cases.

CAFFEINE—is unchanged at 14s. 4d. per lb. for the *pure*, and 11s. 2d. per lb. for the *citrate*.

CAMPHOR.—The market for *crude* remains very firm, and 85s. for *China*, and 92s. 6d. for *Japan*, are the nearest *c.i.f.* quotations. *Refined*: Both German and English makers have advanced their prices to 1s. 1¾d. and 1s. 2d. per lb. respectively for *Bells* in 1-ton lots.

CANTHARIDES.—*Russian* are firm at 1s. 9d. to 1s. 10d. per lb. on the spot. *Chinese*: None here.

CASCARA SAGRADA—Is unchanged at 22s. per cwt. for new and 25s. per cwt. for old bark.

CAMOMILES—Are quoted 75s. per cwt., showing an advance of 15s. per cwt. on the week.

CLOVES.—Privately *Zanzibar* have been quiet and easy. On the spot small sale of fair at 4d., sales of October-December delivery have been made at 3½d., and January-March at 3¼d., but close fractionally higher. At auction 85 bales *Zanzibar* bought in at 4½d., also 58 bags *Amboyna* at 5d. Of 26 cases *Penang* 6 cases fine bright picked, sold at 11d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: Commercial 1s. 4d., pure 2s. 3d. per gallon. *Benzole*: 50 per cent. 10d.; 90 per cent. 9½d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C., 5d. *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 8d. per gallon.

COCAINE—Is dearer, one maker who was still selling at 9s. 3d. now asks 9s. 8d. per oz. for 100 oz. lots in 25 oz. tins. A further advance in the value of the article would appear not improbable.

CODEIA—Is firm at 12s. 6d. per oz.

COD-LIVER OIL—Remains quiet at 80s. to 85s. per barrel *f.o.b.* according to brand for best new non-freezing *Lofoten Oil* in tin-lined barrels of 25 gallons each. It stated that the *Finmarken Oil* will be very good this year and that price of same will probably be but little below that of the *Lofoten* fishery.

CREAM OF TARTAR—Is slightly easier at 72s. to 77s. per cwt. for first white *Crystals* on the spot; *Powder* 74s. 6d. to 80s. 6d. per cwt., according to percentage of bitartrate.

DAMIANA LEAVES—Are rather easier at 8½d. per lb. on the spot.

DRAGON'S BLOOD.—We note arrival of 7 boxes which will probably be offered in next drug sales. The article is very scarce.

ERGOT.—*Russian* firm at 9d. per lb. for sound. Good *Spanish* held for 1s. per lb.

GINGER.—*Cochin* steady. Of 477 bags, rough kinds, 200 bags sold; lean small and ends, 19s. 6d.; inferior, 17s. 6d.; fair washed rough, 23s. to 23s. 6d. Of cut kinds 39 cases sold; medium and small, part cut, 43s. 6d.; dull *B cut*, 55s. *Jamaica* quiet. Only 13 barrels sold; ordinary, 66s.; middling, 70s. to 73s. 6d.

GOLDEN SEAL ROOT—Is reported slightly easier in New York, but no actual change of price is quoted.

GUM TRAGACANTH.—Holders are very firm, and higher prices are generally asked. Firsts quoted up to £13 10s. per cwt., seconds £12 10s. per cwt., thirds £11. Demand is slack.

GLYCERIN—Quiet but firm at 52s. 6d. to 55s. per cwt. for *English* and 54s. to 65s. per cwt., according to brand, for *German* best white double distilled, chemically pure 1260° quality in tins and cases.

IODIDES—Are steady without change in price at 7½d. per oz.

for *Iodine*; 9s. 9d. to 10s. 3d. per lb. for *Potass. Iodide*, and 13s. 4d. to 13s. 7d. per lb. for *Iodoform*.

IPECACUANHA.—Since the auctions a good business has been done up to 9s. 3d. per lb. for *Rio*, and holders are now asking 9s. 4d. to 9s. 5d. per lb. For *Carthagena* the demand is also good at rather dearer rates.

JALAP.—For ordinary small root 5½d. per lb. has been paid.

JAPAN WAX.—Good squares on the spot 33s. to 33s. 6d. per cwt. Market quiet but steady.

KAMALA—Sells privately at 10d. per lb. for good bright.

KAVA KAVA—Is quoted 10d. per lb. on the spot.

LITHIA—Is firm at 10s. 8d. per lb. for the *Carbonate* in 2 cwt. lots.

LOBELIA HERB—Is offered on the spot at 4½d. per lb. for loose and 6d. per lb. for pressed in packets.

MENTHOL—Is dearer for arrival. On the spot 7s. 1½d. to 7s. 3d. per lb. is still quoted.

MERCURIALS—Have been reduced in price 1d. per lb., in consequence of the lower value of *Quicksilver*. Makers now quote 2s. 8d. per lb. for *Calomel* and 2s. 4d. per lb. for *Corrosive Sublimite* in 5 cwt. lots.

MORPHIA—Is quiet but firm at 5s. per oz. for the *Hydrochlorate Powder*.

NITRATE OF SODA—Is firm at £7 12s. 6d. to £7 15s. per ton for *Commercial*, and £8 to £8 5s. per ton for *Refined*.

OILS (ESSENTIAL).—*Peppermint*: American H.G.H., on the spot 5s. 6d. to 5s. 7½d. per lb. *Wayne County*: choice quality scarce and quoted 4s. to 4s. 3d. per lb., ordinary oil 3s. 9d. to 3s. 11d. per lb. *Japanese* very firm and extreme prices asked. *Star Aniseed* quiet, but holders are firm at 7s. to 7s. 1½d. *Cassia* firm for arrival but dull on the spot, quotations range from 4s. 9d. to 5s. 9d. per lb. as to percentage. *Lemongrass* is dull at 3½d. per oz. *Citronelle* steady at 1s. 1½d. to 1s. 2d. per lb. for tins.

OILS (FIXED) AND SPIRITS.—*Linseed* very firm at £17 2s. 6d. for spot pipes and £17 10s. for barrels. *Rape* is steady at £21 10s. for ordinary brown on the spot and £23 for refined, same position. *Cotton* steady. London crude spot £14, refined spot £15 12s. 6d. to £16 5s., according to make. *Olive*: Green oils £29 to £32. *Coconut* slightly dearer at £24 5s. for Ceylon on the spot, Cochin nominally £27 10s. *Palm*: Lagos on the spot unchanged £22 10s. *Turpentine* is dearer but closes quiet at 22s. 6d. per cwt. for American on the spot. *Petroleum Oil* again dearer at 4½d. per gallon for Russian on the spot, American 5¾d. per gallon, water white 6½d. per gallon. *Petroleum Spirit*: Firm at 6d. per gallon for American, deodorised 6½d. per gallon.

OPIUM—Remains quiet and unchanged, with small sales of manufacturing sorts at steady rates. There are no sales of druggists' descriptions to report, but prices are steady.

PHENACETIN.—Price remains unchanged at 3s. 9d. to 4s. 3d. per lb., according to quantity and packing. *Bayer's* make is still quoted 5s. 6d. per lb. in bulk.

PHENAZONE.—Market is very quiet at nominally unchanged prices. Value of *Dr. Knorr's Antipyrine* is also unchanged.

PODOPHYLLIN—Is steady at 12s. 6d. per lb. for good quality. American, not fully soluble, being quoted about 9s. to 10s. per lb. *Podophyllin Root* is firmer at 21s. per cwt. *c.i.f.*

POTASH PERMANGANATE—Is quiet at 60s. and 65s. per cwt. for small and large crystals respectively.

POTASH COMPOUNDS.—*Chlorate* steady at 3½d. to 3¾d. per lb. for early delivery. *Bromide* firm at 1s. 9½d. per lb. *Iodide* steady at 9s. 9d. to 10s. 3d. per lb. according to quantity. *Bicarbonate* unchanged at 30s. to 35s. per cwt. for crystal or powder. *Yellow Prussiate* firm at 6¾d. to 7d. per lb. for English. *Red Prussiate* steady at 1s. 2d. per lb. *Bichromate* firm at 3½d. to 3¾d. per lb. *Pernanganate* is very quiet at 60s. per cwt. for small crystals, and 65s. per cwt. for large.

QUICKSILVER.—As anticipated last week, importers have reduced their price to £7 per bottle, at which business has been done. Second hands are not offering.

QUININE—Continues quiet, but holders are, perhaps, not so ready to suggest low prices. 10d. per oz. in large bulk being about the lowest for best *German* brands.

ROSE LEAVES—Continue very firm at 2s. 3d. to 2s. 4d. per lb. being asked for Dutch.

SALICINE—Is in good demand at 10s. 6d. per lb.

SALTPETRE.—*English*, refined 20s. per cwt. in casks, 1s. more in kegs.

SCAMMONY.—The new arrivals of *Virgin* have been put on the market, but no business has been done. Firsts are held for 27s. to

30s. per lb., and seconds at 20s. to 25s. per lb. *Resin* is in fair demand at 6s. 9d. per lb.

SENNA—Has been in demand since the auctions, resulting in some little business. Next week about 700 bales will be offered if goods are landed in time.

SHELLAC.—There is a stronger feeling on this market, and at Tuesday's auctions, although but little sold, an advance of 2s. per cwt. was marked. A total of 474 cases offered and 172 cases sold. *Second Orange*: Of 199 cases 106 sold, fair bright cakey to blocky at 64s. to 65s., fair red slightly matted at 65s., ordinary red cakey at 64s. *Garnet*: 119 cases offered and chiefly bought in, ruby cakey at 59s. to 60s., and Rangoon hard block at 56s.; only 2 cases flint block Rangoon sold at 54s. *Button*: Of 156 cases 66 sold, fair pale free at 82s., middling firsts at 75s. to 77s., fair seconds at 68s. to 69s. ordinary to fair circle 2's at 62s. to 66s., pale blocky at 76s., ordinary blocky firsts at 70s. to 71s. Since the auctions a fair business has been done at full rates.

SODA COMPOUNDS.—*Ash* firm, £5 5s. to £5 15s., according to strength. *Crystals* remain steady at 57s. 6d. per ton ex ship terms in barrels. *Bicarbonate* £7 10s. per ton for the 97 p.c., and 18s. 6d. per cwt. for the fully bicarbonated. *Bichromate* 2¾d. to 3d. per lb. *Bromide* firm at 2s. per lb. *Iodide* 11s. 7d. per lb. *Caustic* 70 per cent. £8 per ton. *Hyposulphite* 6s. to 8s. per cwt. as to brand. *Nitrate* £7 12s. 6d. for ordinary and £8 2s. 6d. per ton for refined.

SPICES (VARIOUS).—*Black Pepper* all bought in, Penang 4¾d., Singapore 4¾d., Tellicherry 4¾d. *White Pepper* mostly bought in, Siam 8½d., Singapore 8½d., 17 bags Penang sold at 7½d. *Chillies*: 28 bales Zanzibar, first-class sea-damaged bought in at 35s. *Capsicums*: 1 bale Natal bought in at 80s. *Cassia Lignea*: 438 boxes bought in 52s. to 56s.; 238 bales broken bought in at 33s. *Cinnamon*, of 109 packages Ceylon, 49 bags sold, chips 4½d. to 5d., quillings 7½d., leaf 7¾d., broken quill, 8½d. *Mace*: Only 4 cases Penang sold, good bright bold palish, partly wormy, at 2s. to 2s. 1d.; 1 case Bombay pickings sold at 1s. 3d., and 1 box Travancore at 1s. 5d. 22 packages West India sold at 1s. 5d. to 1s. 8d., common and broken 1s. 3d. to 1s. 4d. *Pimento* flat. Of 710 bags only 10 bags sold at 4½d., the rest being bought in at 4½d. to 4½d.

SUGAR OF LEAD.—*English* is quoted at 31s. per cwt., *Foreign* firm at 27s. 6d. per cwt.

SULPHATE OF COPPER—Firm on the spot at £15 15s. to £17 per ton, according to brand.

SULPHONAL—Is still obtainable in limited quantity at 7s. 3d. per lb. for bulk packing.

SULPHUR—Is firm, *Foreign*, roll 6s. 6d. per cwt., flowers 7s. per cwt. *English*, roll 8s. per cwt., flowers 11s. per cwt.

TURMERIC—Is firm but quiet. Sales of fair *Bengal* finger at 19s. per cwt.; fair *Chinese* finger, 17s. per cwt. *Madras* is scarce. *Cochin* split bulbs, 10s. 6d. per cwt.

Liverpool Market Report.

SEPTEMBER 21, 1898.

Trade has been rather slow of late, and though inquiries have been numerous, the actual amount of business done has scarcely been up to the average. In Seeds some good business has been concluded in American Linseed to arrive, but spot prices are such as to cause prospective buyers to hold off. Canaryseed continues quiet, commanding only slight attention. Oils generally maintain their price, and are selling steadily; slight advances may be noted in Linseed Oil and Spirits of Turpentine. Among the miscellaneous items of the week's sales are 60 boxes of Curaçoa Aloes, disposed of privately, and Gambia Beeswax at fair rates. Chemicals generally are reported dull.

ALOES.—60 boxes Curaçoa sold on private terms.

AMMONIA SALTS.—*Carbonate* 3d. per lb.; *Sulphate* is dearer, £10 3s. 9d. to £10 5s. per ton.

BEESWAX.—31 packages of Gambia found buyers at £6 12s. 6d. per cwt.

BLEACHING POWDER—Is quietly steady at £5 5s. to £5 15s. per ton.

CANARY SEED—The market is inactive, and sales are confined to small amounts of Turkish from store at 29s. per 464 lbs.

COPPERAS—Is firm at 39s. per ton for Lancashire and 37s. for Welsh.

COPPER SULPHATE—Is quoted at £16 15s. to £16 17s. 6d. per ton.

LINSEED.—High prices are expected by holders on the spot, but buyers will not come to terms. Small amounts of Larnaca

from store have been sold at 42s. per 416 lbs., whilst for future delivery good business has been done in American at 32s. 6d. *c.i.f.*

OILS (FIXED) AND SPIRITS.—*Castor* is improved in tone owing to better prices obtained for forward lots of Calcutta. French first pressure ex quay 3d. per lb., ex store 3½d. per lb., Madras 3½d. per lb. and Calcutta 3½d. per lb. *Olive* is in limited demand, and a small amount of Lisbon sold at £30 per tun. For shipment Seville is quoted at £28 10s. to £29 10s. per tun, and Malaga £30 10s. per tun cost and freight. *Linseed* of Liverpool pressure has advanced 3d. per cwt., and is now firmly held for 18s. 3d. to 18s. 6d. per cwt. *Cottonseed* is quiet at the easier rate of 15s. 9d. to 16s. per cwt. *Spirits of Turpentine* are firm and in fair demand at the improved price of 23s. per cwt.

POTASH SALTS.—*Bichromate* 3½d. per lb., *Chlorate* 3½d. to 3¾d. per lb.; *Cream of Tartar* is quiet at 75s. per cwt. for best white; *Pearlashes* have been selling at 34s. to 35s. per cwt.; *Potashes*, 1896, fetch 21s. 6d. per cwt., 1898, 22s. 6d. per cwt.; *Saltpetre* 21s. per cwt.

SODA SALTS.—*Bicarbonate* £6 15s. per ton.; *Borax* 14s. per cwt.; *Caustic*, 77 per cent., £7 15s.; 70 per cent., £7 1s. 3d. per ton; *Crystals* £2 17s. 6d.; *Nitrate* is fairly steady, with moderate amount of trade doing at 7s. 7½d. to 7s. 9d. per cwt.

Manchester Chemical Report.

SEPTEMBER 21, 1898.

The heavy chemical trade in the district continues unsettled, with much uncertainty as to the future. There is further movement in the direction of diminishing the output, and the United Alkali Co., Ltd., are closing another works at Widnes with this object in view. In Drysalteries and Anilines there is more movement here since the resumption of business in the manufacturing towns surrounding Manchester after the holidays. Arsenic is improving somewhat rapidly, and to-day is quoted £16 5s. to £16 10s. Sulphate of Copper is very steady at £17 per ton for best brands, delivered Manchester, while as high as £18 10s. is asked for spring delivery. Coal Tar Products continue dull, except Creosote and Pitch, which are a trifle higher than last week. Owing to the difficulty of procuring packages, Lancashire-made Green Copperas is 1s. to 1s. 6d. over last week. Yellow Prussiate is unchanged at 6¼d. to 7d., and sells well. Brown Acetate of Lime is steady at £5 5s. per ton, both Welsh and American, delivered Manchester. Aniline Oil quoted 5¼d., and Salt 4¼d.

Newcastle Chemical Report.

SEPTEMBER 20, 1898.

This market is now approaching its dull season, as the bulk of Baltic shipments of heavy goods has been well worked away. Prices unchanged and quoted as follows: Bleaching Powder £6 to £6 5s. Soda Crystals, basis price, 45s. Caustic Soda, 70 per cent., basis price, £7 to £7 5s. Soda Ash, 52 per cent., £4 5s. Alkali, 52 per cent., £5 5s. Sulphur, £5 per ton.

Personal.

MR. FRANK MAITLAND, chemist, 31, Chapel Street, Stonehouse, Plymouth, has been unanimously elected Deputy-Chairman of the Urban District Council, Stonehouse.

MR. G. D. ROBERTS, pharmaceutical chemist, has purchased the business of Mr. W. H. Mathew, pharmaceutical chemist, Saltash.

MR. F. A. WILCOCK, chemist and druggist, Bradford, has sold his business, and has entered into partnership with Mr. J. A. Mitchell, of 33, St. Mary's Road, Bradford.

MR. RICHARD BUTLER, chemist and druggist, of Drighlington, Yorks, has purchased the business of Mr. F. A. Wilcock, at 110, Great Horton Road, Bradford.

News in Brief.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.—The annual meeting of this Association was held on September 20 at the Victoria Hotel. A very satisfactory report was read by Mr. Pickard, after which the officers for the ensuing year were elected. The following gentlemen were voted into their respective offices: President, Mr. A. H. Waddington; vice-presidents, Mr. George Rimmington and Mr. S. N. Pickard; hon. sec, Mr. J. A. Mitchell; treasurer, Mr. R. W. Silson; council, Mr. J. O. Moulson, Mr. Rogerson, Mr. Dunn, Mr. Wilcock, Mr. Mackay, and Mr. Hanson. Mr. Waddington returned thanks for his election, and proposed a vote of thanks to Mr. Dunn, the retiring president. Mr. Mackay seconded, and it was thereupon carried unanimously.

ADULTERATED CAMPHORATED OIL.—At the North London Police Court, last week, Joseph Emsley, chemist and druggist (Mod. exam.), of High Street, Stoke Newington, was summoned for selling camphorated oil which was not made according to the formulary of the British Pharmacopœia. The summons was taken out by Mr. A. L. Bridge, inspector under the Food and Drugs Act for the Middlesex County Council; and he produced the analyst's certificate, which showed the mixture was made with cotton seed oil instead of olive oil. The defendant said cotton seed oil looked best, and was only about 6d. per gallon cheaper; but the prosecutor said cotton seed oil was only half the price of olive oil, and not nearly so good in its healing properties. The defendant added that it was an error of judgment on the part of his assistant. Fined £5, and 12s. 6d. costs.

GLASGOW SCHOOL OF PHARMACY.—On Thursday, September 8, the students of this School, together with Mr. Lothian, the Principal, visited the Longford Chemical Works of the Scottish Acid and Alkali Co. and Sir Wm. Baird's ironworks at Kilwinning. The party was conducted over the laboratories and vitriol factory of the Chemical Works, the various stages in the manufacture of sulphuric acid being elucidated in a most interesting manner. In the afternoon the ironworks were visited. These cover a large area, and are intersected by a network of railways. The party was hoisted to the top of the blast furnaces and saw them charged with ore, limestone, and coal by the cup and cone arrangement. The tapping of two of the furnaces was then seen. The gases from the blast furnaces are passed through about five miles of condensers and the condensation products—tar, ammonia, etc.—collected. The whole plant is of the most modern construction, and all the operations are conducted with scientific precision and clockwork regularity night and day. The return journey was enlivened with song, and altogether this proved a most enjoyable outing.

MESSRS. J. H. SMITH & Co.'s Flydooomo Works, Cartergate, Newark, have been visited by a representative of the *Newark Herald*, and in an interesting account of the visit it is stated that the advantage of "Flydooomo" over other kinds of fly-papers is that "the special preparation used is most effectual for the purpose"; then, "it is nicely wrapped up to hand over the counter," and "the sticky stuff is very tenacious and a thin coating is sufficient." The department for making summer drinks, such as Champagne Pop Powder and extract of herbs, in powder and in bottles, was also visited.

EDINBURGH DISTRICT CHEMISTS' GOLF CLUB.—The fourth competition this season for the "Gibson Handicap Medal" was held recently over the Braids course, with the following results: 1, Mr. Geo. Robertson, 106-14 = 92; 2 and 3, Mr. W. C. Baker, 106-12 = 94, Mr. A. M. Stewart, 101-7 = 94. The annual Autumn Holiday Prize Competition was held at Carnoustie on Monday, 19th inst., in splendid weather, with the following results: "Gibson Medal" and 1st prize, presented by Mr. D. N. Mylie, Mr. W. C. Baker; 2nd prize, Mr. H. D. Alexander; 3rd prize, Mr. George Robertson. After dining at the Panmure Arms, a hole competition, Captain *versus* Vice-Captain, was played, resulting in favour of the former team by 4 holes. Fourteen members were present.

THE SALE OF "FEMALE MEDICINES."—At an inquiry held at Milford on Monday, September 5, respecting the death of Sarah Ann Courtnadge (24), a married woman of Oxted Green, it transpired

that she had taken advertised female pills whilst enceinte, with the result that she died suddenly. At the coroner's request, Dr. A. P. Luff, of St. Mary's Hospital, who was instructed by the Home Office and gave evidence as to the composition of the pills, made a statement to the effect that there is no drug that can be relied upon to procure abortion. Certain drugs were sold by certain people, which in the majority of cases had no effect whatever, and which in a few cases only procured abortion at the expense of the life of the woman. The jury returned a verdict "that the deceased died of septicæmia and septic peritonitis, produced by abortion," and added a rider urging that legislation is necessary to prevent the selling of such drugs, put up and officially stamped as "patent" medicines.

REMEDY FOR BUGS.—Acetic acid injected by means of a glass syringe into all cracks and crannies is said to be an excellent remedy against these troublesome pests, as a drop of acetic acid infallibly kills a whole nest of them.—*Practitioner*, lxi., 111, July, 1898.

A CURIOUS LAWSUIT.—A Vienna specialist received 35 dollars for ridding a man of a tapeworm. Afterwards, the patient thought he had paid too much, and demanded 20 dollars back. The doctor demurred and was sued. He could not, he argued, put the tapeworm back from where he took it, and if he could he was not sure that either the patient or the law would let him; besides, the tapeworm was dead. The patient complained that it was only a short one. The doctor said he could not find any precedent for removing tapeworms at so much per yard, finally the doctor gave the patient back 2.50 dollars.—*Literary Digest*.

Trade Notes.

MESSRS. G. VAN ABBOTT AND SONS intimate that on and after September 19, 1898, all orders should be forwarded to Baden Place, Crosby Row, Borough, London, S.E.

PARKE'S DRUG STORES, LIMITED.—The Directors of this Company will recommend at the annual meeting of the shareholders to be held on the 29th inst., the payment of a dividend of $4\frac{1}{2}$ per cent. (free of income tax) on the Ordinary shares for the last half-year, making with the interim dividend paid on March 30, $7\frac{1}{2}$ per cent. for the year, carrying to Depreciation Fund £505 10s. 6d., and Reserve Fund £800.

PHOTOGRAPHIC APPLIANCES.—Mr. W. Tylar, 41, High Street, Aston, Birmingham, sends a copy of his new catalogue of specialties in photographic appliances, etc. The catalogue is beautifully got up, and contains new blocks of pictures taken by the Tit-bit camera, several specialties reproduced in the natural colours, and a good specimen of colour photography. The list has been carefully revised, new goods added, and the whole brought thoroughly up-to-date, while a few useful hints for beginners are given. Every dealer in photographic goods should possess a copy of this work.

Marriage.

JACK—CABLES.—At 32, Kyd Street, on the 14th inst., by the Rev. Henry Angus, D.D., assisted by the Rev. J. E. MacDougall, James Jack, F.L.S., pharmaceutical chemist, to Janet, second daughter of the late Patrick Cables, iron merchant and shipowner.

Partnerships Dissolved.

(From the London Gazette.)

Wm. Hedley and S. Galbraith, Mineral Water Manufacturers, Langley Bridge, Brandon, Durham. Debts will be received and paid by Wm. Hedley, who will continue the business in his own name.

C. Aggio and A. T. Copeland, Veterinary Surgeons. Debts will be received and paid by A. T. Copeland.

John Birch and W. Wademan, Aërated Water Manufacturers, Bare, Lancaster.

J. H. Tuff and A. A. Argent, Patent Medicine Vendors, 66, Fenchurch Street, E.C. Debts will be received and paid by J. H. Tuff, who will continue the business under the old style.

Publications Received.

PHARMAKOLOGISCHES ÜBER EINIGE MORPHINDERIVATE. Von PROFESSOR DR. MED. H. DRESER, in Elberfeld.

KLINISCHE VERSUCHE ÜBER DIE WIRKUNG UND ANWENDUNG DES HEROINS. Von DR. MED. FLORET, in Elberfeld. Reprinted from the *Therapeutische Monatshefte*. Berlin: Julius Springer. From the Publisher.

FORMULAIRE HYPODERMIQUE ET OPTHÉRAPIQUE. Par DR. E. BOISSON ET J. MOUSNIER. Pp. 261. Price 3 fr. Paris: J. B. Baillière et fils, 19, Rue Hautefeuille, Près du Boulevard Saint-Germain. 1899. From the Publishers.

UNIVERSITY COLLEGE, BRISTOL, CALENDAR, for the season 1898-99. Pp. 280. Bristol: J. W. Arrowsmith, Quay Street. 1898. From the Secretary.

A POCKET DICTIONARY OF HYGIENE. By C. T. KINGZETT, F.I.C., and D. HOMFRAY, B.Sc. Pp. 104. Price, 2s. 6d. London: Baillière, Tindall and Cox, 1898. From the Authors.

ANATOMISCHER ATLAS DER PHARMAKOLOGIE UND NAHRUNGSMITTELKUNDE. Von Dr. A. TSCHIRCH und Dr. O. OESTERLE. Lieferung 14. Price 1s. 6d. London: Messrs. Williams & Norgate, 14, Henrietta Street, Covent Garden. 1898. From the Publishers.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

WANTED.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

Good Formulæ wanted for Cough Balsam, Neuralgia Mixture, Quinine and Iron Tonic, Skin Emollientine, or book of good reliable recipes, but must be good.—"Reliable," Pharm. Journ. Office, 5, Serle Street, W.C.

Erasmic Soap, Dent's Gum, and Frog in the Throat; state quantity and price, carriage paid, to—Eastman, Forest Lane, Stratford.

Two 2-gall. Swan-neck Carboys, cut glass stoppers, perfume stock bottles, lozenge jars, dispensing scales, etc., wanted cheap.—4, Blannel Street, Burnley.

OFFERED.

Miscellaneous.

Photographic mounts, Bristol cartes, 3s.; G.B.E., 10s.; cabinets, 10s.; G.B.E., 15s.; quarter-plates, 6s.; half-plates, 12s. 1000; plate-sunk mounts, 12 by 10, 40s. 1000. Samples free.—Edward Peck, East Dereham, Norfolk.

Magic Lanterns, second-hand; triples and binials; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Six Pieces Perfume Ribbon, each 36 yards long (216 yards), assorted colours; post free, 5s.—Edward Peck, East Dereham, Norfolk.

74 Microscope Slides, 2s. 3d. per dozen, or 12s. the lot, or exchange unmounted objects, approval.—Lintin, 170, Freedom Road, Sheffield.

For Sale Cheap.—Dissecting case, cost 21s., never used, 10s., also 6 2-minute and 3 ½-minute English-made clinicals, 14s., approval.—Howard, 3, Church Road, Wimbledon, Surrey.

Water Bed, full size (practically new), £2. Indiarubber female urinal, artificial pin leg, and spinal apparatus with jury mast, 10s. the three.—Chemicus, 88, Sussex Road, Holloway.

Bath Chair, new, used once, cost seven guineas. What offers.—Cocks, chemist, Stonehouse, Plymouth.

What offers for *Chemist and Druggist*, 1870, 1872, 1877, also 1883 to 1888 inclusive, and 1891 to 1897 inclusive.—Smith, Chemist, Stroud.

Two 2-gall. swan-necked carboys (York glass); 15-gall. copper syrup-pan; what offers, cash or saleable patents?—Brigham, Chemist, Pocklington.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs Abbott, Allan, Baldock, Brandis, Brown, Cocks, Dell, Dowzard, Duncan, Elliman, Ferrall, Fielding, Fordred, Frizell, Gadd, Giles, Gillmour, Glyn-Jones, Hill, Hogg, Jack, James, Jarvis, Jones, Kingzett, Kinton, Kirkby, Kraemer, Lee, Leonard, Lindsey, Llovd, Martin, Mitchell, Moss, Orton, Pa'ke, Parry, Parson, Poppelreuter, Roberts, Robinson, Sharp, Skeats, Summers, Whiaeray, White, Wilcock, Willmot, Wilson.

ROYAL PHOTOGRAPHIC SOCIETY.

The forty-third annual Exhibition of the Royal Photographic Society is now being held at the Gallery of the Royal Water Colour Society, 5A, Pall Mall East, and will remain open to the public daily until November 12 next. It will also be open on Monday, Wednesday, and Saturday evenings, from 7 till 10, and on each evening there will be a display of lantern slides.

The private view, which took place on the morning of Saturday, September 24, was well attended, and that time-honoured institution, the *soirée*, which was held the same evening, was, as usual an extremely pleasant function. At these gatherings the country membership is always well represented, and as the Society extends an hospitable welcome to almost everyone of light and leading in photography and its allied sciences and arts, which is largely availed of, the occasion is an enjoyable as well as important feature in the Society's annual programme. The President, the Earl of Crawford, K.T., F.R.S., was unavoidably absent, but the majority of the officers and members of Council were present to receive the members and guests.

On entering the gallery one's first impression is that the aspect is a sombre one. This seems due, in the first place, to the dark tone of the curtains which divide the wall into panels and the festoons of the same material which are draped around the room. But on studying the matter the effect is in reality principally attributable to the low tone which the present fashion decrees as that most acceptable in a photograph, and the fashion of framing the picture close up without a mount, and frequently without even the relief of a gilt line or slip. With the pictures they had to deal with, the Hanging Committee of the Exhibition undoubtedly did right in keeping the background extremely subdued, and their wisdom becomes manifest when the time comes for studying the pictures individually. When one becomes acclimatised, as it were, to the prevailing low tone the aspect is far from unpleasing.

A noticeable feature of this year's Exhibition is an increase in the average size of the pictures. The catalogue gives no information whether the results on the walls are enlargements or are printed directly from the original negatives, but that in a large number of cases, perhaps even the majority of cases, they are the former, there is little room to doubt. The processes of enlarging, however, are now so skilfully carried out, and the prevailing methods of treatment lend themselves so readily to an enlarged image that the matter is not an important one, especially as the advance in general excellence which in recent times each year's Exhibition has shown over its predecessor is distinctly maintained. There are very few pictures that stand out from the rest, but that is because the average quality is so high; at the same time, there is an almost complete absence of mere padding. Comparing mentally the worst photographs in the present Exhibition with those of even last year's, and this is by no means an unreasonable test, the advance made is most marked.

Following the custom of last year, the majority of the portraits are hung together in one panel, and an opportunity is afforded of studying them as a whole. There is an almost complete absence of the kind of thing the ordinary professional portraitist aims at, the kind of thing he puts in his show-case and decorates his reception room with, and believes the public admires. Indeed, there is but one specimen of such work, and a very good one of its kind it is, but on these walls it strikes quite a jarring note. The other extreme, which might be termed the photographic freak, is not, however, much in evidence. One is apt to wonder whether anyone can find a better excuse for C. W. Richardson's "Study of a Head" than that it is a failure in what may have been an attempt to do something out of the common, and one cannot help smiling at Oscar Hardee's efforts at eccentricity, "A Profile Study," which represents a face cut down vertically in front of the ear, and "A Portrait of a Lady" who has evidently been scalped. G. Lafayette's study of a girl with a violin, too, strains after effect in a way that will not appeal to everyone, but the bulk of the portraits will repay study. Complete success has not been attained in every case, of course, and one can find many minor faults, but at least we have freedom from the bad traditions of the skylight which have always hampered the professional photographer's progress, and a praiseworthy attempt at more refined treatment, with greater simplicity and breadth of effect which cannot fail to bear good fruit when the public realise something of what photography is capable of.

John Stuart, in "A Portrait of a Gentleman" (42), shows a good

example of treatment. His subject is certainly not an ideal one, but he has succeeded by avoiding anything like a straining after effect. By treating a somewhat commonplace looking subject in a very simple manner, a picture, which is anything but commonplace, results. His portrait of a lady, though a far more attractive subject, is not so meritorious as a picture. R. W. Robinson has done well. His portrait group—"Mother with Children"—is an admirable example, and the "Light of Morning," which is perhaps a figure subject rather than a portrait, will also please many. "An Interesting Article," by N. S. Kay, is a good portrait study, which is also interesting as a picture. "Paulina," by W. M. Warneuke, is gracefully treated, and the works of Harold Baker, who, as one of the judges, is not competing, P. S. Lankester, H. W. Barnett, C. Sweet, and Miss Muriel Bell should be noticed, though the latter is extremely unfortunate in her choice of frames.

Among the figure subjects three pictures of considerable size by Th. and O. Hofmeister, of Homburg, claim attention from the boldness of their treatment, and the interest in them is increased by the fact that the prints are in gum bichromate. "Calling the Ferryman," by John E. Dumont, is also characterised by similar breadth of treatment.

The architectural pictures struck us as being singularly good as a whole. They are all hung together, so that comparison is easy, and, at the same time, this arrangement emphasises the fact that there is almost as much scope for originality of treatment in architectural subjects as in others. There are views of the same place, hung almost side by side, which are more unlike than most could imagine two views of the same place could be. There has been some high-falutin talk recently about placing the architectural pictures in the technical section. The only sense in the suggestion lies in the fact that architectural subjects require more technical skill than most others.

There are but few flower pictures, too few to be worth mentioning, but for those of Dr. G. McDonald, which are very fine.

Landscape subjects naturally are in the majority. Comparing this year's work with that of last year there is no great change of opinion indicated as to methods of treatment. The pictures as a whole are very similar, but the average is better. It seems strange to say so now-a-days, but we notice an improvement in technique. We do not mean that the biting sharp, hard, shiny thing whose absence some few are still lamenting, is upon us again, but that more are beginning to recognise that broad effects can be obtained without aggressive fuzziness, that clouds printed over the landscape are an offence, and that the spotting of the prints is not pleasing when it is the most noticeable feature. It would be difficult to discover a technical defect in W. Thomas's picture "Woodland Graces," while as a picture it will appeal to all varieties of critics. Horsley Hinton seems to have strayed into the birch and bracken, too. His pictures are good, but a great departure from his usual style. Viscount Maitland has made very distinct progress in his work, and J. Page Croft has also come well to the front. We do not like J. C. S. Mummery's work so well as some we have seen, and W. D. Welford's is too palpably a plagiarism to be praiseworthy. W. A. Fraser, who sends two pictures of New York by night, *à la* Paul Martin, receives a medal, but this kind of work after it ceases to be a novelty will take its natural place. One of the most admired pictures is a sea-piece by C. F. Inston, and A. Cochrane's two pictures, a "Study of Sheep" and "Going Milking," are both worth studying. W. J. Warren's charming little snap-shots of "London in December" have been distinguished by a medal.

The technical photographs are less numerous than usual. A medal has been awarded to W. Edwin Brewerton for a study of still life, printed in three colours from three negatives taken through screens. The blue print is made upon ferro-prussiate paper, the other colours being obtained by sensitising the blue print successively with yellow and red gum bichromate in transparent colours, the colours being printed, of course, each from its own negative. The result shown is passable, but does not arouse enthusiasm. It is probable it appealed to the judges more on account of the ingenuity and originality of the method of its production than on æsthetic grounds. Thos. Manly shows some examples of Ozotype printing in pigment, described as being a process of carbon printing without actinometer, transfer, or safe edge, and in which the pigmented gelatin does not come in contact with a chromic salt. The results are in no way distinguishable from carbon prints made in the usual way. There are also examples of Ozotype printing with aniline colours, which are

interesting. Messrs. Elliott and Son's enlargement in carbon of "St. George's Chapel, Windsor," from a negative by Bulbeck, is a *tour de force*. At a rough estimation its size is 8 feet by 5. A close examination shows that it is in reality made up of four prints, but the difficulties which occur under such circumstances have been so skilfully overcome that it requires minute attention to detect how it is done. Any one who has attempted to join up prints to form a panoramic view will appreciate what these difficulties are. Dr. Hall Edward's X-ray photographs are interesting, perhaps, rather from the sensationalism of the subjects than from their showing any great advance in this application of photography. That entitled "Victims of the Toy Pistol," from the number of examples given, points a moral with regard to the necessity for greater restrictions on the sale of these dangerous toys. The Radiograph through chest of child showing the position in the gullet of a shilling and a sixpence, which had been accidentally swallowed, has the agony piled up by the exhibition of the identical coins in the frame. There are reproductions of pictures by F. Hollyer and by the Autotype Co., and several exhibitors send work which will appeal to the naturalist, the architect, and others.

The lantern slides are not numerous, but we think they are unusually good in quality. The sets by H. T. Malby, illustrating the changes of form in clouds at sunset, the negatives being taken at intervals of three minutes, are particularly interesting. C. Dockree's architectural slides are exceedingly good, and several exhibitors send flower studies of great merit.

In recent years the display of apparatus has not formed a very important part of the Exhibition. The rule of the Society that each exhibit must be a novelty, or must have some point of novelty about it, keeps it down to reasonable limits. Before referring to the apparatus itself we should say something about Col. J. Waterhouse's specimens of pictures on Daguerreotype plates, orthochromatised and treated with ordinary developers, alkaline and acid, which are shown on the apparatus table. In these experiments Col. Waterhouse, with characteristic originality, has taken up a line of his own. The Daguerreotype process, for ordinary purposes, is as dead as the proverbial door-nail, but there are some scientific applications of photography where no process is more suitable or would be more suitable if some of its difficulties as it has hitherto been worked were removed. If Col. Waterhouse should succeed in simplifying the process he will deserve the thanks of the community.

The most imposing piece of apparatus is Stringer's photomicrographic apparatus exhibited by Messrs. Watson and Son, in which the whole condensing system is arranged to slide upon one rectangular bar firmly attached to a base board. The optical system, by which the rays from an oxyhydrogen jet falling upon a condenser of ordinary size are eventually parallelised, the parallel beam being of exactly the size to fill the substage condenser, seems to be an admirable one. Messrs. Watson and Sons also have a combination studio, copying and enlarging camera and stand, which is a well thought-out piece of apparatus. Those interested in the hand camera will find here plenty to amuse them. The Eastman Company send a selection of their new Kodaks, which, as they will take plates as well as films, may be expected to make their way into the regions of serious photography. Adams and Co. show the "Adams de Luxe" hand camera, and the "Tella," designed to take 50 cut films without sheaths or other backing. We were shown the working of this and tried it for ourselves. It is a marvel of ingenuity. Another hand camera taking cut films is the Fram, shown by W. Watson and Sons. The Frena shown seems to base its claim to be there on some difference in the construction of the lens used. J. Illingworth and Co. also show hand cameras.

These notes should not be closed without a word of praise for the catalogue, which is illustrated by some thirty full-page blocks in half-tone from the pictures, and in addition, there are numerous pen-and-ink sketches among the letterpress. Apart from its usefulness as a catalogue, as a picture-book it is worth more than the sixpence charged for it.

The judges were: In the Art Section, Harold Baker, Lt.-Col. J. Gale, A. Horsley Hinton, J. B. B. Wellington, W. L. Wyllie, A.R.A. In the Technical Section: T. Bolas, F.I.C., F.C.S., J. Bulbeck, Chapman Jones, F.I.C., F.C.S. The awards were: Art Section, C. S. Baynton, "Norwich Cathedral"; W. A. Fraser, "A Wet Night in New York"; G. E. Thompson, "Threshing Wheat, Le Puy, France"; W. J. Warren, "London in December"; and Miss Mathilde Neil, "Polly." Technical Section: W. E. Brewerton, "Still-Life," in three colours.

PHARMACY IN IRELAND.

[From our Dublin Correspondent.]

AS I ANTICIPATED IN MY LAST LETTER the candidates for the Council of the Pharmaceutical Society of Ireland have proved to be what is known in sporting circles as "good starters." All the outgoing councillors, save Dr. Merrin, have gone strongly to the poll, and at the last moment their number was reinforced by the addition of Mr. R. W. McKnight, Belfast, whose retirement from the precincts of Mount Street some time ago was the subject of mixed comment. Mr. McKnight, like an old war-horse, sniffed the battle afar off, and despite the gauntlet of company pharmacy thrown down by the seven apostles, threw himself into the breach as became a (Mac) Knight, determined to aid the weaker side and to give his company as *un bon camarade* to his fellow candidates. As the list now stands there are eleven candidates for seven vacancies, and these may be divided into three classes, namely, anti-company, company, and independent. My readers can fit the cap on those concerned. I have already described the "Richmonds," but a word in reference to Mr. McKnight may not be out of place. This gentleman represents no inconsiderable section of the Ulster pharmaceutical craft. For a goodly period he has thrown himself into matters of progress in things affecting the well-being of the trade generally. An active member of the Northern Pharmaceutical Association his name has become a "household word" in Belfast, and to his excellent management of the Ulster Chemists, Limited, may be ascribed the present flourishing condition of that recently floated company. In Mr. McKnight the "perfected number" have a strong adversary, and as his resignation from the Council was perhaps unpremeditated, his action in seeking re-election evinces a laudable desire to serve the Society which it would be a pity to check, more especially under existing circumstances.

SOMEONE HAS BEEN TRYING TO FIND OUT who is the Councillor referred to as sitting on the hedge, and I have been asked to be a little more explicit in my description of that gentleman. I am sorry I cannot gratify that perhaps natural curiosity, but sufficient to say that "Mr. Doubting," as our good old friend Bunyon would call him, has since bravely gone to the hustings, and I shall be very pleased to congratulate him on his return at the head of the list. With regard to Dr. Merrin, who does not seek re-election, it is right to say that his retirement has nothing to do with pharmaceutical politics, and for some time past it has been an open secret that the doctor was only awaiting the expiration of his term of office to bid farewell to his fellow Councillors. The fact is that Dr. Merrin, since he qualified as a physician and surgeon, has gone so rapidly to the front in medical circles, and his *clientèle* having extended proportionately, he has really no spare time at his disposal, and would fain occupy his very few hours of leisure in preparing for further honours in the healing art. I may add in parentheses that Dr. Merrin has just moved into his new professional residence in Harcourt Street, and *on dit* it is not unlikely that the genial doctor will shortly blossom forth as a Fellow of the Royal College of Physicians and Surgeons in Ireland. He will, I understand, still keep on his medical hall in Lower Camden Street, as its closing up would be a great inconvenience to the public.

GENERALLY SPEAKING, the combination of physician and pharmacist is uncommon in Dublin; not that there are few dually qualified in chemistry and chirurgery, but of those who keep both irons hot simultaneously the total might readily be counted on one's five fingers; indeed, so far as I am aware, there are only three gentlemen in the city who keep open shop as pharmacists and practise medicine at one and the same time, and these three are, it happens, doing excellently in their respective districts. The explanation of the scarcity of medical pharmacists lies in the fact that the medical profession proper—those who confine themselves to medicine and surgery, look with no favourable eye on their dually qualified brethren who prescribe and compound alternatively, and, whether accidentally or otherwise, very few medical prescriptions outside those written by the owners of the surgeries reach the laboratories of those concerned. The feeling is expressed by our French neighbours in the axiom *chacun à son métier*, and they say one cannot be a successful chemist and practising physician at the same time, but the contrary is proved in the case of Dr. Merrin and of Drs. Leybourne and Clendining, of Rathmines,

two old pharmacists' assistants, by the way, who do a great amount of good to the poorer classes of patients whose means do not admit of them visiting the half-guinea practitioner, and who hesitate to pauperise themselves by seeking free advice and medicine at the local dispensaries.

THIS BRINGS ME TO THE QUESTION OF CHEMISTS and their relations with the public. In Dublin there is little, if any, counter prescribing by chemists, and as a general rule the pharmacist will not diagnose an ailment or recommend therefor any particular medicine, although he may be in full possession of the knowledge of the remedy sought. But circumstances alter cases, and inasmuch as all things being lawful, all things are not expedient, the paraphrase of this more accurately suits the chemist than perhaps any other class of trader. A few days ago, in the course of an inquest held on the body of a man who obtained from a chemist a most innocent preparation for relieving stomachic pains, and who brought about his end by an overdose of bad whiskey, it transpired that the deceased had obtained from the pharmacist a bottle of medicine, and at once the coroner (himself a medical man) proceeded to put the chemist through his facings, winding up with a bitter complaint against men who had no medical qualifications being allowed to prescribe for the public, and who, he said, if so permitted, would constitute a menace and a danger to the community. It was notorious, he added, that chemists who had no diplomas were daily performing the work of the medical faculty on an extensive scale, in order to attract business to their respective pharmacies. This sapient coroner may be a very clever physician, but he is not a pharmacist, and if rumour speaks true his knowledge of practical pharmacy is not sufficiently extensive to enable him to compete with the average third year apprentice. It is well known that it is not the general practice of the public to run to a doctor on account of every trifling ailment.

THE FOUNDATION OF MEDICAL SCIENCE is experience, and many a chemist who has never set foot as a student inside a college of medicine knows as much about the treatment of common diseases as most doctors, and, without speaking disparagingly of the latter, is less interested in the coin or kudos attaching to the cure. It is conceded on broad principles that it is wrong for chemists to diagnose obscure or uncertain maladies, or to offer advice or compound medicine therefor; but I do think, from my experience of pharmacists, that as a class they do much good in a quiet unostentatious manner by kindly advice given gratuitously to the public—generally to the effect that a doctor should be consulted, and in other similar directions acting as good Samaritans in relieving poor humanity as far as lies consistently in their power. It is a common thing to hear the chemist asked what is good for so and so, and on replying to be asked to supply the article named. The "order" rarely exceeds one or two pence, and more frequently is not charged for at all, as, for example, a few drops of tincture of opium to relieve an aching tooth or a small dose of medicine to assist digestion, or perhaps a restorative in the case of sudden weakness or the accident of the moment, and this, forsooth, is the apprehended danger and public menace. It is said that the sin of wrong-doing consists in being found out, and the sweeping condemnation to the contrary. I hold that the skilled pharmacist is as well able to prescribe for one half the cases treated by the medical faculty as the, in many cases, fledgling physician, who has to consult his Roscoe or Martindale before writing out a simple prescription, and in this opinion I am supported by not a few who have grown grey in pharmacy, but whose hands are tied by the shibboleth of surgical etiquette hallowed by custom into a law. One is not always able to find a doctor, but the chemist's shop can always be located, and if a mixture curing the ailment be procured therefrom the same end is gained, except, perhaps, that the doctor is half a sovereign the poorer and the chemist a couple of *denarii* the richer.

THE FOLLOWING DRUG AND MEDICINE CONTRACTS are announced as having been made:—Messrs. John Clarke and Co., Belfast, to supply the Dungannon Union; Leslie and Co., Dublin, to supply the Ardee Poor Law Guardians; and Boileau and Boyd, Dublin, to supply the Newcastle West Board. The last-named contract was very keenly contested, no fewer than eight tenders having been received.

News in Brief.

THERAPEUTIC ACTIVITY OF ERGOT.—In the last line of the note on this subject, printed at page 345, last week, for "two thousand pounds" read "twenty thousand pounds." Messrs. Parke, Davis and Co., who make "ergot aseptic," a preparation referred to in the same note, ask us to state that they claim no proprietary rights in the preparation.

PROFESSOR J. NORMAN COLLIE and Mr. Woolley have returned from their trip to the Rocky Mountains, where they have been climbing and exploring for the past two years. Their object this year was to climb Mounts Brown and Hooker. Professor Collie was in the Himalayas with Mr. Mummery when the latter met his death, and Mr. Woolley's name is associated with much pioneer work in the Caucasus. In the Rockies they have discovered extensive snowfields and a group of peaks, both of which they have named after Mr. Douglas Freshfield. A full account of the trip will be communicated to the Alpine Club.

DRUG STORES AND DISPENSING.—According to the *Times*, at the Nottingham Guildhall, on September 23, an assistant of Messrs. Boots (Limited) was summoned under the Food and Drugs Acts for selling a compounded drug composed of potassium iodine and syrup of ginger, which was deficient to the extent of 10 per cent. in potassium iodine. Dr. Boobbyer, medical officer of health, proved writing the prescription and making the analysis. The deficiency might be detrimental to a patient. A fine of 20s., including costs, was inflicted. Writing to the *Times* of Monday last, Mr. Richard Bremridge, Registrar of the Pharmaceutical Society of Great Britain, refers to the paragraph referring to the above prosecution, and points out that in that report reference is made to "Messrs. Boots (Limited), chemists and druggists." He informs the editor, however, that the name of "Boot" or "Boots" does not appear on the register of persons entitled to keep open shop as chemists and druggists in Great Britain, which it is his duty to keep as Registrar, appointed under the provisions of the Pharmacy Act, 1868.

THE EUCALYPTUS GLOBULUS IN CORNWALL.—According to the *West Briton*, there is now growing in the garden of Mr. Charles H. Hext, at Polgwin, a specimen of the *Eucalyptus globulus* commonly known as the "Blue Gum Tree," showing quite a large number of seeds. For a tree of this kind to bloom and seed in the district is exceedingly rare, the gardener, Mr. Frank Polkinghorne, never having come across a specimen, either in the neighbourhood or elsewhere. "The seeds are carried on stems, reaching a height of twenty feet, the leaves of this portion of the tree being of a different shape to those on the ordinary branches, being longer and narrower, with the peculiar characteristic of hanging, not as ordinary leaves, with one side to the sky and the other side to the earth, but with faces vertical like the long feathers of a cock's tail."

THE COMPOSITION OF GREGORY'S POWDER.—At Lambeth Police Court, on September 22, Henry Thomas Hines, of Lucas Road, Newington, was summoned, at the instance of the Newington Vestry, for selling, to the prejudice of the purchaser, a certain drug, viz., Gregory's Powder, which was not of the nature, substance, and quality of the article demanded by the purchaser. Inspector Selby, one of the officers of the vestry, sent to the defendant's shop and purchased a sample of Gregory's Powder. The sample was submitted to the public analyst, who certified its constituents to be as follows: Rhubarb and ginger, 36.6; magnesia, 39.8, and carbonate of magnesia, 23.6. In a note appended to his certificate the analyst said, "According to the British Pharmacopœia Gregory's Powder should be made with magnesia, rhubarb, and ginger only, and should not contain any of the carbonate of magnesia, which is a cheaper article than the magnesia prescribed. Magnesia is magnesium oxide." The defendant explained that he had only had the business a few weeks at the time the purchase was made, and that the powder he sold was some he had taken over from the previous owner of the business. He was asked for two ounces of the powder, but was only able to supply one ounce, that being all he had in stock. Mr. Shiel ordered the defendant to pay a fine of 20s., and costs.

CHEMISTS' ASSISTANTS' UNION.—The first annual general meeting of this newly-formed Union will be held at the Horse Shoe Hotel on Thursday, October 6, at 9 p.m. Addresses will be delivered by Dr. Henry Dutch and Mr. Glyn-Jones. Amongst those who have promised to attend we notice the names of Dr. C. Taylor, Messrs. E. A. Holloway, A. H. Soloman, C. Islip, N. Smith, H. Lloyd, and many others well known in the trade. All assistants are invited to be present.

SOCIAL MEETING AND PRESENTATION AT EDINBURGH.—On September 23, the employes of Messrs. Raimes, Clark and Co., Edinburgh, held their annual social and dance in Lodge Trafalgar Hall, Leith. Mr. W. A. Davies presided, having Mrs. Clark on his right, and Mr. Clark on his left, Messrs. G. Radford and W. J. B. Halley being croupiers. After an excellent tea, Mr. Davies in a few appropriate words welcomed the large company, and expressed his pleasure at having Mr. and Mrs. Clark present. Thereafter a capital programme of music and song was carried through, the performers all being employes or their wives and daughters. The mandoline duet by Misses Davies and Halley, and the cultured singing of Miss Coates were much appreciated. The comic songs of Messrs. Donaldson ("Graham Courtney") and Hunter caused great amusement. Among the other performers were Messrs. Cunningham, Davidson, J. H. Davies, and J. P. Gibb, Mrs. Jamieson, and Misses Amos, G. Davison, and Hughson. Miss Davies was accompanist. During and interval in the programme a presentation was made to Mr. and Mrs. Clark from the employes on the occasion of their marriage. This took the form of a massive silver loving cup on an ebony plinth, a replica of one presented to Sir Andrew McDonald, ex-Lord Provost of Edinburgh. In most felicitous terms Mr. W. A. Davies made the presentation, and wished in the name of the staff long life, health, and prosperity to Mr. and Mrs. Clark. In the course of his reply Mr. Clark, in thanking the employes for their very handsome gift to him, which he said would be considered an heirloom in his family, referred to the loyal manner in which they served the firm, and hoped the same cordial relations would always subsist between them. After votes of thanks to the chairman, croupiers, and committee, dancing was engaged in by seventy couples, and kept up with unabated vigour till 4.30 a.m. The cup is in the style of the early part of the seventeenth century and closely reproduces the form then in fashion, a fine example of which may be found in the pair of small cups, bearing the date mark 1682, the property of George Heriot's Hospital, and now in the keeping of the Lord Provost, as chairman of the governors. While adhering to the quaint form shown in these, the ornament adopted is admirably suited to the larger scale on which this cup is made, and consists of bold curved fluting carried round the lower parts and a raised band of spiral work above, each side having a large oval shield, surrounded with rich, effective mantling of antique scrollwork. The cup, which has two handles of simple but elegant form, stands 7½ inches high, and is mounted on an ebony plinth. One shield bears the following inscription: "Presented to Mr. and Mrs. Clark, on the occasion of their marriage, by the employes of Messrs. Raimes, Clark and Co., Edinburgh, August 24, 1898." The other shield is engraved with Mr. Clark's monogram. It has been manufactured and supplied by Mr. James Aitchison, silversmith to the Queen, 80, Princes Street, Edinburgh.

ROYAL PHOTOGRAPHIC SOCIETY.—On Saturday, September 24, the *soirée*, which inaugurates the annual exhibition of the Royal Photographic Society, was held in the gallery of the Royal Society of Painters in Water Colours, 5A, Pall Mall East. There was a very large attendance, nearly 600 ladies and gentlemen availing themselves of the invitations of the President and Council. In the unavoidable absence of the President of the Society, the Earl of Crawford, the guests were received by Mr. Chapman Jones, Vice-President. Amongst others of the officers and Council present were Sir H. Trueman Wood and Mr. John Spiller (past Presidents), Mr. G. Scamell, Colonel J. Waterhouse, Mr. R. Child Bayley, Mr. Thomas Bedding, Mr. T. Bolas, Mr. C. H. Bothamley, Mr. F. A. Bridge, Mr. W. E. Debenham, Mr. A. Haddon, Mr. A. Horsley Hinton, Mr. A. Mackie, Mr. J. W. Marchant, Mr. W. Thomas, Mr. H. Snowden Ward, and Mr. Leon Warneke. Professor Meldola was also present during the evening. A report of the exhibition will be found on another page in this issue.

MESSRS. AYRTON AND SAUNDERS, Hanover Street, Liverpool, have just completed the remodelling of the dispensing and compounding department of Messrs. Backhouse's pharmacy, Dundalk, which is now claimed to be on a par with any pharmacy in the country for comfort and elegance.

EDINBURGH PHARMACY ATHLETIC CLUB.—The last of the series of 50 yards swimming handicaps was brought off in Dalry-Baths on September 26, when the competitors finished in the following order; G. H. C. Rowland, 1; J. Grieve, 2; A. G. Paterson, 3; J. Lockerbie, 4; L. S. Lamb, 5. The prize winners in the competition (four races) being: 1, G. C. H. Rowland 15 points; 2 and 3, J. Grieve and L. S. Lamb 14 points each. The tie between the two latter will be swum off on October 10.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.—At a Committee meeting of this Association, held on Tuesday last, the 27th ult., Messrs. Hoblyn and Palmer were elected members. A vote of sympathy was passed to Mr. Mathew (Saltash), and hopes expressed of a speedy recovery from his painful illness. Mr. Mathew, who has been the only chemist in Saltash for about thirty years, is suffering from a cancerous growth in the tongue, and recently became a patient at the St. Barnabas Hospital. He has undergone an operation and gained much relief, and is now progressing satisfactorily. Mr. Kelly, of Devonport, represented Mr. Mathew during his absence, and it is interesting to note that it was Mr. Kelly's father whom Mr. Mathew succeeded thirty years ago.

ADDITIONAL TELEGRAPHIC FACILITIES.—The Post Office authorities give notice that on October 1, the compulsory repetition of the telegram of advice of a telegraph money order will be abolished, and from that date a fee for repetition will only be charged when the sender of an order gives special directions for the telegram of advice to be repeated at his own expense in order to ensure accuracy in transmission. On and from the same date the sender of a telegraph money order will be allowed, on paying for the additional words required, to add to the official telegram of advice any short communication which he may wish to send to the payee. On the arrival of such telegram of advice at the office of payment, a copy of the private communication will be enclosed with the order and delivered to the payee at the address given in the telegram, or will be handed to him at the paying office, as the case may be.

AT THE WORKING MEN'S COLLEGE, 46, Great Ormond Street, W.C., a course of about thirty lectures on electricity and magnetism will be delivered by Mr. Joseph J. Denton, on Monday evenings during the coming winter, beginning October 3. Courses of lectures on elementary, practical, and advanced theoretical mechanics will be delivered by Mr. Thomas H. Hill, Inter. B.Sc., Lond., on Tuesday and Wednesday evenings, beginning October 4. The fees are 5s. for each course, covering the right to use the common room, library, etc. Particulars of other classes may be obtained from the secretary of the College.

AT THE MEETING OF THE SANITARY INSTITUTE a resolution was carried, on the motion of Alderman Harrison, of Sunderland, that places where ice cream is made should be placed under sanitary control, and that registration of the vendors of ice creams should be established.

THE "ALLENBURYS" CRICKET CLUB played its last match for the season on Saturday, September 24, the opposing team being the "Allen" C.C. (Stafford Allen and Sons). The game ended with a score of 44, "Allens," against 52 for six wickets, "Allenburys." The club has played 11 matches during the season against clubs connected with the trade, with the following result. Won, 6; drawn, 3; lost, 2.

CITY SCHOOL OF CHEMISTRY AND PHARMACY.—An examination was held at the above School on Monday, September 19, for one or more scholarships entitling the successful candidate to free tuition at the School. As a result of this examination the Principal has decided to divide the scholarship awarded between Messrs. H. Bristow and T. W. Prosser, who were bracketed equal by the examiners. The awarding of the second scholarship has been deferred.

MARKET REPORT

London Report.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

SEPTEMBER 29, 1898.

Business during the past week has been quiet, the chief changes which have taken place being an advance in value of Ipecacuanha, which buyers so far decline to follow to the full extent of holders' views. Price of Quicksilver has also been advanced; Mercurials are, however, so far unchanged in price. Quinine is firm. Cocaine rather dearer. Acid Citric steady. Acid Tartaric and Cream of Tartar quiet, but fairly steady. Iodides and Bromides unchanged, as also are Phenacetin and Sulphonal. Acetanilid for large quantity lower, same may be said of Potash Permanganate. Phenazone weak. Acid Carbolic quiet. Glycerin firm. Cod-liver Oil quiet. Sulphate of Ammonia weak. The following are actual prices of articles of principal interest:—

ACETANILIDE.—It is reported that there have been offers at below 1s. per lb. for ton lots, and more especially for export; price for smaller quantity remains unchanged at 1s. to 1s. 2d. per lb.

ACID BORACIC.—Firm at 24s. per cwt. for crystals and 26s. per cwt. for powder.

ACID CARBOLIC.—Quiet but fairly steady at 6½d. to 6¾d. for 35° to 36° ice crystals in large bulk; other qualities and packing in proportion. *Crude*: 60° F., 1s. 11d.; 75° F., 2s. 3d. per gallon. *Liquid*: 95 per cent., of pale straw colour, 1s. 1d. to 1s. 2d. per gallon in large casks.

ACID CITRIC.—Is unchanged, makers being firm at 1s. 3d. per lb. for crystals, with second hand sellers at 1s. 2½d. per lb.

ACID OXALIC.—A steady business on the spot at 3½d. per lb.

ACID TARTARIC.—Is fairly steady at 1s. 1d. per lb. for *English*, but *foreign* is slightly easier at 12½d. per lb.

ALUM.—Loose lump, £5 7s. 6d. per ton; ground in bags, £6 per ton.

AMMONIA COMPOUNDS.—*Sulphate* is again lower and closes flat at £9 17s. 6d. for grey prompt, 24 per cent. London. *Hull* £9 16s. 3d. *Carbonate* steady at 3¼d. to 4d. per lb., according to package. *Muriate* quiet at 22s. 6d. per cwt., for rough and 26s. to 27s. 6d. per cwt. for best white chemically pure. *Sal ammoniac*: Sublimed firsts 35s. per cwt., seconds 33s. per cwt., crushed for batteries 35s. and 37s. per cwt. respectively. *Bromide* steady at 2s. 1d. per lb. *Iodide* 14s. 6d. per lb.

ARSENIC.—Steady at 19s. per cwt. for *powder*, and 34s. per cwt. for *lump*.

BLEACHING POWDER.—Is steady at £6 15s. to £7 5s. per ton on the spot, according to quantity and packing.

BORAX.—Firm at 14s. per cwt. for *Lump*, and 14s. 6d. to 15s. per cwt. for *Powder*.

BROMIDES.—Are steady at unchanged prices.

CAMPHOR.—*Crude* continues very firm and appears to be scarce. *English* refiners have again advanced their prices by one half-penny per lb. on last week's quotations.

CASCARA SAGRADA.—Market is quiet but steady at 22s. 6d. to 25s. per cwt. according to quantity and age of the bark.

CLOVES.—Privately *Zanzibar* are firm but quiet. October to December delivery business done at 4d. to 4½d.; January to March same figure. At auction 58 bales *Amboyna* bought in at 4¼d.; also 22 cases good to fine picked *Penang* at 11d. to 1s.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: Commercial, 1s. 2d.; pure 2s. 3d. per gallon. *Benzole*: 50 per cent., 10½d.; 90 per cent., 10d. per gallon. *Crude Naphtha*: 30 per cent. at 160° C. 4½d. *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 6d.; 90 per cent. at 160° C., 1s. 4d.; 90 per cent. at 190° C., 1s. 3d. per gallon.

COCAINE.—The chief makers now quote 9s. 6d. to 9s. 9d. per oz. for the *Hydrochlorate* for 100 oz. lots in 25 oz. tins. There are, however, sellers from second hand at somewhat below these figures.

CODEIA.—Is firm at 12s. 6d. per oz.

CODLIVER OIL.—Market is steady at 82s. 6d. to 85s. per barrel *f.o.b.* for best new non-congealing *Lofoten* oil in tin-lined barrels of 25 gallons.

CREAM OF TARTAR.—Is quiet at 72s. to 77s. for first white *Crystals* on the spot, and 74s. to 80s. per cwt. for *powder*, according to quality.

GINGER.—*Cochin*, dull; of 1221 bags rough 275 sold, shrivelled pickings, 11s. 6d.; cuttings, 13s.; lean small and ends, 18s. 6d.; ordinary small washed rough, partly mouldy, 19s. to 19s. 6d. Of cut kinds only 12 cases sold, B cut 57s. 6d.; A bold cut, 85s.; C cut bought in at 37s. to 45s. *Jamaica* also dull; of 106 barrels only 10 barrels sold, small at 67s. 6d.

GLYCERIN.—Is very steady at 52s. 6d. to 55s. per cwt. for best *English*, and 54s. to 65s. per cwt., according to brand, for best *German* white double distilled chemically pure, 1260° quality, in tins and cases.

IODIDES.—Without alteration in price, and are in fair demand.

IPECACUANHA.—A large business has been done in both *Rio* and *Carthagera* qualities. For the former 9s. 6d. per lb. has been paid for heavily damaged quality, and market closes firm at 10s. per lb. sellers. For *Carthagera* the demand has been very active, and for the few remaining bales in stock 7s. 6d. per lb. is asked.

MERCURIALS.—So far makers have not followed the advance in value of quicksilver; prices therefore remain unchanged.

MORPHIA.—Quiet and without change at 5s. for the *Hydrochlorate powder* in quantity and bulk packing.

OILS (FIXED) AND SPIRITS.—*Linseed* very firm, London spot pipes £17 5s., barrels £17 12s. 6d. *Rape* dearer, ordinary brown spot £21 15s.; refined spot £23 5s. to £23 10s. *Ravison* naked spot £19 10s., November-December £18 10s., January-April £18. *Cotton*, steady, London crude spot £14 5s., November-April £13 5s.; refined spot £15 10s. to £16 10s., according to make. *Olive*: Spanish £22, Levant £29 to £32, Mogador £29 to £32. *Coconut* firm, Ceylon spot pipes £24 5s., near at hand £23 5s. to £23 10s., *c.i.f.*, October to December £23 5s., *c.i.f.* *Cochin* spot pipes and hogsheads £27 10s., near at hand £26 *c.i.f.* October to November £26 to £26 10s., *c.i.f.* Mauritius spot £24 5s. to £24 10s. in hogsheads. *Palm*: Lagos spot £22 10s. *Turpentine* firm. American spot 22s. 3d. to 22s. 4½d., October to December 22s. 7½d. to 22s. 9d., January to April 23s. to 32s. 1½d. *Petroleum* firm. Russian spot and October to December 4¾d. American spot 5¾d. to 5¾d., October to December 5¾d. Water white 6¾d. to 6½d., October to December, 6½d. per gallon. *Petroleum Spirit*: American 6d. to 6¾d., deodorised 6½d. to 6¾d. per gallon.

OPIUM.—Market is quiet, prices remaining, however, nominally unchanged.

PHENACETIN.—Quiet at 3s. 9d. to 4s. 3d. per lb., *Bayer's* make being still held for 5s. 6d. per lb. in bulk packing.

PHENAZONE.—Is weak at nominally unchanged prices. The price of *Dr. Knorr's Antipyrine* remains firm and unchanged.

POTASH COMPOUNDS.—*Chlorate* quiet but steady at 3½d. to 3¾d. per lb. *Bromide* unchanged at 1s. 9½d. per lb. *Iodide*, 10s. 3d. per lb. *Bicarbonate*, 30s. to 35s. per cwt. *Yellow Prussiate*, 6¾d. to 7d. per lb. for *English* make. *Red Prussiate*, 1s. 2d. to 1s. 3d. per lb. *Bichromate*, 3¾d. to 3¼d. per lb. *Permanganate*, lower at 52s. 6d. per cwt. for small crystals and 57s. 6d. for large crystals.

QUASSIA WOOD.—Is scarce; although demand is not active prices are firm at £5 per ton for logs.

QUICKSILVER.—Has been put up 5s. per bottle to £7 5s. from first hand.

QUININE.—Market is firm and there are few sellers below makers' prices, best *German* brands of the *Sulphate* are quoted at 10d. per lb. for 1000 oz. lots in 100 oz. tins and cases.

SALPETRE.—*English* refined 20s. to 21s. per cwt. according to package.

SODA COMPOUNDS.—*Crystals* continue firm at 57s. 6d. per ton, ex ship terms. *Ash*: £5 to £5 10s. per ton on the spot, according to strength and packages. *Bicarbonate* steady at £7 5s. per ton for the 97 per cent. and 18s. 6d. per cwt. for the fully bicarbonated quality. *Caustic*: 70 per cent., £8 per ton. *Bichromate*: 2¼d. to 3d. per lb. *Bromide* steady at 2s. per lb. *Iodide* quiet at 11s. 7d. per lb. *Hyposulphite*: 6s. to 8s. per cwt., according to brand. *Nitrate*: £7 12s. 6d. per ton for ordinary and £8 2s. 6d. per ton for refined.

SPICES (VARIOUS).—*Black Pepper*: Only 40 bags Penang offered, and bought in at 4¼d. *White Pepper*: Only 20 bags mixed Penang offered and sold at 7¼d. *Chillies*: 20 bags good Japan bought in at 45s. *Cassia Buds*: 4 bags wild Bombay bought in at 30s. *Cinnamon Chips*: 126 bags Ceylon sold at 4d. to 4¼d. *Mace* dull. 40 cases Penang bought in; pickings, 1s. 3¼d. to 1s. 4d.; ordinary to fair, 1s. 7d. to 1s. 9d.; 35 packages West India sold at 1s. 4d. to 1s. 6d.; pickings, 1s. 3d. *Pimento* flat. Of 509 bags only 70 bags sold; ordinary grey, 4d.; middling, 4¼d.; fair, 4¾d.

SUGAR OF LEAD.—*English* steady at 31s. per cwt. *Foreign* firm at 27s. 6d. per cwt. on the spot.

SULPHATE OF COPPER—Dearer at £16 to £17 10s. per ton according to brand.

SULPHONAL—Is unchanged, the two makers still supplying in limited quantities at 7s. 3d. per lb. for bulk packing.

SULPHUR—Steady. *English*: Roll 7s. 6d. to 8s. per cwt., flowers 11s. per cwt. *Foreign*: Koll 6s. 6d. per cwt., flowers 7s. per cwt.

To-day's drug auctions passed off quietly, a considerable number of the lots offered failing to find buyers. Chief point of interest was the advance in price of Ipecacuanha. Tinnevelly Senna was also dearer. Cardamoms fairly steady. The following are the particulars as far as it is possible to give same up to time of going to press.

ALOES.—Fair hard bright *Cape* realised 26s. per cwt., ditto not quite so good 24s. 6d. down to 19s. for common drossy and 16s. for low inferior quality. 30 kegs good *Socotrine* held for 75s. per cwt. 100 boxes fair livery *Curacoa* sold at 23s. to 27s. per cwt., down to 12s. 6d. for low inferior. 117 boxes capey *Curacoa* bought in at 16s. per cwt.

ANISEED.—15 bags fair *Spanish* held for 28s. per cwt.

BALSAM COPAIBA—1 cask and 5 cases of fair quality bought in at 1s. 7d. per lb.

BALSAM PERU.—3 cases bought in at 8s. 3d. per lb.

BALSAM TOLU.—6 cases bought in at 1s. 8d. to 1s. 10d. per lb.

BUCHU LEAVES.—Brownish-green round were held for 5¼d. per lb., rather yellowish for 6¼d., and good green for 6½d. per lb. Fair longs bought in at 6d. per lb.

CAMPHOR.—10 cases refined sold cheaply without reserve at 1s. 1d. to 1s. 1¼d. per lb. for 1-oz. tablets.

CARDAMOMS—Were in fair supply, the bulk selling at about steady values. Good bold pale *Ceylon-Mysore* realised 3s. 7d. per lb., the second size, 3s. 1d. per lb.; small, 2s. 4d. to 2s. 7d. per lb. *Seed* realised 2s. 10d. to 3s. per lb., being slightly easier. Good *Malabars* held firmly at 2s. 9d. to 3s. 2d. per lb.

CIVET.—3 horns of good fair quality were bought in at 12s. per oz.

COLOCYNTH.—1 case inferior and broken *Spanish* sold at 6d. per lb.; 1 case good ditto bought in at 9d. per lb.

COLOMBO ROOT.—8 bags fair washed with stem were bought in at 14s. per cwt.; poor sorts with stem selling at 10s., ditto rather better being held for 17s., and fair washed with stems for 35s. per cwt.

CROTON SEED.—Good fair sold at 80s. to 85s., rather darker in colour at 72s. 6d. to 75s. per cwt.

CUBEBS.—53 bags of medium to fair quality were bought in at 25s.; 30 bags slightly mouldy at 24s. per cwt.

CUTTLEFISH.—Bold pale were bought in at 4d., small partly broken selling at 2¼., 8 cases very small at 1d. per lb.

DILL SEED.—32 bags of somewhat inferior quality were held for 9s. to 11s. per cwt.

DRAGON'S BLOOD.—Small seedy lump sold at £6 10s. per cwt., dull saucers and squares part sold at £7 10s. per cwt.

ERGOT OF RYE.—Fair *Spanish*, slightly weevily, bought in at 9d. Sound grey *Russian* bought in at 1s. per lb.

FENNEL SEED.—15 bags were held for 10s. per cwt.

GALANGAL ROOT.—10 bales bought in. at 26s. per cwt.

GAMBOGE.—Fair to good pipe, partly sold at £8 17s. 6d.; balance bought in at £8 5s. to £8 15s., and £8 for good pickings down to £6 5s. for ordinary ditto.

GUAZA.—23 robbins, consisting partly of brownish tops, were held for 6½d. per lb.

GUM ARABIC.—2 cases fair sorts bought in at 110s. per cwt.

GUM ASAFETIDA.—Heavy pinky block was bought in at 52s. 6d. per cwt.; ditto greyer and more sandy at 40s. to 42s. 6d.

GUM BENZOIN.—11 cases low *Siam* siftings sold at 50s. per cwt. Low to medium *Sumatra* sold at £4 12s. 6d. to £5 15s.; medium

to fair ditto at £6 to £7 5s.; very good ditto held for £10 10s. per cwt. Medium to fair *Siam* bought in at £13 to £13 10s. per cwt., up to £14 for beans and £16 for fair small free gum.

GUM KINO.—2 cases *African* held for 3s. 6d. to 4s. per lb.; 11 boxes *Cochin* part sold previously at 10s. per lb., balance being held for this price.

GUM MYRRH.—5 bales dark siftings sold at 35s. to 38s. per cwt.; fair sorts bought in at 55s. to 60s.; good sorts at 90s. to £5 10s. per cwt.

HONEY.—2 packages *West Indian* sold at 20s. 6d. per cwt. 16 cases *Australian* bought in at 19s.

IPECACUANHA.—Holders of both *Rio* and *Carthagera* kinds had put up their prices, the former to 10s. to 10s. 3d. per lb., and the latter to 7s. to 7s. 6d. per lb., which prices buyers were not prepared to pay yet. 1 odd bale *Rio* sold at 9s. 4d. per lb., which under the circumstances was cheap.

IGNATIUS BEANS.—10 bags good sound bought in at 4d. per lb.

KAMALA.—Fair bright quality was bought in at 1s., dull at 6d. per lb.

KOLA NUTS.—Good bright *West Indian* held for 6d. per lb.

LIME JUICE.—6 hogsheads concentrated *West Indian* were taken out at £16 per 108 gallons.

MUSK.—Thin skin *Tonquin*, medium to bold, few slightly broken were held for 67s. 6d. per cwt.; 4 tins thin skin grey, one or two partly damp for 33s.; 6 bottles grain *Nepaul* bought in at 35s. per oz.

NUX VOMICA.—Medium to bold very dull, Ceylon sold cheaply at 5s.; rather small but decidedly brighter being held for 6s. per cwt.

OILS ESSENTIAL.—1 case *Nutmeg* held for 2¼d. per oz. *Winter-green*, 1 case Dodge and Olcott's bought in at 5s. 3d. per lb. *Lime*, 3 cases distilled, *West Indian* held for 3s. 3d. per lb. 10 cases *Cajaptua* bought in at 3s. 7¼d. per bottle of 20-oz. net. 7 cases *Japanese Peppermint* demethylised held for 3s. 3d. per lb. 2 cases fine *Cinnamon Bark* for 3s. 3d. per oz. 20 cases *Citronella* bought in at 1s. 2d. per lb., while 5 drums, offered without reserve, were withdrawn, there being one bid, viz., 11½d. per lb. 5 cases Hale and Parshall's *Peppermint* bought in, 4s. 6d. per lb. being price required. 4 cases *Cassia* oil, containing according to Mr. C. J. Umney's analysis, 84 per cent. cinnamic aldehyde, were bought in. 2 cases *French Geranium* oil were held at 1s. 6d. per lb. 1 bottle *Ylang Ylang* bought in at 14s. 6d. per oz., 8 cases commercial oil *Eucalyptus* at 10d. per lb.

ORANGE PEEL.—Fair thin cut was bought in at 7d. per lb.

ORRIS ROOT.—4 serons *Mogador* offered without reserve, sold at 14s. per cwt.

PATCHOULI.—9 bales of medium quality taken out at 4d. per lb.

PERUVIAN BARK.—4 serons sold without reserve at 1¼d. per lb.

RHUBARB.—*Canton* rough pickings, medium colour, round and flat bought in at 1s. per lb., bold round held for 1s. 2d., small to medium selling at 1s., small trimming at 1s. 4d., medium to fairly bold flat *Canton* held for 1s. 3d., fair bold flat high dried sold at 11d. per lb. down to 10d. for small ditto, and at 6d. per lb. for rough horny round. Good small round *Shensi* trimming, part dull coat, was held for 2s. 6d. to 2s. 9d., medium rough ditto for 2s. per lb. 1 case small round of fine colour sold at 2s. 9d. per lb.

SAFFRON.—52 tins fair *Valencia* were held for 36s. to 38s. per lb.

SARSAPARILLA.—5 serons *Honduras* were held for 1s. 6d. per lb.

SENNA.—Of *Tinnevelly* 735 bales were offered, being of a better quality than the previous arrivals this season. Competition was good, and all sold at steady to rather dearer prices, especially for the better selections. Small leaf of fair colour realised 2d. to 2½d. per lb., medium 2½d. to 3d. per lb., and fair bold up to 4½d. per lb. Good pods 1½d. per lb. For *Alexandrian* there was no demand, the selection being very poor.

SOY.—20 casks *China* held for 1s. 4½d. per gallon.

TAMARINDS.—*West Indian* sold at 8s. 6d. to 9s. 6d. per cwt.

TONQUIN BEANS.—Fair frosted *Paras*, sold at 2s. per lb.; black ditto being bought in at 1s.; 2 cases foxy sold at 8d.; fair medium *Angostura* held at 3s. 9d. per lb.

TURMERIC.—One bag *East Indian* sold without reserve at 11s. per cwt.

VANILLA.—Prices about steady to slightly lower, supply was more than sufficient for the trade, and a not inconsiderable proportion of the offerings were bought in, good *Bourbons* realised 15s. to 19s. per lb. for 3½ to 7½-inch beans, and 11s. to 13s. for mouldy. The long lengths were bought in at 20s. to 22s. per lb. *Tahiti* beans are held for 8s. 6d. per lb. without finding buyers.

WAX.—Five casks good *Jamaica* sold at £6 12s. 6d. per cwt., fair *Madagascar* was bought in at £6 10s., *Zanzibar* part sold cheaply at £5 10s. subject to approval, *Madras* bought in at £6. Six packages *West Indian* at £6 10s. per cwt., 48 cases *Japan*, part sold previous to auctions, rest being bought in at 34s. per cwt.

Newcastle Chemical Report.

SEPTEMBER 28, 1898.

A quieter tone prevails in this market. Baltic shipment are nearing to a close, and little new business coming forward. Prices unchanged, and are quoted thus: Soda Crystals, basis, 45s. to 52s. 6d.; Bleaching Powder, £6 to £6 5s.; Caustic Soda, 52 per cent., £4 5s.; Alkali, 52 per cent., £5 2s.; Sulphur, £4 15s. to £5 per ton.

Manchester Chemical Report.

SEPTEMBER 28, 1898.

In heavy chemicals there is little new to report, except that there is some business forward over next year. Some complication is added owing to the fact that the over plus of American make of Ammonia Alkali is being offered in Liverpool at very low prices. Consumers, therefore, are averse to speculate forward, as there appears to be no level yet that figures will not touch. In general articles, there are one or two advances. Arsenic has gone up to £17, and Sulphate of Copper £18 per ton, while £18 10s. is quoted for spring delivery, best brands, Manchester. Brown Acetate of Lime is very steady and somewhat higher at £5 5s. to £5 7s. 6d. per ton, Welsh and American, delivered here. Naphthas continue stiff, and little offering. Benzols show no change on the abnormally low figures of the past few weeks. Pitch is firmer, and Creosote continues to improve, but Anthracene is dull. Aniline Oil 5½d., and Salt 4½d.

Liverpool Market Report.

SEPTEMBER 28, 1898.

A slight but all-round improvement has been noticeable in the week's business, both as regards the quantity of produce changing hands and the prices obtained. Considerable advances have taken place in the price of nearly all varieties of Linseed, whilst Canaryseed has improved in tone. In African produce a fair amount has been done in Sierra Leone Ginger and dried Kola Nuts at fully late rates. South American imports of Honey, Beeswax, Spermaceti, and Quillaya Bark have commanded a good share of attention and have sold at good prices. Oils generally are following the upward move, Linseed Oil and Cottonseed Oil having increased their quotations. The price of Quillaya Bark has not yet reached £20 per ton, as expected, for holders have been induced to part with some, at any rate, at £19. Chemicals are brisker, but in inquiry and to a smaller extent in demand, with better prices for Chlorate of Potash, Sulphate of Copper, and Ammonia Sulphate.

AMMONIA SALTS.—*Carbonate* 3d. per lb. *Sal Ammoniac* 35s. and 3s. per ton. *Sulphate* £10 per ton.

BEESWAX.—*Chilian* has been selling at £6 17s. 6d. per cwt.

CANARYSEED—Is steady at 28s. to 30s. per 464 lbs. for Turkish, of which 400 bags sold at 28s.

COPPERAS—Still rules 39s. per ton Lancashire, and 37s. Welsh.

COPPER SULPHATE—Is dearer, for prompt delivery £17 per ton, forward £17 10s. to £17 15s., according to date.

GINGER.—Sierra Leone has sold well at 19s. per cwt.

HONEY.—About 450 barrels of Chilian were disposed of early in the week at 25s. per cwt. for Pile X; 22s. 6d. for Pile 1; and 21s. 6d. for Pile 3. Later, 30 barrels Pile 1 made 23s. per cwt.

KOLA NUTS.—50 packages of dried changed hands at 1½d. per lb.

LINSEED—Has advanced generally about 1s. per cwt. over last week's rates. To arrive before end of year. North American is quoted at 34s. 6d. per 416 lbs.; Calcutta, 37s. 4½d.; and River Plate, 34s. The spot sales include 60 bags of Larnaca at 41s. to 42s., and 100 bags of "feeding quality" Bombay at 39s.

OILS (FIXED) AND SPIRITS.—*Castor* is continuing in good demand with a firm quotation for all qualities. Calcutta 3½d. per lb., French 3d. to 3½d. quay and store, and Madras 3½d. *Olive* is

steady, with Spanish oils quoted at £29 10s. to £30 10s. per tun on the spot. For shipment Malaga is now at £31 per tun, cost and freight. *Linseed* has been advanced in price to 18s. 6d. and 19s. per cwt. by Liverpool pressers owing to upward move in the price of seed. *Cottonseed* has also gone up, viz., 16s. to 16s. 3d. per cwt. *Spirits of Turpentine* is easier by 6d. per cwt., and a moderate amount of business has been done in it at 22s. 6d. per cwt.

POTASH SALTS.—*Bichromate*: 3½d. per lb. *Chlorate* dearer, 3½d. to 3¾d. per lb. *Cream of Tartar* is scarce on the spot, 75s. per cwt. *Pearlashes* are chronically nominal at 34s. to 35s. per cwt. *Potashes*: 22s. 6d. per cwt., to arrive. *Prussiate* is quiet at 6¾d. per lb. *Saltpetre*: 21s. per cwt.

QUILLAYA BARK.—236 bales were offered at auction, but offers of £19 per ton were declined, however since then business has been effected at that figure.

SODA SALTS.—*Bicarbonate*: £6 15s. per ton. *Borax*: £13 10s. to £14 per ton. *Caustic*: 77 per cent., £7 15s. per ton; 70 per cent., £7 1s. 3d. *Crystals*: £2 17s. 6d. to £3 per ton. *Nitrate* is in fair demand at 7s. 7½d. to 7s. 9d. per cwt.

Marriages

BRICE—CARMICHAEL.—On September 24, at the Parish Church, Aldridge, Staffs, by the Reverend C. M. Roberts, B.D., Rector of Aldridge, Ernest Brice, L.R.C.P., L.R.C.S., L.F.P.S., of Chaseterrace, seventh son of the late John Brice, of Leicester, and of Wirksworth, Derbyshire, to Olive Gorrie, eldest daughter of Peter Carmichael, of Chaseterrace, near Walsall.

BLACK—ROBERTSON.—At the Grand Hotel, Aberdeen, on the 24th inst., by the Rev. Robert Slessor, M.A., Trinity Parish, John Black, chemist, Aberdeen, to Nina, youngest daughter of the late James Smith Robertson, Aberdeen.

Trade Notes.

MESSRS. ALLEN AND HANBURYS, LIMITED, London, have established a depôt in Hamburg, with a view to extending their trade to Germany, and have appointed the firm of Otto Fuerst, Hamburg, their sole representatives for that country.

MESSRS. EVANS, GADD & Co., of Exeter, are offering an attractive novelty in their Victoria Violets Soap. It is a superfatted soap, perfumed just to the right degree, and should sell well at one shilling per box of three tablets, each of which is enclosed in a pretty wrapper. The retail price is protected by P.A.T.A. agreement, and the trade price is nine shillings per dozen boxes.

Personal.

MR. E. BROWNING, chemist and druggist, has recently opened a Pharmacy in Exeter Street, Plymouth.

DR. JAMES LEICESTER, F.I.C., late chief lecturer on chemistry and metallurgy at the Merchant Venturers' Technical College, Bristol, has been elected as the head of the Chemical Department of the Municipal Technical College at Derby.

MR. WILLIAM MARTINDALE has been elected an honorary member of the American Pharmaceutical Association, upon the recommendation of the Council of that body, on the occasion of the forty-sixth annual meeting, held at Baltimore, Md., during August last. It is pleasing to record this compliment paid to one of our leading practical pharmacists by representative fellow-craftsmen in the United States. No one in this country has done more than Mr. Martindale to advance scientific pharmacy, and distinctions such as that mentioned serve as evidence of the manner in which his endeavours are appreciated abroad.

MR. F. G. DE FAYE, chemist and druggist, David Place, Bath Street, Jersey, has recently erected at the rear of his pharmacy a new and fully equipped factory for the manufacture of table waters. In an account of a visit paid to the factory by a representative of the *Jersey Times*, some interesting details are given, it being described as "a model factory." Mr. de Faye is the sole contractor for the supply of aerated waters to Her Majesty's troops in the island, and has received many flattering testimonials from commanding officers, mess presidents, etc.

Publications Received.

SECOND STAGE MATHEMATICS. Edited by WILLIAM BRIGGS, M.A., LL.B., F.C.S., F.R.A.S. Pp. viii.+219. Price 3s. 6d. London: W. B. Clive, University Correspondence College Press, 13, Bookseller's Row, Strand, W.C. 1898. From the Publishers.

A SHORT MANUAL OF ANALYTICAL CHEMISTRY, by JOHN MUTER, Ph.D., F.R.S.E., F.I.C., F.C.S. Eighth Edition. Illus. Pp. xiv. + 229. Price 6s. 6d. London: Simpkin, Marshall, Hamilton, Kent, and Co., Ltd. 1898. From the Publishers.

Poisoning Cases.

LAUDANUM.—At Birmingham on Friday, September 23, an inquest was held concerning the death of Charles Ashton (63), brass-dresser. It appears that he lost his wife some few months ago, and since then had been despondent and could not sleep at night. On Tuesday, September 20, he was found to be suffering from the effects of poison, and was taken to the General Hospital, where he died two hours after admission. Two bottles which had contained laudanum were found in his possession. The jury returned a verdict that "Death was due to an overdose of laudanum."

CHLORODYNE.—William Mallon, a painter, of Landport, on Wednesday, September 21, was found by a police constable on a seat near Victoria Park insensible. He was taken to the Landport Hospital and medically attended, but death took place the next morning, the cause being an overdose of chlorodyne, taken to relieve pain. A jury subsequently returned a verdict of "Death from misadventure."

CARBOLIC POISONING.—The Manchester City Coroner, Mr. S. Smelt, held an inquest on September 23, regarding the death of Charles Warriner, labourer, who was stated to have bought six-pennyworth of carbolic acid, which he was shortly afterwards seen to drink. He was taken to the Infirmary, where he died. The Coroner spoke of the frequency of carbolic poisoning as a method of suicide, and said he could hardly understand it, seeing that to take carbolic acid was like swallowing red hot coals. If people only realised the terrible agony they would have to endure and the slow death which followed he was sure they would not take it. The jury suggested that some restriction should be placed upon the sale of it. The Coroner said the Legislature had no more contemplated that people would poison themselves in this way than that they would swallow live coals. However, cases of the kind were becoming so common that he thought it would be a good thing if something were done to prevent the indiscriminate sale of carbolic acid. As it was anybody could sell it. A verdict of "Suicide whilst insane" was returned.

Partnerships Dissolved.

(From the London Gazette.)

J. N. Chcat and Thomas Wardley (trading as the Red Cross Chemists' Co.), chemists and druggists, 4, York Road, Ilford. Debts will be received and paid by Thomas Wardley.

O. T. Stephenson and W. F. Bruce, surgeons, Woolston, Southampton. Debts will be received and paid by O. T. Stephenson.

J. Lockwood and R. A. Holden, Manufacturing Chemists, 6, Brook Street, Manchester. Debts will be received and paid by J. Lockwood.

H. W. Carter and E. M. Wright (trading as H. W. Carter and Co.), Aërated Water Manufacturers, etc., Old Refinery, Bristol. Debts will be received and paid by H. W. Carter.

R. B. Shuttleworth, Louisa H. Shuttleworth, Amelia Shuttleworth, Elizabeth Shuttleworth, and Henry Bartle (trading as Stockport Hop Bitters Co.), Aërated Water Manufacturers, Norris Street, Stockport, so far as regards Henry Bartle.

Diary of the Week.

Monday, October 3.

PHARMACEUTICAL SOCIETY.

Reopening of the School of Pharmacy, at 3 p.m.
Distribution of Prizes by the President.
Inaugural Address by Sir James Crichton Browne, M.D., F.R.S.

Tuesday, October 4.

PHARMACEUTICAL SOCIETY OF IRELAND.

Annual Dinner at the Shelbourne Hotel.

Saturday, October 8.

UNIVERSITY COLLEGE, LIVERPOOL, at 4.30 p.m.

Opening of the New Thompson-Yates Laboratories of Physiology and Pathology by Lord Lister.

Earlier in the day, at 3 p.m., Lord Spencer, Chancellor of the Victoria University, will confer the degree of Doctor of Science upon Lord Lister in St. George's Hall.

Receiving Orders in Bankruptcy.

(From the London Gazette.)

A. C. Riding, Chemist, High Street, Docking, Norwich.
F. Tucker, Chemist, late of 110, Falcon Road, Battersea, London, S.W.

Albert Gledhill, Veterinary Surgeon, Perryfield Road, Crawley, Sussex.

Advertisement.

(Received too late for Classification.)

MANAGER. Out-door. Married, no family. Age 34. Disengaged second week in October. CHURCHHOUSE, Chard.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

WANTED.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

OFFERED.

Miscellaneous.

Photographic mounts, Bristol cartes, 3s.; G.B.E., 10s.; cabinets, 10s.; G.B.E., 15s.; quarter-plates, 6s.; half-plates, 12s. 1000; plate-sunk mounts, 12 by 10, 40s. 1000. Samples free.—Edward Peck, East Dereham, Norfolk.

Magic Lanterns, second-hand; triples and binials: oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Six Pieces Perfume Ribbou, each 36 yards long (216 yards), assorted colours post free, 5s.—Edward Peck, East Dereham, Norfolk.

Set of four 1-gallon Cylindrical Percolators, with strainers, lids, and brass taps, all copper and tin-lined, £2 the set, or 10s. 6d. each.—Chemist, 34, Avondale Road, Chorley.

Students' and Chemists' Books offered and wanted, cash or exchange; purchasers send stamp for list; sellers send list stating edition, year of publication, condition, and price.—Gower, Publisher, Waterloo, Liverpool.

Surplus Stock.—What offers for 5 1-gall. tins Jeyes' perfect purifier; 11 1-gall. tins Jeyes' sheep-dip; 2 doz. 6d. bottles Jeyes' disinfectant-fluid; 2 doz. 6d. tins Jeyes' disinfectant-powder; ½ doz. 1s. boxes Jeyes' flower-soap (6 tabs. in box)?—Ferrie, Chemist, Bo'ness, N.B.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Bateson, Benson, Breeze, Browne, Burns, Carr, Clarke, Coull, Cruickshank, Dent, Devereux, Dowzard, Dyer, Faye, Grieve, Haigh, Happold, Hopkins, Jones, Lee, Lovibond, McWalter, Merck, Millar, Moore, Newsholme, Owen, Proctor, Robinson, Sewell, Umney, Walpole, Whineray, White, Wood.



EXHIBITION OF OPTICAL, MATHEMATICAL, AND SCIENTIFIC INSTRUMENTS.

There is a popular idea that the great City companies remain in existence solely for the purpose of spending their riches in feasts and riotous living. That this reproach might have had some truthful basis in the past cannot be gainsaid, but it is satisfactory to note that at the present time many of the companies are doing a great deal in an unostentatious manner to benefit the crafts to which they are allied. The Worshipful Company of Spectacle Makers, one of the poorest of the companies in wealth, its corporate income being only £1100 per annum, nevertheless takes a leading position in regard to usefulness.

At the time when the Company was granted its Royal Charter, in 1629, spectacles were practically the only optical instruments dealt in, and the comparatively few makers and sellers were all connected with the Guild. As science progressed, and the demand for other optical and philosophical instruments increased, the spectacle maker ceased to confine his trade to that one article, and became the general optician, while from the fact that spectacles are so generally in demand they became ordinary articles of commerce, and their sale extended to trades totally unconnected with optics. Thus the company lost touch with many of those who make or sell spectacles, but it is now making an endeavour to re-associate with the Guild opticians and others who satisfy their requirements as to technical ability, and on passing the examination approved by the Optical Committee of the Company any person will be admitted to the Guild and granted a diploma of membership.

As time goes on and the importance of something more than commercial knowledge in dealing with such instruments of precision as spectacles becomes more generally understood, the good work that the Company is now doing in arranging educational facilities for those who wish to become proficient in this branch of science, and in conducting examinations and granting diplomas to those who prove themselves capable, will be more fully appreciated.

The Spectacle Makers' Company is not, however, confining its attention to those matters which alone came within the scope of its founders, but, in a broad minded spirit, is using all its influence in promoting the interests of those engaged in that important branch of manufactures which may be included in the general term scientific instruments, and it may be taken as an earnest of the Company's intentions that the Exhibition of Optical, Mathematical, and Scientific Instruments, held at the Mansion House, from October 3 to 8, was organised.

The exhibition was opened on Monday afternoon last by the Lord Mayor, who was accompanied by the Lady Mayoress. The ceremony, which took place in the Long Room, was short, but decidedly quaint. Indeed, but for the modern costumes of those present, and the allusions of those who spoke to things of which our forefathers knew nothing, one might have imagined oneself back in the early days of the Company's existence. They do things that way in the City. Miss Kemp, having presented a bouquet to the Lady Mayoress, Mr. W. H. E. Thornthwaite, F.R.A.S., Upper Warden of the Company, gave a brief outline of the work of the Company, particularly with regard to the promotion of the present exhibition. The Renter Warden, Sir Reginald Hanson, Bart., M.A., LL.D., M.P., said a few words. Mr. A. A. Wood, C.C., introduced the exhibitors, or, at least, all who were present, individually to the Lord Mayor. The Lord Mayor said a few graceful words, expressing his pleasure in providing accommodation for the exhibition in his house, and then, with the Lady Mayoress, led the way to the room in which the exhibits were placed, which has for decoration the banners of the present and various past masters of the Company.

There are thirty-seven exhibitors, and they include the best known firms of scientific instrument makers. Naturally, spectacles form an important feature in the exhibition. The firms who seem to devote their attention principally to spectacles and appliances connected therewith, are Springate and Co., 108, King's Road, Southsea, J. Raphael and Co., 51, Clerkenwell Road, E.C., W. W. Whitehouse, of Eastbourne, G. Culver, White Lion Street, Pentonville, W. Dunscombe, 10, St. Augustine's Parade, Bristol, F. Bateman and Co., 401, Strand, etc., Gregory and Co., 51, Strand, W.C., and Botwright and Grey, Clerkenwell, E.C. In most cases these firms, in addition to their fine samples of modern work, show interesting relics of the past, which are always valuable for

comparison and sometimes curious on account of the personal history connected with them. Messrs. Carpenter and Westley, of 24, Regent Street, S.W., in particular have many such exhibits, and the case furnished by Mr. Evan Lewis, F.S.A., F.R.A.S., of Barnes Lodge, King's Langley, an enthusiastic collector of antique scientific instruments, is quite a museum in itself. Here we have astrolabes, the earliest form of scientific instrument in general use, which date from the fourteenth to the seventeenth centuries; a theodolite made in France towards the end of the sixteenth century; a surveying instrument by Tobias Volckmar, of Brunswick, dated 1612; several theodolites by English makers of the early part of the eighteenth century; a large number of portable sundials from England, France, Germany, Italy, etc., showing the development of the various types from the fifteenth century to the present time; besides other curiosities of a similar kind too difficult to describe and even too numerous to mention.

C. Baker, of 244, High Holborn, shows microscopes, telescopes, and mathematical and surveying instruments. R. and J. Beck, of 17, Cornhill, have a large case containing a varied assortment, the well-known "Frena" cameras, "Autograph" lenses, various models of microscopes, levels and theodolites, telescopes, and meteorological and other apparatus appertaining to most of the branches of science. Louis P. Casella, of 147, Holborn Bars, shows the Bridge-Lee patent photo-theodolite for photographic surveying, Short's patent gradient telemeter level, Dive's patent portable pressure anemometer, hygrometers, steam pressure gauges, a pocket altazimuth, rain gauges, thermometers, etc. J. H. Dallmeyer, Limited, in addition to specimens of their manufacture—photographic lenses, telescopes, etc.—show specimens of optical glass in the various stages of its manufacture into photographic lenses. W. Wray, of Laurel House, North Hill, Highgate, shows telescopes and photographic lenses. Dollond and Co., of 35, Ludgate Hill, have compasses, aneroids, thermometers, etc.; they also show a pair of spectacles for a horse.

Joseph Long, of 43, Eastcheap, makes a specialty of hydrometers, saccharometers, thermometers and other instruments especially useful to brewers, distillers, and maltsters. J. P. Maginnis, of 9, Carteret Street, Queen Anne's Gate, Westminster, S.W., has for his specialty instruments for the use of the mechanical and architectural draughtsman. Maw, Son and Thompson show ophthalmoscopes, laryngoscopes, rhinoscopes, clinical thermometers, and other instruments for the medical profession. Newton and Co., of 3, Fleet Street, show apparatus of the most elaborate kind for optical projection, including projecting microscopes, polariscopes, etc. Ernest Hinton, of 12, Vorley Road, Upper Holloway, N., shows preparations for the microscope. J. J. Hicks, 8, Hatton Garden, E.C., shows "ometers" too various to mention, as well as his well-known patent opaque measures. R. W. Paul, of 44, Hatton Garden, has all kinds of electrical appliances and instruments. W. Tylar, of 48, Waterloo Road, S.E., shows several forms of optical lanterns, and J. H. Steward, of 409, Strand, W.C., shows telescopes, etc. Negretti and Zambra show all kinds of instruments. W. Watson & Sons, of 413, High Holborn, have microscopes, photographic apparatus, etc. Lambert Matthews, 97, Queen Victoria Street, E.C., shows lanterns and accessories. E. G. Wood, of 74, Cheapside, has a varied collection. H. W. Cox, Ltd., of 10, Cursitor Street, Chancery Lane, W.C., shows electrical apparatus, and R. G. Mason, of 69, Clapham Park Road, S.W., a trade maker, shows microscopes, etc.

The Worshipful Company of Spectacle Makers is to be congratulated on the success of its enterprise, and the Company, the exhibition, and the public are equally indebted to Mr. H. C. Kemp, the organising manager of the exhibition, for the admirable way in which he has performed his task.

RECTAL ALIMENTATION.—The following prescriptions are given in the *Journal de Practiciens*:—Nutritive enema: Cod-liver oil, \mathfrak{z} i.; yolk of one egg; lime water, \mathfrak{z} x. This mixture is sufficient for four or five enemata, which may be given during the course of a day. In other instances the following may be employed: Cod-liver oil, \mathfrak{z} v.; yolk of one egg; chloride of sodium, gr. xl.; water, \mathfrak{z} v. This is also sufficient for four or five enemata. In still other cases where it is desirable to use the hypophosphites, and the stomach will not retain them, the following rectal injection may be employed: Cod-liver oil, Oj.; gum tragacanth, gr. xxxv.; gum arabic, \mathfrak{z} iss; calcium hypophosphite, gr. xxxv.; lime water a sufficient quantity to make onc quart. From four to six ounces of this liquid may be used for an injection.—*Practitioner*, lxi., 110.

ITEMS OF INTEREST.

A PATIENT in an English insane asylum imagined himself dead, and nothing could drive the delusion from his brain. One day the physician had a happy thought, and said to him: "Did you ever see a dead man bleed?" "No," he replied. "Did you ever hear of a dead man bleeding?" "No." "Well, if you will permit me, I will try an experiment with you, and see if you bleed or not." The patient gave his consent, the doctor whipped out his scalpel and drew a little blood. "There," he said, "you see that you bleed; that proves you are not dead." "Not at all," the patient instantly replied; "that proves that dead men can bleed."—*New York Tribune*.

THE trial of a doctor's suit was published in a Connecticut newspaper some years ago, in which a witness was called for the purpose of approving the correctness of the doctor's bill. The witness was asked by the lawyer whether the doctor did not make several visits after the patient was out of danger? "No," replied the witness, "I considered the patient in danger so long as the doctor continued his visits."—*The Samaritan*.

IN HIS LATEST BOOK, Mark Twain tabulates a "memorable scientific discovery." "According to the Hindoo creed the Ganges water makes everything pure that it touches." It had often been noted as a strange thing that while Benares is often afflicted with cholera, it does not spread beyond her borders." Mr. Henkin, Government Scientist, by investigations found that Ganges water, though mingled with sewer discharge, destroys cholera germs, whilst pure well water propagates them by millions.

W. H. HAWKINS, M.D., C.M., U.S.A., is a gentleman who is found per post at 7, Bristol Gardens, Sussex, England. His mission on the earth is the preservation of "vital fluid," whatever that may mean. His literary obscenity and "medical" fudge are being distributed in this country. His charges are two guineas for the first month, thirty shillings for the second, and a guinea for the third. He forwards with the pamphlet a small quantity of a powder, which, on analysis, proved to be acetate of lead. This is to be dissolved in two tablespoonfuls of water and added to a portion of urine. Should a "heavy white cloud" be produced, this indicates presence of organic matter, and shows that you are "losing vital fluid" and "your case is a grave and serious one," necessitating the immediate manipulation of this deceitful hoaxer. As normal urine necessarily gives a white precipitate with acetate of lead the "test" is so much rubbish. There is a "caution" not to open the packet in daylight "owing to the delicate nature of the test."

ALOPECIA CAUSED BY THALLIUM ACETATE.—The fact that thallium acetate in doses of 10 centigrammes causes the loss of hair, was noticed by Combemale, when he first drew attention to the antisudorific action of salt. This disastrous effect is now confirmed by Huchard, who regards the rapid loss of hair as sufficiently serious to prevent the drug being employed in medicine. *Les Nouv. Rem.*, xiv., 625.

PURAL.—This is a new disinfectant, prepared in cylindrical compressed cones and is said to consist of powdered charcoal saturated with liquefied benzoic acid, carbolic acid, and menthol. The cones fume, after being well lighted, and clear the atmosphere of all bad odours; only very sensitive persons are inconvenienced by the vapours, which have the same favourable influence on whooping cough as phenol vapours.—*Pharm. Post*, xxxi., 282.

ANTISCABINE.—A remedy for scabies has been introduced by Skettles under this name; it is a soapy substance, to be rubbed in two to three times per diem. It is composed of Peruvian balsam, Castile soap, glycerin, boric acid, spirit and β -naphthol.—*Pharm. Post*, xxxi., 282.

REMEDY FOR PERSPIRATION.—Monin recommends the following mixture: Lavender water, peppermint, orange flower water, tinct. of myrrh, tinct. of quillaya, aa 50; sodium benzoate, 20. To be used as a wash three times per diem, sprinkling a few drops on a cloth moistened with warm water.—*Zeit. d. allg. oest. Apoth. Ver.*, lii., 360, after *Apoth. Ztg.*

FIXING AND COLOURING FRESH-WATER ALGÆ.—Pfeiffer von Wellheim recommends a mixture of equal volumes of formaldehyde solution, acetic acid, and methyl alcohol. The staining is performed by immersing the algæ for four to six hours in a mixture of 100 C.c. of 50 per cent. alcohol and 2 to 3 C.c. concentrated alcoholic ferric chloride solution. The specimens are then immersed in pure alcohol, and a solution of carminic acid in 50 per cent. alcohol is added drop by drop.—*Pharm. Centr.*, xxxix., 437, after *Chem. Ztg. Rep.*, 104.

PTHISISIN.—This is a preparation prepared from bronchial glands in the tablet form, and recommended for all lung diseases. Each tablet is equivalent to 25 grammes fresh bronchial gland substance.—*Zeit. d. allg. oest. Apoth. Ver.*, lii., 440.

PREVENTIVE OF RUST ON METAL WARE.—Lard 125, camphor 20, are melted together and a little graphite added. The objects are dressed with this paste, which is removed after twenty-four hours.—*Zeit. d. allg. oest. Apoth. Ver.*, lii., 360, after *Allg. med. centr. Ztg.*

STERILISED MILK AND BACTERIA.—Schottelius has shown that milk which has been boiled offers a far less favourable culture medium for bacteria than milk which has not been heated. Into separate sterilised vessels he put milk drawn directly from the udder, sterilised milk and sterilised bouillon in 20 C.c. portions. To each he added 1 C.c. of a bouillon culture of diphtheria bacilli. He kept one set of tubes at the ordinary temperature, the other at that of the blood, and after the lapse of six hours estimated the number of bacilli in each. The result showed that under either condition of temperature, the multiplication of the bacilli was nearly ten times as rapid in the unboiled as in the boiled milk, the bouillon taking an intermediate position, as shown by the table:—

	At 15° C.	At 37° C.
Raw milk	21,230,000	50,160,000 per C.c.
Bouillon	7,600,000	18,240,000 "
Boiled milk	2,200,000	6,030,000 "

—*Practitioner*, lxi., 62.

UREA FORMALDEHYDE COMPOUND.—Goldschmidt has patented a process for the production of an odourless disinfectant obtained by the action of formalin on an alkaline solution of urea, which are stated to combine in molecular proportions, forming a white powder, which slowly decomposes in the air, liberating formaldehyde.—*Zeit. d. allg. oest. Apoth. Ver.*, lii., 410, through *Chem. Zeit.*

URANIUM-AMMONIUM FLUORIDE FOR SCREENS.—Kolle states that this salt, which is used for preparing fluorescent screens for Röntgen's apparatus, may be prepared by the following method. Two parts uranium nitrate are dissolved in 8 parts of boiling water, 1 part of ammonium fluoride is added, and boiled for some minutes. The octahedric crystals separating on cooling from the filtered solution are repeatedly washed with cold water, dried, mixed with collodion or gelatin solution, and these mixtures applied to the paper screens. The value of the screen depends on the perfect formation of the crystals.—*Pharm. Centr.*, xxxix., 454.

THE THERAPEUTICS OF NUCLEIN.—The failure which has been observed in some instances to follow the administration of nuclein, with a view to promoting an increase of the leucocytes in the blood, is attributed to the fact that frequently the source of that substance has been yeast, and not, as was originally specified by Horbaczewski, the splenic pulp of animals. Yeast nuclein is stated to be useless, being without influence on leucocytosis, while spleen nuclein increases the number of leucocytes 100 per cent.—*Les Nouv. Rem.*, xiv., 341, after *Klin. Therap. Wochens.*

LEAD POISONING IN THE POTTERIES.—Some startling statements have been published in North Staffordshire, on the authority of a nurse whom the Women's Trades Union League sent into the district recently to make inquiries respecting the number and nature of existing cases of lead poisoning. She told an interviewer that she was astounded at the extent of the suffering of people of both sexes employed in the pottery industry. She had seen within two months as many as 150 patients whose symptoms are those of lead poisoning.

ENGLISH NEWS.

THE VACCINATION ACT AND CALF LYMPH.—In a recent communication to the Bury Board of Guardians recently, the Local Government Board stated that they will not be in a position to supply glycerinated calf lymph to public vaccinators for the purposes of vaccination before January 1, when the Vaccination Act comes fully into operation. The supply to public vaccinators will then be furnished without charge.

THE LABELLING OF POISONS.—At an inquest held at Exmouth last week, Mr. C. E. Cox (Deputy District Coroner of Honiton) referred to the observations he had made towards Mr. J. T. Bickford, chemist, who sold some poison which a child drank and afterwards died. At the inquiry he expressed the opinion that Mr. Bickford was legally to blame for not having labelled the bottle "poison," it having contained a preparation of atropine. He wished now to say that he was not now of the same opinion, but thought to the contrary, that he was not legally to blame. When he made the remarks he did he was under a misapprehension as to the law with regard to the sale of poisons. He had overlooked an Act of Parliament passed in 1869, which amended the Act to which he referred at the inquest, viz., the Act of 1868. He had since seen Mr. Bickford, and he had assured him that the conditions of the Act of 1869 had been fully complied with, and under those circumstances no label whatever was required by law, so that Mr. Bickford had done even more than the law required him to do in putting the label on. Therefore, although in his private opinion the law on the labelling of poisons ought to be much more stringent, he unreservedly withdrew every expression which he made at the inquest imputing any legal blame to Mr. Bickford. He was quite satisfied that there was no blame, and as he always wished to do justice in the office which he held he wished to express his sorrow that he should ever have made such remarks under a misapprehension.

EDUCATIONAL FACILITIES AT BRISTOL.—The courses of lectures provided in the science department in connection with the evening classes of the Merchant Venturers' Technical College at Bristol include lectures and laboratory work in botany, chemical physics, chemistry (inorganic and organic), physiology, magnetism and electricity, and sound, light, and heat, laboratory work in biology, metallurgy, general physics, and zoology.

ADULTERATED MILK OF SULPHUR.—At the Chippenham Petty Sessions last week, Mr. Turpin, chemist, of Chippenham, was summoned by Mr. Smith, County Council inspector, for an infringement of the Food and Drugs Act. Mr. Bevin prosecuted. It appeared from the evidence that the inspector's representative bought some milk of sulphur, which was found adulterated with not less than 50 per cent. of calcium sulphate. The facts were not disputed, but the prosecution admitted Mr. Turpin sold the preparation as he bought it, and the Bench thought that the justice of the case would be met by Mr. Turpin paying the costs, whilst advising him to protect himself in the future by having a more distinct label.

NOVEL LABORATORY PROPOSAL.—At a meeting of the Devon County Council last week, the Technical Instruction Committee, referring to a communication which they had received from the Medical Officer of Health for Newton Abbot, suggesting the establishment of a laboratory, reported that they had made inquiries and found that the medical officer was prepared to start a laboratory on his own responsibility if he might say that he did so with the approval of the County Council. The Committee recommended the Council to give its approval, for, though the Council have official analysts for food and drugs, manure and feeding stuffs, they have no power to deal with analyses of water. The report was adopted.

THE PHOTOGRAPHIC SALON.—The sixth exhibition is now being held at the Dudley Gallery, Egyptian Hall, Piccadilly, S.W., and will remain open until November 5. The exhibition will also be open on Tuesday and Friday evenings from 7 till 10. It is stated in the "Forewords" of the catalogue that "the aim of the Salon since its inception six years ago has been to discredit ingrained traditions based on a narrow misconception of the true method of interpretation possible in pictorial photo-

graphy, and to change, or at least to modify, the harmfulness which the following of these traditions has brought about." It is not easy to discover any sense in the expression "the true method of interpretation possible," and the "Forewords" do not therefore help to make it clear why there are two separate photographic exhibitions at the present time, instead of one with all the best work under the same roof. The aspect of the gallery is in striking contrast to that of the Pall Mall exhibition. Here the idea seems to have been to carry out a decorative scheme in which the pictures figure as "notes" rather than to provide a background calculated to display the majority of the pictures to their greatest advantage. Whether the effort is successful or not is a question that must be left to individual taste to decide. It may be mentioned that the background for the pictures is in a rather pale shade of green, relieved with white hangings. Of the pictures themselves, as a whole, it is possible to speak in no uncertain terms. The exhibition is good and undoubtedly in advance of that of any previous year. As in former years, the distinctive characters of the exhibition is due more to the work of the foreign exhibitors, of whom there are a considerable number, and who, in most cases, send a number of pictures, rather than to any other cause. On turning to the list of exhibitors at the end of the catalogue, most of the names appear familiar, most of the individuals having sent work to the exhibition reviewed last week. In some cases there are the same pictures. Pictures produced by the gum-bichromate process are fairly numerous, as might be expected, and the fullest advantage has been taken of the power there is of modifying the result which the process admits of by the use of the brush or otherwise during development. Whilst the end may justify the means, this is not pure photography. George Davison's work is very fine, as usual; his pictures are numerous, and Horsley Hinton is seen at his best in "Suffolk Meadows." H. Henneberg, R. Demochy, and H. Watzek all contribute landscape work that deserves more than passing notice. In portraiture W. Crooke more than maintains his reputation, and F. Hollyer, in his portrait of the late Sir F. Burne-Jones, gives us an example of simple photography which should be of assistance in rebutting the charge that is sometimes made against photography of being nothing more than a mixture of chemistry and mechanics. Craig Annan's "Burgomaster's Daughter" is a remarkable picture and his portrait of "Oswald Fergus, Esq.," is almost as characteristic. Everyone who has the opportunity to visit this exhibition is heartily recommended to do so.

EXETER PUBLIC ANALYST.—The Exeter City Council last week authorised the Sanitary Committee to confer with the Exeter Museum and Technical Education Committee upon the subject of the appointment of a public analyst, with a view to securing the services of a gentleman who would also be qualified to lecture at the College, and also upon the subject of the use of the laboratory at the Museum.

DEWSBURY AND DISTRICT CHEMISTS' ASSOCIATION.—A meeting of the above Association was held in the Town Hall, Dewsbury, on Monday, the President, A. Foster, Esq., in the chair. A committee was appointed to draw up a circular, which was to be sent to the proprietors of patent medicines, asking them to join the P.A.T.A. Some members having received circulars with regard to the appointment of a local secretary of the Pharmaceutical Society, the treasurer, Mr. W. Stead, Heckmondwike, was appointed for this district.

DEATH OF A SALFORD CHEMIST.—The death is announced of Mr. Henry Bullock, chemist and druggist, of Oldfield Road, Salford, aged 63. Mr. Bullock was for seventeen years a member of the Salford Corporation, being one of the Conservative representatives of Islington Ward. When the re-arrangement of seats took place some four or five years ago Mr. Bullock, who was then in failing health, retired, and of late years took no active part in political matters.

MR. A. SIDNEY CAMPKIN, J.P., Chairman of the Cambridge Sewage Disposal Committee, attended the Sanitary Congress at Birmingham last week, as a delegate appointed by the Sanitary Committee of the Town Council of Cambridge. He was present at the reception of the Lord Mayor of Birmingham at the Council House on Wednesday evening, at which some 1200 were present. He also attended Sections II. and III. at the Mason University College, at the Physics Theatre, and the Biology Theatre on

Thursday and Friday, where lectures were given on several subjects, including sewer ventilation and sewage disposal, and took part in the discussion thereon. The medical officer of health for the Borough, Bushell Annington, Esq., M.D., was also present as Recording Secretary of Section III.

MESSRS. PERFECT AND Co., chemists, 161, Commercial Road, Landport, intimate that they have a well-appointed photographic dark-room in connection with their establishment.

SPONGE MERCHANT VERSUS CHEMIST.—Before his Honour Sir Richard Harington, at the Birmingham County Court, on Monday, an action was brought by Sam Marcason, sponge merchant, Snow Hill, Birmingham, against Arthur M. Carr, chemist, Church Gresley, near Burton-on-Trent. The claim was for £8 4s., balance of money due on a sale of sponges which the plaintiff alleged he made to the defendant. The point of the case turned on a receipt for £2 19s. purporting to be signed by the plaintiff. He, however, denied that the signature was his. It transpired, however, that the defendant had complained to the Inland Revenue authorities because this receipt was unstamped, and the plaintiff had to pay a fine of £1 to the Inland Revenue, who then gave permission for the document to be stamped. The evidence of the defendant, and he was corroborated by his nephew, was to the effect that the receipt represented the price of the whole of the sponges he bought from the plaintiff, and that the other lots claimed for were never purchased by him. Two cases were left by plaintiff at his premises at plaintiff's own desire, but these were returned. The judge gave judgment for the defendant. He expressed the belief that the plaintiff had committed perjury, and ordered all the documents in the case to be impounded. He also directed the Registrar to tax costs on the most liberal scale the circumstances would permit.

SCOTTISH NEWS.

MR. THOMAS HETHERINGTON, chemist, Moffat, one of the most prominent citizens and the oldest merchant in the town, died early on Sunday, October 2. Deceased, who had been suffering for several weeks from a critical ailment, had somewhat recovered, but a couple of days ago he contracted a chill, and pleurisy intervening, he succumbed. He was well known among the visiting population, having been in business for nearly half a century. The deceased gentleman was an enthusiastic curler and keen bowler.

EDINBURGH DISTRICT CHEMISTS' GOLF CLUB.—Six players representing pharmacy in Glasgow played a friendly match against six members of the Edinburgh District Chemists' Golf Club on Thursday, the 29th ult., over one of the Edinburgh private courses, resulting in favour of the Glasgow representatives by 9 holes. The results of the individual matches were as follows:—Mr. Robert McAdam, 11; Mr. W. L. Currie, 0; Mr. Alex. McAdam, 0; Mr. Geo. Robertson, 4; Mr. Geo. McDonald, 1; M. Jas. Moir, 0—16. Mr. W. C. Baker, 0; Mr. Jas. Stott, 2; Mr. H. D. Alexander, 5; Mr. Geo. Robertson, 0; Mr. J. G. Anderson, 0; Mr. W. B. Cowie, 0—7. After luncheon in the Club House a second round was played, during which rain fell pretty heavily, but did not affect the play very much. The outing was much enjoyed by all.

GLASGOW SCHOOL OF PHARMACY.—A smoking concert was held by the students of the above School on Friday evening, September 30, 1898, in the Bank Restaurant on the occasion of the departure of Mr. Brown, Demonstrator in Practical Chemistry, to take up a situation with Messrs. Savory & Moore, London. There were about forty students present, Mr. John Lothian (Principal) in the chair. A most enjoyable musical programme was contributed by Messrs. MacLeod, Mitchell, Hunter, Hamilton, Riddell, Taylor, Gilmour, and Lothian, with Mr. Kennedy, accompanist. Mr. Taylor, on behalf of the students, presented Mr. Brown with a handsome gold Albert and badge, bearing the inscription: "Presented to William Brown by the Students of the Glasgow School of Pharmacy in recognition of his services as Demonstrator, September, 1898." Mr. Brown, in a feeling and eloquent speech, thanked the students, and said his association with the Glasgow School of Pharmacy would always be to him a very pleasant recollection.

DR. H. BELLISE BAILDON, M.A. Cantab., F.R.S.E., etc., author of 'The Spirit of Nature' and other works in prose and verse, and editor of 'The Round Table Series,' who has been studying philology in the University of Freiburg (Baden) and has taken the degree of Doctor of Philosophy there, has been offered and has accepted the post of University Lecturer on the English Language and Literature in the Imperial University of Vienna. Dr. Baildon will thus be associated with the eminent English scholar, Professor J. Schipper, Ph.D., LL.D. (Edinburgh), etc., author of 'Die Englische Metrik' and editor of 'The Works of William Dunbar' and of the Anglo-Saxon 'Bede.' A series of articles by Dr. Baildon on his school friend Robert Louis Stevenson is now appearing in the scientific German review *Englische Studien*, edited by the distinguished Anglist Professor Kölbing, of Breslau University. 'Spirit of Nature' was delivered as a series of lectures at Evening Meetings of the Society in Edinburgh. Dr. Baildon is a pharmaceutical chemist and was a member of the Board of Examiners for Scotland for several years, and was also a member of the Council. Since he left the ranks of pharmacy he has devoted himself to literature and has travelled extensively.

IRISH NEWS.

THE PHARMACEUTICAL SOCIETY OF IRELAND was established by law in 1875. The Act of 1791, which gave power to licentiates of Apothecaries' Hall, Dublin, to practise the art and mystery of medicine, being amended, pharmacists were constituted to supply the deficiency which existed throughout the kingdom of establishments and shops for the sale of poisons and compounding of prescriptions. The chemists and druggists before 1875 sold poisons, but were not allowed to compound. The latter privilege was to be extended to those in business at the time of the passing of the Act, on condition of their undergoing a modified examination. Two years were allowed for preparation. Some passed, some failed. During the decade which followed the inscribing of 38 and 39 Vict., chap. 57, upon the Statute Book, a large body of apprentice chemists having emerged from the chrysalis state, did not feel inclined to hide their experience in a napkin, so in defiance of the law they opened shops as chemists and druggists. The Pharmaceutical Society determined to exert its authority, but the newly-started chemists formed themselves into an association, and they found in Sir James Haslett, M.P., a tower of strength. The latter gentleman got a Bill passed when the Pharmaceutical Council least expected it. This was the Pharmacy Amendment Act, which guaranteed immunity to the fledglings. Some years ago the Society made a stand against the company system in pharmacy. They were defeated, although they won on the certificate question. The following is the involved logic of the law: No person or persons unqualified can keep open shop. A company is not a person, therefore it can keep open shop. The law says an apprentice must serve five years in a shop kept by a qualified person; a company is not such, therefore, etc. Recently the Society has met with serious reverses in Belfast. Three separate prosecutions of alleged illegal compounding were preferred before a resident magistrate. Two were won by defendants, with costs. The third case was also decided for the druggist, and against the wish of the magistrate, solely because the Society's solicitor had arranged to have his holidays. Subsequently, the Society summoned defendants' assistants, because though unqualified, they had compounded and sold medical prescriptions. A fine of £5 was imposed in each case.

SOME MONTHS AGO an article (now appearing in local journals) was published in the *Lancet* anent the epidemic in Belfast. The gross negligence of the Special Commissioner in accepting the statistics of an assurance company based upon a census which is obsolete by 60,000, is little to be commended in the pursuit of medical or other knowledge. The deaths from typhoid in Belfast have never reached 7 per cent. of the notifications. Yet if the entire 3000 infectious cases reported in 1897 were considered as typhoid they would mean 210 deaths in a population of 350,000, or 600 per million; something different from the proportion in the *Lancet*, i.e., 965 per million for nine months. The fact that the general death-rate was lowest in the month of the greatest number of notifications is very remarkable.

THE ULSTER MEDICAL COUNCIL addressed an admonition sometime ago to the profession to make certain before notifying typhoid.

Charges, however, have been made that cases of typhoid have been notified twice or thrice. And lately, when a fever-notified patient died, a pathological examination by Professor Lorraine Smith revealed pneumonia but no typhoid, and three medical men testified that there was neither typhoid nor typhus. The thirty or forty thousand operatives engaged in the linen industry—a great cause of early bronchitis—places Belfast at a great disadvantage in comparison with other cities. It should likewise not be forgotten that the hospital system is very inadequate. The bulk of the work falls on the Union Infirmary (where the medical and nursing staff are greatly overworked), and the "Royal" or "General," which is £2000 in debt. The commercial capital, however, will be better equipped to combat disease when the Infectious Hospital and Royal Victoria (which latter rose into financial being under the magnetic and magnificent exertions of Mrs. Pirrie, late Lady Mayoress) are built.

THE SMALL FUN which confronts the provincial pharmacist in the following of his calling is not without interest. During an epidemic amongst cattle numerous Irish farmers applied to a chemist for a remedy. He made up a bottle containing tinct. rhei and sweet spirit of nitre, and labelled it "The Mixture." One purchaser on his return begged to know what was in it. Of course professional secrets could not thus be sported with, and so he was told. He then got very wroth, but the chemist remaining obdurate, he departed none the wiser. It never occurs to the large bulk of customers that the pharmacist is entitled to a percentage on his knowledge. It is consoling to think that he can "prescribe" for cattle without a V. S. fulminating. It is a well-known fact that no man shrinks from "curing" his neighbour. Sometimes he kills him, but that is blamed on the attending doctor. Like a well-to-do agriculturist, who required the village apothecary to give him 12 grains of corrosive sublimate in 1½ ozs. of sweet spirit of nitre. Believing it was for cattle the chemist, to say something, asked, "What's the matter." "Oh!" said the bucolic physician, "it's fur a man with an itch in his bared" (beard). The chemist thought indeed that it would "cure" the itch in a thorough manner. "What quantity do you give?" "About 15 drops." "Is there a doctor attending the case?" "Yis, but I heerd this wuz a good cure." "Oh well, my man, I couldn't give it you without a medical order."

Poisoning Cases.

CARBOLIC ACID.—At Liverpool on Friday, September 30, an inquest was held with respect to the death of Eleanor Parry Austin (43), wife of a carter. The evidence was to the effect that she was a healthy woman, but addicted to drink, and that on the previous Wednesday she awoke from a drunken sleep and asked for a drink. She poured something from a bottle, similar to one used for beer, and drank it, discovering when too late that it was carbolic acid. The jury found that death was caused by taking carbolic acid while in a state of intoxication.

CAUSTIC SODA.—James Summers (28), labourer at Messrs. Pilkington's plate-glass works, St. Helens, died on Monday, September 26, from the effects of drinking caustic soda solution in mistake for lime-juice on Friday, August 5. A verdict of "Death from misadventure" was returned by a jury.

CHLORODYNE.—On Thursday, September 29, an inquest was held at Shooter's Hill on the body of Mary Amelia Handford (31), a wards-maid at the Brook Hospital. It appeared from the evidence that she was in the habit of taking chlorodyne for sleeplessness, and on Sunday, September 25, had evidently taken an overdose. The deputy coroner said it could not be ascertained where the chlorodyne was obtained, but no chemist should have served it without labelling it poison. A verdict of "Accidental death from chlorodyne poisoning" was returned.

OIL OF JUNIPER.—Matthew Henry Bielby (41), painter, of Ewell, suffered from pains in the back, for which he used oil of juniper. On September 21 he remained in bed until 4.30 p.m., on account of his back, and then went out to get some oil. He did not return until after midnight, when he told his wife he had taken two pennyworth of oil of juniper. A doctor was sent for, but death took place before his arrival, being due to enteritis. A verdict of "Death from misadventure" was returned at an inquest held on Saturday, September 24.

MARKET REPORT.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

London Report.

OCTOBER 6, 1898.

Business in drugs and chemicals has been extremely quiet during the past week. There are also hardly any changes of importance to record. Quinine is firm, the possibility of dearer prices being hinted at. Camphor very firm, both for crude and refined. Opium quiet, but firm. Acid Citric, Acid Tartaric and Cream of Tartar steady. Quicksilver and Mercurials unchanged. Acetanilide lower. Phenacetin and Sulphonal without change. Cocaine dearer. Cod-liver Oil quiet. Glycerin Steady. Permanganate of Potash lower. Bromides and Iodides without change. Ipecacuanha exceedingly firm. Borax and Acid Boracic quiet. Phenazone dull and weak. Antipyrine Knorr unchanged. The following are prices actually ruling:—

ACETANILIDE—Has been further reduced in price, one of the best makes being now quoted at 11d. per lb. for 10 cwt. lots, smaller quantity being higher in proportion.

ACID BORACIC—Steady. Crystals 24s. Powder 26s. per cwt.

ACID CARBOLIC—Is somewhat dull at 6¼d. to 6½d. per lb. for 35-36° ice crystal, in 2½ cwt. drums and overcasks; 39-40° C. 7d.; and 39-40° C. detached crystals, 8d. per lb.; crude 60° F. 1s. 11d. per gallon; 75° F. 2s. 3d. per gallon; liquid 95 per cent., of pale straw colour, 1s. 1d. to 1s. 2d. per gallon in 40 gallon casks.

ACID CITRIC—Is firm at 1s. 2½d. to 1s. 3d. on the spot.

ACID TARTARIC.—Quiet but fairly steady. English spot 1s. 1d. per lb., foreign 1s. 0¾d. to 1s. 0½d.

AMMONIA COMPOUNDS.—Sulphate flat. Grey, October, 24 per cent. London, Hull, and Leith, £9 15s. per ton; Beckton, £9 12s. 6d.; Beckton terms, £9 10s. Carbonate quiet at 3½d. to 4d. per lb., according to packing. Muriate steady at 22s. 6d. to 25s. for the commercial quality, and 26s. 6d. to 27s. 6d. for the chemically pure. Sal Ammoniac: Sublimed, 35s. and 33s. per cwt. for firsts and seconds respectively; crushed, for batteries, 2s. per cwt. more. Bromide: 2s. 1d. per lb. Iodide: 13s. 7d. per lb.

APOMORPHIA—Is quoted 18s. to 18s. 6d. per oz.

ASAFETIDA.—Really good quality appears to be scarce, and for such there is a demand; 199 cases, which arrived this week from Bombay, are probably, judging from port of shipment, of inferior quality.

ATROPIN.—Market is firm at 15s. 6d. for the Sulphate, B.P. and 17s. 10d. for the alkaloid.

BLEACHING POWDER—Is quoted £6 10s. to £7 per ton on the spot.

BISMUTH—Is unchanged at 5s. per lb. for the metal, 4s. 10d. for the subnitrate, and 5s. 5d. for the carbonate in 5-cwt. lots.

BORAX—Quiet at 14s. and 14s. 6d. per cwt. for Crystals and Powder respectively.

BROMIDES—Are without change at 1s. 9½d. per lb. for Potass. Bromide, 2s. 1d. per lb. for Ammon. Bromide, and 2s. 0½d. for Sodii Bromide, price of Bromine being 2s. per lb.

CAMPHOR—Both crude and refined, are very firm, English makers quoting 1s. 3½d. per lb. for bells and flowers, tablets being dearer in proportion.

CASCARA SAGRADA—Is steady, 25s. per cwt. being asked for old bark, last year's crop being offered at a rather lower figure, say, 22s. 6d. to 23s. per cwt.

CHIRETTA—Scarce and very firm at 6d. per lb.

CLOVES.—Privately Zanzibar quiet, but steady business has been done in October-December delivery at 3¾d. to 4d., January-March quoted at same price. At auction of 265 bales Zanzibar 40 bales

Monthly Statement of Drugs, etc., Warehoused in London.—October, 1898.

Articles.	Sept., 1898.		Stocks, Sept. 30.		Articles.	Sept., 1898.		Stocks, Sept. 30.			
	Arrivals.	Deliveries.	1898.	1897.		Arrivals.	Deliveries.	1898.	1897.		
Aloes (all kinds).....	packages	1421	569	6,652	5,228	Gum, Mastic	packages	—	8	8	4
Balsams	"	41	197	360	428	Myrrh	"	25	18	478	504
Cinchona Bark	"	1,832	1,431	21,550	20,174	Olibanum	"	1	178	3,730	1,533
Quinine Sulphate	ounces	39,056	26,000	1,732,192	1,432,090	Tragacanth	"	49	638	1,610	3,581
Beeswax	packages	849	679	2,557	2,672	Ipecacuanha	"	26	103	168	321
Camphor	"	18	254	9,181	11,624	Jalap	"	6	17	329	324
Cardamoms	"	246	441	1,519	760	Nux Vomica	"	88	67	285	342
Cochineal	"	83	203	2,605	2,112	Oils, Castor	"	60	105	456	400
Calumba Root	"	3	285	907	77	Olive	"	19	237	843	798
Cubcbs	"	—	14	1,923	472	Aniseed	"	10	14	138	109
Dragon's Blood	"	9	2	23	101	Cassia	"	—	16	79	98
Galls (all kinds)	"	453	1,182	5,483	5,142	Rhubarb	"	411	91	1,034	757
Gum, Ammoniacum	"	30	—	59	32	Saltpetre	tons	995	1,132	2,678	3,933
Arabic, all kinds	"	921	1,532	10,284	13,842	Sarsaparilla	packages	49	148	364	236
Asafoetida	"	—	163	307	496	Senna	"	913	701	1,388	1,190
Benjamin	"	16	309	2,820	3,231	Shellac	"	2,154	5,581	53,758	53,273
Galbanum	"	—	—	15	15	Terra Japonica, Gambier	tons	19	662	828	1,055
Gamboge	"	8	6	321	341	Cutch	"	56	57	1,105	1,471
Guaiacum	"	—	19	85	78	Turmeric	"	71	26	349	631
Kino	"	2	4	41	21						

The stocks of camphor, oils of aniseed and cassia are incomplete, some warehouses not making returns.

sold, fair at 4d. to 4 1/32d. Of 25 cases *Penang*, 7 cases sold, middling small picked at 6 3/4d. to 7d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol* lower, ordinary at 1s. 1 1/2d., pure 2s. per gallon. *Benzole* is very weak at 9d. per gallon on the spot for 50 per cent., and 8 1/2d. to 9d. for 90 per cent. For delivery next year a large business has been done at 10d. to 11 1/2d. per gallon. *Crude Naphtha*, 30 per cent. at 120° C., 4d. *Solvent Naphtha*, 95 per cent. at 160° C., 1s. 6d.; 90 per cent. at 160° C., 1s. 2d.; 90 per cent. at 190° C., 1s. 3d. per gallon.

COD-LIVER OIL.—Is quiet but steady, price of best *Lofoten* non-congealing oil ranging from 82s. 6d. to 87s. 6d. per barrel, according to brand, in tin-lined barrels of 25 gallons.

COCA LEAVES.—Are scarce; *Bolivian* held for 1s. 3d. per lb. for good and *Truxillo* 8d. per lb. for good green.

COCAINE.—Makers' price for best brands has been advanced to 9s. 9d. per oz. for the *Hydrochlorate* in 25 oz. tins for 100 oz. lots. Market is very firm and a further advance would appear probable in face of actual position of the *crude* article.

CODEIA.—Is firm at 12s. 6d. per oz. for quantity and bulk packing.

CORIANDE SEED.—6s. per cwt. asked for Morocco.

CREAM OF TARTAR.—First white crystals spot 71s. to 72s. per cwt., powder 73s. to 75s.

DRAGONS BLOOD.—This scarce article continues in good demand, and the bought in lots of poor quality ex last sales have, it is said, been sold at from £7 10s. to £8 10s. per cwt.

GINGER.—Of 376 bags rough *Cochin* 110 bags sold, ordinary to fair washed rough at 20s. 6d. to 23s. Of 139 cases cut kinds 117 cases sold, chiefly without reserve, B, 55s. to 56s., C's, wormy, 32s. 6d.; 69 barrels, 9 half-barrels *Jamaica* sold at firm rates: low middling to middling, 69s. to 74s. 6d., good middling to good, 76s. to 79s.

GLYCERIN.—Is firm at 52s. 6d. to 55s. per cwt. for *English*, and 54s. to 65s. per cwt. for best *German* makes of white double-distilled chemically pure 1260° quality, in cases of 8 × 56 lb. tins. It is said that a further advance in price is not improbable.

IODIDES.—Are steady and in good demand at 10s. 3d. per lb. for *Potass Iodide*; 11s. 7d. per lb. for *Sodii Iodide*; 13s. 7d. per lb. for *Ammon. Iodide*; and 13s. 7d. per lb. for *Iodoform cryst.*, powder and precipitated. Price of *Iodine* is unchanged at 7 1/2d. per oz.

IPECACUANHA.—Holders remain very firm, asking 10s. per lb. for *Rio*, and 7s. 6d. for *Carthagera*, 7s. per lb. having been refused for the latter. Looking at the position of the article it would appear probable that buyers will be obliged to pay the prices asked by holders.

LITHIA.—Is firm at 10s. 8d. per lb. for the subnitrate in 2 cwt. lots up to 11s. 1d. per lb. for smaller quantity.

MERCURIALS.—Makers' quotations for 5 to 10-cwt. lots are, *Corrosive sublimate*, 2s. 3d. per lb. *Calomel*, 2s. 7d., and *Red oxide cryst.* and *levigated*, 2s. 11d. per lb.

MORPHIA.—Is quiet but firm at 5s. per oz. in bulk for the *Hydrochlorate Salt* in powder.

NITRATE OF SODA.—Ordinary is quoted £7 10s. to £7 12s. 6d., and refined £8 to £8 2s. 6d. per ton.

OILS (FIXED) AND SPIRITS.—*Linseed* quiet at £17 spot London for pipes; £17 10s. for barrels. *Rape* steady ordinary brown spot, October to December, £21 15s.; January to April, £23 5s. *Olive*, Spanish, £29; Levant and Mogadors, £29 to £32. *Coconut*, Ceylon spot, £24; October to December, £23 5s. *c.i.f.* *Cochin* spot, £27; October to December, £26 to £26 10s. *c.i.f.*; Mauritius, £24 5s. spot. *Palm*, Lagos spot, £22 10s. *Turpentine*, strong and active, at dearer prices, American spot, 22s. 6d.; November to December, 22s. 9d.; January to April, 23s. 6d. *Petroleum* firm, Russian spot, November-December, 5d. per gallon, American spot 5 1/2d. to 5 3/4d., November-December 5 3/4d., water white 6 3/4d. to 6 1/2d., November-December 6 3/4d. to 6 1/2d. *Petroleum Spirit*: American, 6 1/4d. to 6 3/4d.; deodorised, 6 1/2d. to 6 3/4d. per gallon.

OPIMUM.—Market is firm. There has been rather more inquiry, but in face of firmness of holders, in consequence of late reports from Smyrna as to extent of the crop, little business has resulted. Present quotations are: Good *Druggists'* 11s. to 12s. per lb., seconds 10s. 6d. to 10s. 9d., *manufacturing* 10s. 3d. to 10s. 9d., *soft shipping* 10s. 6d. to 13s. 6d., according to quality, *Persian* 11s. 3d. to 11s. 9d.

ORRIS ROOT.—Extra picked *Florentine* 36s. per cwt., *c.i.f.*, picked, 34s. 6d. per cwt., sorts, 30s. per cwt.; *Mogador*, 14s. 6d. to 15s. per cwt.

OXALIC ACID.—3d. to 3 1/4d. per lb. *new*, delivered in London.

PERMANGANATE OF POTASH.—Over-production of this article has led to a decided fall in price, and it is now possible to buy in ton lots at 60s. per cwt. for small crystals, and 65s. per cwt. for large crystals.

PHENACETIN.—Unchanged at 3s. 9d. to 4s. 3d. per lb.

PHENAZONE.—Is dull and weak, while *Dr. Knorr's Antipyrine* is stated to be in good demand at unchanged price.

PILOCARPINE.—Makers' price is now 1s. 4d. per gramme for both the *Nitrate* and *Hydrochlorate* salts.

POTASH COMPOUNDS.—*Chlorate* is firm at 3 1/4d. per lb. spot London for crystals, powder 1/4d. per lb. more. *Bromide* 1s. 9 1/2d. per lb. *Iodide* 10s. 3d. per lb. *Bicarbonate* 32s. 6d. to 35s. per cwt. *Bichromate* 3 1/2d. per lb. *Prussiate*: yellow 6 1/4d. to 7d., red 1s. 2d. to 1s. 3d. per lb. *Permanganate* 52s. 6d. and 57s. 6d. per cwt. for small and large crystals respectively.

QUICKSILVER.—Is firm at £7 5s. per bottle from first hand; second-hand offering at 1s. per bottle less money.

QUININE.—As a result of the late bark sales in Amsterdam, at which the price of the unit was fully maintained *Quinine* remains firm, makers of German brands most in favour quote 10d. per oz. for the *Sulphate* in 100-oz. tins and for 1000 oz. lots, there being little or nothing offering from second hand below this figure. It is rumoured, on what should be reliable authority, that at the next sales quite moderate quantities only of bark will be offered, which may, in face of the actual large demand for the manufactured product quite possibly lead to an advance in price of the unit and a consequent rise in the value of quinine.

SENNA.—Small sales of *Tinnivelly* since the sales from second

hands at full prices. Arrivals of new crop are coming in freely, but on the other hand the deliveries are good.

SODA COMPOUNDS.—*Crystals* quiet; barrels, 55s. per ton; bags, 52s. 6d., ex-ship. *Ash*, £5 5s. to £5 10s. per ton on spot. *Bicar. bonate*, £7 5s. to £7 10s. landed for the commercial 97 per cent. quality, and £18 10s. per ton for the fully bicarbonated. *Caustic*: 60 per cent., £6 10s. per ton; 70 per cent., £7 10s. *Bichromate*, 2½d. per lb. *Bromide*, 2s. per lb. *Iodide*, 11s. 7d. *Hyposulphite*, 6s. 6d. to 8s. 6d. per cwt., according to packing and make. *Nitrate*, £7 12s. 6d. for commercial, and £8 2s. 6d. for the refined.

SPICES (VARIOUS).—*Black Pepper*: Only 80 bags Tellicherry offered and bought in at 4½d. *White Pepper*: 174 bags Penang bought in at 7½d., 21 bags Siam withdrawn, 120 bags fine Singapore sold at 8½d. *Red Pepper*: 10 cases Valencia bought in at 45s. *Chillies*: 10 bags good red Natal sold at 38s. *Capsicums*: 8 bags East India sold at 46s., also 2 bales Natal at 74s. *Cassia Lignea*: 30 boxes Quang Si sold without reserve at 25s.; 235 bales broken, partly sold at 37s. 6d. *Cinnamon*: 16 bales broken quill bought in at 1s.; 12 bags Ceylon broken sold at 8d.; 52 bags coarse bark bought in at 5d. *Mace* dull: Of 37 cases Penang only 1 case good palish sold at 2s.; 11 cases West India sold at 1s. 4d. to 1s. 7d. *Pimento*: Of 295 bag only 60 sold at 4½d. to 4¾d.

SULPHATE OF COPPER.—Quiet but firm at £16 5s. to £17 10s. per ton.

SULPHONAL.—Is still obtainable from the makers at 7s. 3d. per lb. for bulk packing. *Bayer's* make is unchanged at 5s. 6d. per lb. in bulk.

Newcastle Chemical Report.

OCTOBER 5, 1898.

This market, as a whole, remains quiet. Shipments are still fair, but not much new business passing. Bleaching powder £5 10s. to £6, according to markets. Soda crystals, basis price, 45s. Caustic soda, 70 per cent., basis price, £7. Soda ash, 52 per cent., £4 5s. Alkali, 52 per cent., £5 5s. Sulphur, £5 per ton.

Manchester Chemical Report.

OCTOBER 5, 1898.

There is absolutely no change to report in heavy chemicals. Inquiries in Liverpool show that no importance is to be attached to the rumours that American made alkali, 58 per cent., is being sold over next year. Orders can only be placed there on the usual terms, and this is undoubtedly the case in Manchester. Indeed, in many respects there is a scarcity of articles such as Soda Crystals, Glauber and Epsom Salts, and similar products. In miscellaneous articles, there is some firmness. Glycerin, for instance, is firmly held by local producers, and one order in particular was refused at current rates, and this for a considerable quantity of ten to twenty tons. Sulphate of copper is firm at £18 per ton, prompt delivery, best brands, Manchester. Arsenic is firm at £17, ex-ship Garston. Brown acetate of lime is in request, and is steady at £5 7s. 6d. per ton for Welsh and American, delivered Manchester. More oil cargoes are being brought to this port. Early in the week the "Petrina" came down with a full cargo of petroleum for the Bagnall Oil Co.'s Wharf, at Mode Wheel. The s.s. "Robert Dickinson" is on her second voyage from Philadelphia, and will land at the Mode Wheel Oil Wharf next week. There is also one Russian tanker and two American steamers on the way.

Liverpool Market Report.

OCTOBER 5, 1898.

The improvement in the tone of the market recently commented on still continues, prices are well sustained, and a good average of transactions has been concluded. The miscellaneous sales are worthy of note from their including a large parcel of Huanuco Coca Leaves. The slight fall in the price of Spirits of Turpentine has given place to a corresponding rise, and the quotation is now 6d. per cwt. over last week's figure. Good sales of high-class Chilian Honey and Sierra Leone Chillies, together with a lot of Cochin Ginger, complete the list of miscellaneous articles. Seeds, viz., Linseed and Canaryseed are in about the same position as last week, whilst Oils have only experienced slight variations in price, mostly as regards Spanish Olive.

The chemical business done has been done on a quiet and a small scale, most of attention being centered in Sulphate of Copper which is firm and seems to be about to command higher prices.

AMMONIA SALTS.—*Carbonate* is still quiet at 3d. per lb. *Sal ammoniac*, 35s. per cwt. *Sulphate* is quiet at £10 per ton.

BEE SWAX.—Good sales of Gambia at an average of £6 10s. per cwt. are reported, together with 20 bags of Chilian at £6 15s. per cwt.

CANARYSEED.—Commands slightly more attention, an offer of 28s. 6d. per 464 lbs. for high quality Turkish was refused—price is between 28s. and 30s.

CHILLIES.—Fine quality Sierra Leone sold at 39s. per cwt.

COCA LEAVES.—24 bales of Hunuco from store sold at 8½d. per lb.

COPPERAS.—Is exceedingly firm at 39s. and 37s. per ton.

COPPER SULPHATE.—For immediate delivery £17 2s. 6d., per cwt., forward £17 7s. 6d. to £18 per ton according to date.

GINGER.—Sierra Leone has been moving off in small quantities at 19s. per cwt., and 50 bags of Cochin made 23s. per cwt.

HONEY.—100 barrels of Chilian were sold at 21s. 9d. per cwt. for Pile 3, and 23s. 6d. Pile 1. 70 barrels Pile X found buyers at 27s. per cwt.

KOLA NUTS.—36 packages of dried wore disposed of for 1¼d. per lb.

LINSEED.—The prices for forward delivery of seed shipped September-November have been 37s. 9d. per 416 lbs. for Calcutta, and 34s. American. 50 tons of River Plate went for 34s. 6d. per 416 lbs., and Bombay feeding quality is selling at 39s. to 40s.

OILS (FIXED) AND SPIRITS.—*Castor* has a fair amount of attention, Madras being the only variety selling a shade lower than last week; Calcutta, "good seconds," 3½d. per lb.; French, 1st pressure, 3½d. per lb.; and Madras, 3d. to 3½d. *Olive* is firm at steady prices on the spot. Spanish sell at £29 10s. to £30 10s. per tun. For shipment Malaga is £31 per tun, cost and freight, and Seville £30 to £31 on same terms. *Linseed* is held for 18s. to 18s. 6d. per cwt. *Cottonseed* has fallen 3d. per cwt., and now is quiet at 15s. 9d. to 16s. *Spirits of Turpentine* has advanced to 23s. per cwt., and is very firm with a fair inquiry.

POTASH SALTS.—*Chlorate*: 3½d. to 3¾d., or 4d. per lb. *Cream of tartar* is firm at 75s. per cwt., and very scarce. *Pot.* and *Pearlashes* are unchanged from last week.

SODA SALTS.—*Bicarbonate*: £6 15s. per ton. *Borax* is firmer, £13 10s. to £14 per ton. *Caustic*, 77 per cent., £7 15s. per ton. *Crystals*: £2 17s. 6d. to £3 per ton. *Nitrate*: 7s. 7½d. to 7s. 9d. per cwt. 122 bags of damp and discoloured sold at 7s. 4½d. per cwt.

Marriage

VINCENT—DE VAN.—On September 22, at St. Mary's, Islington, by the Rev. J. M. Willoughby, Robert, second son of the late Joseph Vincent, of Kingstonswell, Chard, Somerset, to Clara, only daughter of the late George De Van, Surgeon, Lowman Road, N., and Mrs. De Van, Bathurst Mansions, Holloway, N.

Publications Received.

GENERAL ELEMENTARY SCIENCE, edited by WILLIAM BRIGGS, M.A., F.C.S., F.R.A.S. Second edition, Pp. viii. + 136. Price 3s. 6d. London: W. B. CLIVE, University Correspondence College Press, 13, Booksellers' Row, Strand, W.C. 1898.

THE CALLING OF THE PHARMACIST. By OSCAR OLDBERG. Pp. 24. Chicago: North-Western University Press. 1898. From the Author.

Trade Notes.

MR. B. KÜHN, 36, St. Mary-at-Hill, Eastcheap, London, E.C., has obtained the bronze medal for "Chinosol" at this year's Sanitary Congress held at Birmingham.

MESSRS. BURROUGHS, WELLCOME AND Co. have been awarded two highest awards at the recent Health Exhibition at Birmingham, the one for their Water Analysis Case and the other for their "Soloid" products.

Announcements.

Tuesday, October 11.

ROYAL PHOTOGRAPHIC SOCIETY, 5A, Pall Mall East, London, W., at 8 p.m. Opening meeting; the President will deliver the annual address, to be followed by the presentation of the medals awarded at the Exhibition.

Wednesday, October 12.

MANCHESTER PHARMACEUTICAL ASSOCIATION, Chemical Club, Victoria Hotel, at 7.30 p.m. Opening meeting and election of Council. Mr. John Harrison, J.P., of Sunderland, member of the Council of the Pharmaceutical Society, will deliver an address on "Pharmacy and Parliament."

NEWCASTLE ON-TYNE AND DISTRICT CHEMISTS ASSOCIATION, Metropole Hotel, Clayton Street West, Newcastle, at 8 p.m. Annual meeting and election of Council. The inaugural address will be given by the new President Mr. F. E. Schofield, of Morpeth.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS ASSOCIATION, Whimble Street, Plymouth, at 2.30 p.m. Annual meeting to be followed by the annual dinner at 7.30 p.m., at Routly's Farley Hotel, Plymouth.

Thursday, October 13.

CHEMISTS' ASSISTANTS' ASSOCIATION, 73, Newman Street, London, W., at 8.30 p.m. Inaugural address by the new President, Mr. F. W. Gamble.

NORTH STAFFORDSHIRE AND DISTRICT CHEMISTS' ASSOCIATION, Copeland Arms Hotel, Stoke, at 6.30 p.m. Opening meeting; Mr. John Averill, of Stafford, will deliver the presidential address, followed by a smoking concert.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY, 37, Surrey Street, Sheffield, at 6.30.—Opening of the fourteenth session of the Society's School of Pharmacy at the Masonic Hall, when the President will distribute the prizes, and the inaugural address will be delivered by Mr. J. Rymer Young, F.C.S., of Warrington, member of the Council of the Pharmaceutical Society. The annual dinner will be held the same evening at 7.45.

Friday, October 14.

KING'S COLLEGE, London, at 8 p.m.—The introductory lecture of a systematic course of lectures and demonstrations for Sanitary Inspectors will be delivered by Professor W. J. Simpson.

Partnerships Dissolved.

(From the London Gazette)

J. A. Fox, John Fox, Ben Fox and Arthur Smith (trading as Fox Brothers and Co.), Soap Manufacturers, Lion Works, Macclesfield. Debts will be received and paid by Ben Fox and Arthur Smith.

J. W. Roe and C. J. Glasson, Physicians, Surgeons, etc., Ellesmere, Salop, so far as regards C. J. Glasson.

J. S. Sequeira and Thomas Jones, General Medical Practitioners, 68, Leman Street, Whitechapel.

W. J. Smart, J. J. Smart, and Geo. T. Smart (trading as Smart Brothers), Round Oak Glass Works, Brierley Hill, Stafford, so far as regards Geo. T. Smart.

Wm. Hoffmeister, J. B. Hoffmeister, and Henry E. W. Hoffmeister, Physicians and Surgeons, Cowes, Isle of Wight, so far as regards John B. Hoffmeister.

Geo. S. Passmore and J. E. Passmore, 5, Greenough Street, Wigan. Debts will be received and paid by Geo. S. Passmore.

Receiving Orders in Bankruptcy.

(From the London Gazette.)

Dr. Henry S. Cook, 30, Selborne Road, Handsworth Wood, Birmingham, Medical Practitioner.

H. K. Vines, Medical Practitioner, 188, Adelaide Road, Brockley, Kent.

John Davidson, Drug Store Dealer, etc., 97, Laygate Lane and 154, South Eldon Street, South Shields.

Advertisements.

(Received too late for Classification).

DEVONSHIRE.—£160. For disposal, immediately, Chemist's BUSINESS in large seaport town in Devonshire. Immense neighbourhood. Double-fronted shop. Modern mahogany fittings. Unusual opportunity for young qualified man. Apply, A. E. care of Hodgkinson, Clarke & Ward, Upper Whitecross St., London.

QUALIFIED ASSISTANT wanted. Good dispenser. Also JUNIOR, accustomed to good-class trade. Apply to FRESHFIELD REYNOLDS, Chemist, Harrogate.

OBITUARY.

SANDEMAN.—On September 29, Patrick Sandeman, Chemist and Druggist, Dundee. Aged 56.

HETHERINGTON.—On October 2, Thomas Hetherington, Chemist and Druggist, Moffat. Aged 69.

BULLOCK.—On October 3, Henry Bullock, Chemist and Druggist, Salford. Aged 63.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

WANTED.

Old Platinum Utensils or Scrap, also Old Electric Lamps wanted for prompt cash by P. Rowsell, 14, Walcot Square, London, S.E.

OFFERED.

Miscellaneous.

Photographic mounts, Bristol cartes, 3s.; G.B.E., 10s.; cabinets, 10s.; G.B.E., 15s.; quarter-plates, 6s.; half-plates, 12s. 1000; plate-sunk mounts, 12 by 10, 40s. 1000. Samples free.—Edward Peck, East Dereham, Norfolk.

Magic Lanterns, second-hand; triples and binoculars: oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingland, N.

Six Pieces Perfume Ribbon, each 36 yards long (216 yards), assorted colours, post free, 5s.—Edward Peck, East Dereham, Norfolk.

About 30 doz. Stopped-Rounds, and Four Specie Jars and Stands for £7 net cash.—Orchard, Salisbury.

Dispensatory.—Latest; quite new; cost 35s. What offers?—Kenyon, 22, Society Place, Derby.

Small Student's Balance, in glass case. Carries 500 grains in each pan and turns to 1-10th grain. £1 5s.—Weddell, Colchester.

Books.

Valuable Modern Books.—'Studies in Microscopical Science,' 2 vols., by Arthur C. Cole, 89 coloured lithographic plates, cost £4 4s.; price 24s. M'Alpine's 'Biological Atlas,' 4s. Ganot's 'Popular Natural Philosophy' (uncut), 5s. Williams' 'Pulmonary Consumption,' 2nd edition, cost 16s.; price 7s. 6d. Ringer's 'Therapeutics,' cost 12s. 6d.; price 5s. 6d. Whitt's 'Materia Medica,' 5th edition, 3s. 6d. Bentley's 'Students' Botany,' 2 vols., cost 11s.; price 5s. Cooke's 'Microscopic Fungi,' 1898 edition, 4s. 'Chapters on Evolution,' Dr. Andrew Wilson, 4s. 6d. 'Year-Books of Pharmacy,' 12 years, 6d. per volume. Or will exchange any of the above for old druggists' curiosities, ancient syrup jars, ointment pots, bottles, mortars, etc.—John Austen, Dore, near Sheffield.

Books by Armstrong, Attfield, Bentley, Bower, Jago, Martindale, Oliver, Ostwald, Prantl, Remser, Roberts (midwifery), Squire, Sutton, Thorne, Valentine, Watts, Wills, Wootton. Year Book of Pharmacy. Cheap.—Gower, publisher, Waterloo, Liverpool.

What Offers for Wills' 'Materia Medica' (smaller), 'Pharmacy,' 'Analysis, Cooke's 'Chemistry,' Thorpe's 'Qualitative Analysis,' Thorpe's 'Quantitative Analysis,' Ganot's 'Physics,' Squire's 'Companion,' B.P., 8s. As new.—Chemist, 2, Park Crescent, Torquay.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Adams, Adcock, Bayley, Beecham, Bishop, Blackburn, Browne, Burns, Burroughs, Butterworth, Campkin, Cowley, Dalton, Daniel, Dent, Emsley, Espinasse, Ferrall, Fletcher, Forrester, Fraser, Fresson, Hadfield, Hapgood, Harvie, Heap, Hill, Ho'ding, Horsfield, Hudson, Johnson, Jones, Lothian, Mair, Marshall, Martindale, Merson, Moss, Munden, Oldberg, Palmer, Pike, Payne, Perfect, Phillips, Prector, Reynolds, Russell, Saunders, Smith, Spitta, Todd, White.

MEDICAL JOTTINGS.

THE MEDICAL ASSOCIATION OF THE LOIRE AND HAUTE-LOIRE, which met at Roanne, according to the special correspondent of the *British Medical Journal*, has voted that the Lyons University be called upon to revoke their decision to create the title of doctor for pharmaceutical chemists. The medical profession is opposed to the proposal; it considers that medical men are not sufficiently protected in the present state of affairs, and would be greatly injured by the creation of doctors in pharmacy.

A POSTHUMOUS WORK by the late Sir B. W. Richardson is announced to be shortly published in two volumes under the title of 'Disciples of Æsculapius.' It will consist of memoirs of leading physicians, and will contain a large number of portraits and illustrations.

THE ANNUAL HARVEIAN ORATION at the Royal College of Physicians of London will be delivered in Pall Mall by Sir Dyce Duckworth, on Tuesday afternoon next, the 18th inst., at 4 o'clock. Dr. W. M. Ord will deliver the Bradshaw lecture at the same place on November 10, at 5 o'clock p.m. The subject will be "Myxœdema and Allied Conditions."

THE WILL, DATED JANUARY 2, 1896, of the late Mr. Henry Lee, Consulting Surgeon to St. George's Hospital, who died on June 9 last, has been proved by his widow, the sole executrix, the value of the estate being £46,948 6s. 4d. He bequeathed to his three daughters by his first marriage a legacy of £2000 each, free of duty, and the residue of his property to his wife absolutely.

ACCORDING TO THE 'LANCET,' the British Pharmacopœia is having as favourable reception as it well could have had. The sales up to September 22 amounted to 18,220 copies.

DR. NORMAN KERR read a paper at the recent meeting of the British Medical Association with the object of calling attention to the increasing peril from the rapid expansion of the traffic in proprietary so-called "remedies" containing alcohol, morphine, cocaine, and other strongly poisonous drugs without the purchaser having the slightest suspicion of the presence of any narcotic poison. He found not long ago a distinguished ecclesiastical dignitary, the sworn foe of alcohol and its congeners, was giving one of his children a generous daily allowance of a "wine" containing not only alcohol in substantial proportion but, in addition, a still deadlier drug. Dr. Kerr contended that it was the province of the medical profession to bring pressure to bear upon the Legislature for the adoption of such legislation as shall secure the open disclosure on the labels of all alcoholic intoxicating drinks and drug preparations which are not recognisable as intoxicating. By such a provision buyers would know what they are buying, and they would not be endangered by the unwitting use of alcoholic or other concealed intoxicating proprietary articles. Similar regulations should also apply to morphine, opium, cocaine, and other poisonous inebriants.

PROFESSOR VIRCHOW, who, during his recent stay in this country was the guest of Sir Felix Semon, the celebrated laryngologist, has been interviewed by a representative of the *Pall Mall Gazette*. His views on politics, considering his position as leader of the German Radical party, would no doubt have been excellent "copy" from the interviewer's point of view, but for obvious reasons were not available. On such subjects as compulsory vaccination and the conscientious objector the professor said it was difficult to understand in Germany the attitude adopted by the British Parliament in dealing with the vaccination question. Make it either compulsory or entirely facultative, he said, and then you have a theoretical standpoint. But as you have it now with the conscientious objectors clause, it is simply ridiculous. You give the man in the street the right to a medical opinion! Why the objector thinks only of himself and what he imagines his own convenience. It is all very well for parents to arrange in a way for the future of their own children, but they must not be given the right to expose them, nay to condemn them to contagion. Take the case of a man with a sore leg, which according to medical advice must be amputated if the man's life is to be saved; he refuses to undergo the operation, and, well, if he prefers to die that is his own business. But suppose this leg contains the germs of a

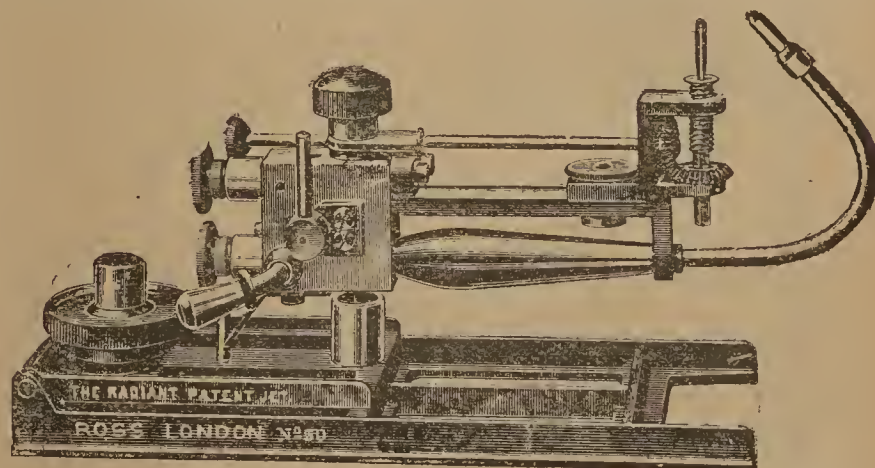
contagious disease; would the doctors be justified in letting the man mix freely with others and spread contagion? Or in the case of a fire, are the feelings of owners of adjacent houses to be consulted when it is necessary to sacrifice them that the conflagration may be circumscribed? "It is not the rights of the individual but of Society at large which are to be considered in dealing with infectious disease; and for the good of the nation regulations concerning compulsory vaccination should be adhered to. The very existence of people hangs on the question. See how the population of some islands has been thinned by smallpox and how whole tribes of American Indians have disappeared from the same malady.

THE PROFESSOR WENT ON TO SAY that the same kind of immature and incompetent arguments that have been the stock in trade of the anti-vaccinationist have served the purpose of the anti-vivisectionist. People should understand that experiments are made for the sake of humanity and for its good, and not for the purpose of inflicting pain on animals. There is no doubt that abuses have existed, but you cannot condemn the practice because of them. Besides, since the discovery of bacteria, the method has taken a fresh lease of life, and it is impossible to test bacteria or their virulence otherwise than with the aid of experimental medicine. Nobody denies the number of cures of diphtheria due to injection of the serum, but could one have tested its efficacy otherwise than on animals? There are no means of curing certain diseases unless the virus is tested on animals. And the same applies to the testing of other injections which are kept in stock by chemists, and are manufactured and sold for medical purposes.

NOTES OF NOVELTIES.

"The Radiant" Limelight Jet.

Messrs. Ross, Ltd., of 111, New Bond Street, S.W., claim for this jet that the luminous area or "spot" is smaller than usual in proportion to the power of the jet, the intensity of the light being greater. We have not seen any comparative tests made, but the brilliancy of the illumination of the screen when one of these jets was used in the lantern convinced us that it is a jet of very high efficiency, and we observed for ourselves that the luminous spot on the lime was less than usual in area. This is, of course, a valuable characteristic. The mixing chamber is unusual in shape and is designed so to ensure silent working. The mechanical arrangements are admirably thought out. An extremely solid base carries upon it a stage which has a lateral motion actuated by a milled head. Upon this stage the jet is

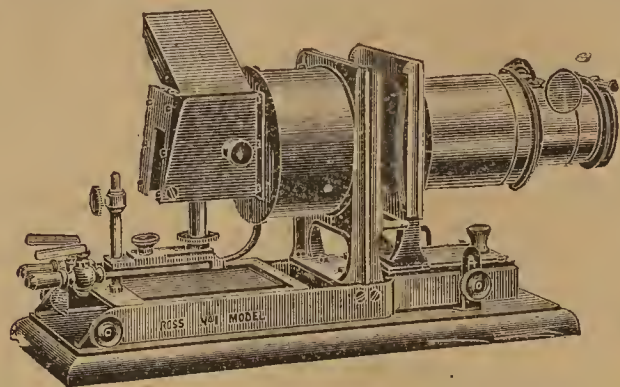


built, the vertical adjustment being obtained by means of a screw turned by a milled head at the top of the jet. The lime adjustment is of the usual kind. The adjustments work very smoothly, and the whole is very firm and free from vibration. The gas valves are of the screw-down kind, and a "cut off" is provided which enables dissolving to be done with ease. The jet is made in two degrees of power. No. 1 is for use with screens of ordinary size, No. 2 for use with screens of excessive size or under other conditions where the maximum of light is required. The price for either size is £4 4s.

Portable Limelight Lantern.

The term "portable" lantern suggests at once a lantern that is liable to catch fire, if of wood, or to get inconveniently hot, if of metal. In that under notice, however, all difficulties arising from

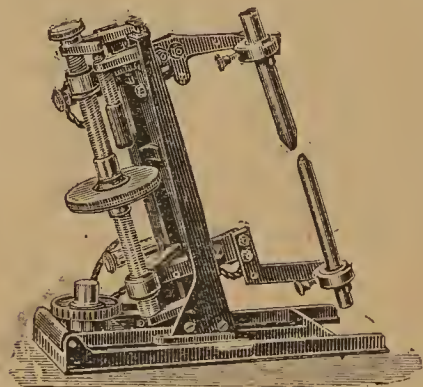
the heating of the body of the lantern are obviated by the expedient of making the body very small—so small that it in reality consists of a chamber to contain the lime only. This arrangement allows of all the means of adjusting the jet to be placed outside the body, where there is no tendency for them to get heated. All the parts of the lantern are very rigid, notwithstanding the fact that its adaptability is greater than in the



ordinary patterns; for instance, a carrier of any thickness may be used and with a slight addition, which may be made, it will be possible to throw a vertical beam. An arrangement is provided for tilting the lantern to a considerable angle, and provision is made for placing one lantern over another to form a binomial, further, in using two lanterns the upper one may be separately tilted to obtain coincidence in the two discs. The instrument is very attractive in appearance. It is needless to say that the workmanship is admirable, and the price—£7 7s.—at which it is put upon the market by Messrs. Ross, Ltd., is extremely moderate.

“The Eclipse” Projection Arc Lamp.

This lamp is made by Messrs. Ross, Ltd., in two patterns A, and B. In the A pattern a frame is built from a stage on the base and set at the angle most suitable for obtaining the maximum of



light through the condensers whether employing a direct or alternating current. While the principal duty of the frame is to carry the working parts of the lamp, it also acts as a screen from the light and a shield from the heat of the carbons. A milled head upon the stage controls the cross motion of the lamp and enables the light to be brought to the optical centre, an important feature being that the motion is in a straight line, and not the swinging motion which many lamps have. A long-shaped milled head near the top of the lamp adjusts the light vertically. Both motions are extremely “sweet” in action, and, of course, there is perfect control over the position of the light, even to minute adjustment. For use with the cinematograph or the projecting microscope, or for making photo-micrographs, this is of immense importance. A small milled head at the top is for rough adjustment of the carbons in relation to one another, but the fine adjustment for feeding the carbons as they consume is provided by a larger milled head in the centre of the lamp. A lever is provided for striking the arc quickly, and thus preventing a heavy strain being put on the fuses and their consequent destruction. The price of the lamp is £4 15s. The B pattern lamp follows in the main the A as described above. The frame, however, is not a fixture to the stage, but is hinged, and the carbons may, therefore, be brought to a vertical position for use otherwise than in the lantern. A further modification, which is also an improvement, is the employment of a suitable non-conducting material in the place of brass for the milled heads. In this pattern a rack and pinion adjustment is substituted for a screw in the vertical traverse of the lamp.

An Improved Lantern Condenser.

The noted firm of opticians, Voigtlander and Sohn, of Brunswick, whose London agency is 92, Hatton Garden, have put upon the market an improved form of condenser for use with the optical

lantern. The front lens is double convex with dissimilar curves, and the back is a meniscus, having an unusually deep concave. It is claimed that in employing it the definition of the picture on the screen is greatly improved, that more light is obtained, and we noticed for ourselves that the glass is unusually white. For those who seek something better than is to be obtained in the ordinary way, this instrument is worthy of consideration. The price of the $4\frac{1}{2}$ inch is 44s.

PRACTICAL PHOTOGRAPHIC NOTES.

NOW THAT THE LIGHT is getting worse and weaker in actinic value by the absorption of the ultra-violet and violet rays by the aqueous vapour, which is—or should be—more prevalent in the atmosphere, many photographers are turning their attention to the use of colour-sensitive plates, that is, plates which are sensitised to the less refrangible rays, such as green, yellow, and orange. For indoor work, too, these plates are invaluable, as being so sensitive to yellow it is extremely easy to obtain really satisfactory negatives of still life, coloured pictures and objects by gas or lamp light, when an ordinary plate would most certainly fail. For those, too, who have followed the exceedingly interesting and instructive articles by Dr. Spitta on “Photo-Micrography” colour-sensitive plates will be found of considerable benefit.

BUT THE MAIN POINT of these remarks is to draw attention to one or two points in connection with the use of these plates which are either unknown or, being known, are ignored. In the first place it has been pointed out by Ives—and his statements can be confirmed from practice—that the use of hydroquinone developer intensifies the action of the blue rays at the expense of the others; further, that when a colour-sensitive plate is developed for too short a time, the action, no matter what developer is used, is almost entirely confined to the blue or more actinic rays. This latter fact has been quite recently pointed out by Dr. H. W. Vogel, or possibly, we should say, has been again emphasised by him, for it has been known for some time.

DURING THE WINTER MONTHS amateur photographers generally turn their attention to lantern slide making, and many chemists may be asked for developers. One of the most satisfactory which we have used for some time is the following, which, so far as our experiments have gone, is applicable to every make of lantern plate:—

	No. 1.	
Ortol.....		12 g.
Potassium Metabisulphite		6 g.
Distilled Water, to.....		1000 C.c.
	No. 2.	
Sodium Carbonate (crystal)		100 g.
Sodium Sulphite		100 g.
Potassium Bromide		2 g.
Distilled Water, to		1000 C.c.

For use mix equal quantities of Nos. 1 and 2, and add double the quantity of water. By using only half the quantity of water a colder tone is obtained, with the larger quantity the tone is a rich warm brownish black.

AS A ONE-SOLUTION DEVELOPER for black tones on lantern plates and bromide paper, there is nothing better than metol-hydroquinone developer, for which the following may be used:—

Hydroquinone	8 g.
Metol	2 g.
Sodium Sulphite	200 g.
Sodium Carbonate	100 g.
Potassium Bromide	4 g.
Distilled Water to.....	1000 C.c.

This is energetic, and may even be diluted with an equal quantity of water with advantage.

AT THE PRESENT TIME there are a few chemicals which are coming into fairly general repute in photographic circles with which chemists as pharmacists may not be well acquainted with. Ammonium persulphate, NH_4SO_4 , is the latest claimant for photographic notice, and this is being used as a reducer, and a very good one it is when used in 5 per cent. solution, and it acts fairly rapidly but evenly. It is not necessary to free the negative absolutely from hypo, as the persulphate oxidises this, and the neutral double sulphate of ammonium and silver formed is readily soluble in excess of the persulphate.

ENGLISH NEWS.

THE SUBJECT OF STRETCHER DRILL is very ably dealt with in a little book by Surg.-Major J. J. de Zouche Marshall, who is anxious to secure the services of chemists' assistants as stretcher-bearers in the Volunteer forces. With a view to putting that idea into practice he proposes to form a half-company or section amongst the chemists in the recruiting districts of his own corps—the 3rd Volunteer Battalion East Surrey Regiment—including Kingston-on-Thames, New Malden, Norbiton, Surbiton, Thames Ditton, Long Ditton, Molesey, Hampton Court, Hampton Wick, Teddington, Richmond, Mortlake, Barnes, East Sheen, Kew, Ham, Esher, Walton, Chertsey, Egham and Staines. Chemists' assistants desiring to take part in this useful work would be required to join the Volunteer force as ordinary recruits, after passing the medical examination, and then to devote two hours in the evening, once a week, to squad and company drill. The ambulance class to be commenced later for instruction in first-aid work, etc., will meet at Kingston, or alternately at Kingston and Richmond, one evening a week, for about twelve weeks, and the members of the class will then be expected to pass for the Army Ambulance Certificate. Further particulars may be obtained from Sergeant-Major de Zouche Marshall, Shortwood, Cromwell Road, Teddington, S.W.

THE LOCAL SECRETARYSHIP AT SHEFFIELD.—Mr. William Ward, F.C.S., having expressed his intention to resign the office of local secretary of the Pharmaceutical Society after twenty-one years' service, a meeting was held at the rooms of the Sheffield Pharmaceutical and Chemical Society on Wednesday, October 15, to nominate his successor. Amongst those present were Mr. W. Ward, F.C.S., Messrs. G. Squire, J. Preston, J. F. Eardley, etc. Mr. Squire was voted Chairman, and, in proposing a vote of thanks to Mr. Ward, said that during his term of office (twenty-one years) he had performed his many arduous duties in a manner worthy of all praise. Much of the work of a local secretary was not of the most pleasant nature, but when such cases had arisen Mr. Ward had displayed a tact and courtesy of which he might be envied. Mr. J. Preston seconded this vote, urging upon Mr. Ward to reconsider his decision. It was supported by Mr. Pater. Letters were read from Mr. G. T. W. Newsholme and Mr. J. M. Furness, both of whom spoke of the valuable service of Mr. Ward. Mr. Ward, in replying, said he heartily thanked the members present for the manner in which they had spoken. Now he looked back on twenty-one years of local secretaryship, it was with feelings of regret that he felt he must let his decision be final. There were many duties attendant upon the local secretary, some pleasing, some otherwise, but whatever form they had taken he endeavoured, to the best of his ability, to perform them well. It was a source of satisfaction to him to feel that during the time he had held the office he had done his duty. He had much pleasure in nominating Mr. Geo. Squire as his successor, and he hoped that the chemists of Sheffield would give that gentleman their votes and support. This proposition, on being put to the meeting, was unanimously carried.

THE FOOD AND DRUGS ACT IN SHEFFIELD.—Mr. A. H. Allen, public analyst for Sheffield, in his monthly report to the City Council, states that six samples of cream of tartar which he examined were of good quality; six samples of glycerin were of full strength and free from arsenic and other objectionable impurities; of six samples of sal-volatile, four were of good quality and two of inferior quality; of six samples of ground ginger, four were genuine, one of very suspicious character, and the remaining sample contained 3 per cent. of foreign mineral matter, consisting chiefly of calcium carbonate; nine out of twelve samples of lard were genuine, and three of very suspicious character, though no adulteration could be detected.

CASE UNDER THE APOTHECARIES ACT.—On Friday, October 7, before Judge Addison, at Greenwich County Court, Mrs. Hobbs, 81, High Road, Lee, S.E., certificated midwife, Queen Charlotte's Lying-in Hospital, was sued by the Medical Defence Union and the Apothecaries' Company for £20 for acting as an apothecary. The Court was crowded with doctors. Mr. Turner, for plaintiffs, proved that the defendant was not a chemist or apothecary, and sold and compounded medicines for patients. Mr. Schultess Young, for defendant, argued that any one could act as a

chemist unless selling poisons, and as midwife treat disease, and that selling particular medicines for diseases was not within the Apothecaries Act. The jury returned a verdict for the defendant and allowed costs on the highest scale. The judge refused leave to appeal.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY.—The following is a list of the officers of this Association for the ensuing session:—President, Mr. R. C. Cowley, 6, Sandon Terrace, Upper Duke Street; Treasurer, Mr. C. W. Cooke, Apothecaries' Hall, 4, Colquitt Street; Secretary, Percy G. Jenner, 4, Colquitt Street. The meetings of the Association are held at the School of Pharmacy, 6, Sandon Terrace, Upper Duke Street, once monthly, Thursdays, 8.30 p.m. Annual subscription 2s. 6d.

MANCHESTER MICROSCOPICAL SOCIETY.—Members of this Society held their annual soirée on Saturday evening, in the Lecture Hall of the Athenæum. There was as usual a good display of microscopes, and the objects shown included specimens of protozoa, hydrozoa, rotifera, insecta, vertebrata, algæ, lichens, fungi, and phanerogamia. There were also exhibited natural history specimens and preparations of maize. The Society maintains its sound conditions, and has lately made a new departure, for the purpose of extending its scope. A section has been formed to give lectures and demonstrations, and biological and general microscopical work. While a number of members have been selected as lecturers, others have volunteered their services as demonstrators. The list of lecturers already includes Messrs. Mark L. Sykes, H. G. Willis, E. C. Stump, Edward Ward, W. H. Pepworth, and W. Stanley. At Saturday's soirée a leading feature was the delivery of a lecture by Mr. Charles Bailey on "Maize." The President of the Society (Professor Weiss) was in the chair, and he commented favourably on the extension movement entered upon by the Society, following the lines of the Geographical Society.

A DRUG-STORE MANAGER IN TROUBLE.—At the Marylebone Police-court on Saturday, October 8, Charles Henry Fowler Borkwood, 39, described as a chemist's manager, although not a registered chemist, was charged, on remand, before Mr. Curtis-Bennett, with feloniously embezzling £3 4s., the money of his employers, Messrs. Lewis and Burrows (Limited), druggists, of 64, Baker Street, Portman Square. He was further charged with stealing £32 17s. 10d.; also photo cameras, mirrors, spirit lamps, etc., of the value of £9 10s., all belonging to the prosecutors.—The prisoner had been manager of the Baker Street branch for many months at a salary of £3 a week, and, according to the police, had behaved shamefully towards his wife and his two little children. He had for some time past, without the knowledge of his wife, taken up with a young lady who had acted as cashier at one of Messrs. Lewis and Burrow's branches, and had been going about with her. After having purloined his employer's money, he went off with the young woman, staying with her at first-class hotels in London, Brighton, and on the Continent. The prisoner had kept his wife short of money, had raised money on a bill of sale on her property, and left her penniless. But for the assistance of a friend she would probably have been put into the street with her children by a money-lender.—Without going into the third charge the prisoner pleaded guilty, and Mr. Curtis-Bennett sentenced him to three months' imprisonment on the first charge and four months on the second charge, total seven months.

CASHING CROSSED CHEQUES.—On Friday, October 7, at the Lambeth County Court, Edgar Frederick Howard Munday, described as a chemist (though the name as given does not appear in the Register of Chemists and Druggists published this year), carrying on business at New Cross, under the title of the Silico Enamel Co., sued Mr. Stone, a butcher, to recover £17 8s. 9d.—The evidence showed that the defendant cashed at different times four crossed cheques, which came to the total claimed, for a customer of his, a traveller named Hamilton, in the employment of the plaintiff's firm. The cheques were made payable to Mr. Howard Munday, but Hamilton represented they were paid to him by plaintiff for commission. Subsequently it transpired that the endorsements were fraudulently made, and Hamilton was prosecuted. In the meantime the cheques had been paid into the bank and honoured. The present action was brought to recover the value of the cheques, the defendant being, as was alleged, guilty of negligence.—Judge Emden said this was an important case for traders. It was a very different thing to cash a man's own cheque and that to

another person, and this difference was emphasised when the other person was the employer of the man seeking to cash the cheque. More especially ought suspicion to be aroused when cheques were offered, not once or twice, but four times.—The jury found for the plaintiff, but expressed sympathy with the defendant.—Plaintiff's counsel asked for costs on the higher scale, on the ground that the case was one of great public interest.—Judge Emden said, after the expression of the jury, he could not accede to the application. He trusted this case would be a warning to persons who were in the habit of cashing cheques.

ICE CREAM PROSECUTION.—It is interesting to note that the suggestion made by Alderman Harrison (Sunderland) at the Sanitary Congress recently held in Birmingham, with respect to the making and sale of ice cream, has been followed up by a zealous sanitary inspector. At Southwark, on Wednesday, October 12, before Mr. Fordham, Pantaleoni Manze, of Bermondsey Street, was summoned at the instance of the St. Olave's Board of Works for selling ice cream which was injurious to health. Mr. Ashdown, sanitary inspector, said that one of the defendant's men was selling the ice cream from a barrow in Maze Pond. A sample was analysed by Dr. Stevenson, who certified that there were a million microbes in every cubic centimetre, which was equal to fifteen millions in a cubic inch. The microbes were probably the result of the ice cream having been made from decomposing milk. Mr. Fordham said it was horrible that such a mixture should be sold, and he fined the defendant £10 and £5 5s. costs.

LIVERPOOL PHARMACEUTICAL STUDENTS SOCIETY.—The annual general meeting of this organisation was held at the Liverpool School of Pharmacy, Sandon Terrace, Duke Street, on Friday evening, October 7, Mr. Pierson presiding. The Secretary's and Treasurer's reports were read and approved, and the usual votes of thanks were awarded to their authors. It would appear that though the financial position of the Society is satisfactory, the attendance of members at the meetings during last year was by no means up to the average. In this the Society has evidently only been subjected to one of the fluctuations to which similar bodies are liable, and which, it is hoped, a united effort on the part of both officers and members may obviate for the future. There was every evidence at the meeting that the younger members of pharmaceutical circles in Liverpool were interested in the well-being of the Society, the Council having a large addition of new officers, a new Secretary being appointed, and a President in the person of Mr. R. C. Cowley being elected, thoroughly in touch with students generally, and one who is calculated to stir up the latent energies of a body which has earned a name for itself amongst provincial societies, both by its length of existence and by the quality of the work done by its members. The following are the officers for the ensuing session. President: Mr. R. C. Cowley, Ph.Ch. Vice-Presidents: Messrs. H. S. Pierson and H. Wyatt, jun., Ph.Ch. Hon. Sec.: Mr. P. G. Jenner. Hon. Treasurer: Mr. C. Cooke. Council: Messrs. Guest, Marshall, A. H. Morgan, T. S. Wokes, Ph.Ch., Prosper H. Marsden, Pratt, Pickering, Wardleworth, and Postlethwaite. The Council have under consideration the advisability of holding the meeting in future at the Liverpool School of Pharmacy as being more central than University College. Besides this, it is intended to revive the competitions for students, formerly instituted by the Society in the early days of its existence. The meetings will be held monthly, on Thursday evening, in future, at 8.30.

SCOTTISH NEWS.

MESSRS. DUNCAN, FLOCKHART AND Co. have now removed their east-end establishment from the temporary premises, 9, Princes Street, to the handsome new shop at 4, Princes Street, which is near the original position of the old pharmacy so long known as 52, North Bridge, but a little nearer to Princes Street. The fitting of the new shop was designed and carried out by Messrs. S. Maw, Son, and Thompson. The fittings are constructed chiefly of fine mahogany in Chippendale style. The windows are fitted with tasteful screens with neat plate glass panels, bearing the name and style of the firm in gold letters. The floors of the windows and of the shop are of parquetry. The chief retail counter, on the south side of the shop, is massively framed and fitted with projecting pilasters. The wall behind the chief retail counter is fitted with drawers labelled in old style, with handsome panelled pilasters and double cornices. The

shelves for bottles are backed with mirrors, and, unlike many modern pharmacies, the upper portion of the fittings are furnished with carboys of ancient but elegant shape. The pediments surmounting the fittings are exceedingly handsome, and fitted with superior carved panels. The wall opposite the retail counter is fitted with a handsome side counter, and range of wall show cases of very elegant design and superior construction. The very large dispensing department, to the rear, is fitted with three counters and screens, all fitted in the most complete and convenient manner, to cope with a large dispensing business. In this department there are also situated the telephone office and clerks' offices, and immediately in front of these are the private office, cash desk, etc. The impression produced by a look round the whole establishment is a feeling of quietness, elegance, dignity, and convenience, and it is safe to say that the shop is one of the most convenient and elegantly fitted pharmacies north of the Tweed, and well worthy of the honourable traditions so intimately associated with the old No. 52.

ATTEMPTED POISONING IN FIFE.—A sensational case of attempted poisoning occurred at Prinlows, Leslie (Fife), on Wednesday, October 5. It appears that William Hepburn, a millworker, about 15 years of age, residing with his mother at Prinlows, for some time has had a strong disinclination for work, and when urged by his mother to go to the mill threatened her with violence. On the Wednesday afternoon Mrs. Hepburn set about preparing tea, and while pouring the water from the kettle into the teapot she observed the colour was very dark, and remarked to her son that surely some soot had got into the kettle. Her son at this time remarked, "I don't want any tea." On pouring the tea from the teapot Mrs. Hepburn noticed a curious smell, and tasted the tea, and having used laudanum frequently as a medicine, she at once concluded that laudanum had been put into the water. She asked her son what he had put into the water. He at once replied that he had purchased a pennyworth of laudanum from Mr. Carmichael, chemist, Leslie, and had put it amongst the water, but added that he did not mean to poison his mother. The police were communicated with, and the lad was subsequently certified as insane by Dr. Turnbull, and was taken to the Fife and Kinross Asylum.

MR. THOS. S. BARRIE, pharmaceutical chemist, has taken over the Glasgow and West of Scotland School of Pharmacy, lately carried on by Mr. T. Mackenzie, M.P.S., and is now the sole Principal.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION.—The opening address will be delivered on Thursday, October 27, by Dr. Ralph Stockman, Professor of Materia Medica, Glasgow University. The subject chosen is entitled "The Sources of our Pharmacopœia."

IRISH NEWS.

IRISH PHARMACISTS' ASSISTANTS' ASSOCIATION.—At Dublin on Monday last a committee meeting of this Association was held at 52, Upper Sackville Street, the Vice-President, Mr. H. Hunt, M.P.S.I., in the chair. Mr. J. W. McClean, L.P.S.I., acted as honorary secretary *pro tem.*, in the absence of Mr. W. Vincent Johnston. It was decided to hold the opening meeting of the ensuing winter session on Friday, October 21, at 8.30 p.m., in the Pharmaceutical Society's House, 67, Lower Mount Street, and the Secretary was directed to issue notices to all the members, informing them of the fact. It was also decided to insert a notification of the opening meeting in the *Pharmaceutical Journal*. A discussion took place relative to the formation of an employment agency for the benefit of members, and it was hoped the incoming committee would be able to complete arrangements which would be of mutual benefit to assistants and employers. It was particularly requested that all the members would be present at the opening meeting, and a cordial invitation thereto was extended to all assistants and apprentices in the trade. The committee earnestly hoped the attendance would be large, as office bearers for the ensuing year would be elected that evening.

PHARMACEUTICAL SOCIETY OF IRELAND.—Registered Druggist Examination: S. R. Anderson, R. Blair, G. Hamilton, H. Haslett, G. M. Marshall, W. K. Young, passed. Six candidates have been rejected. Preliminary Examination.—The following have passed: C. W. Robinson, W. L. Swenarton (equal), T. J. Martin, J. A. W. Gilmour. Seven candidates have been rejected.

MARKET REPORT.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

London Report.

OCTOBER 13, 1898.

Business has again been quiet during past week. There are also no changes of any particular importance to record. Ipecacuanha remains firm, while the possibility, not to say probability, of higher prices for Quinine is spoken of. Quicksilver and Mercurials, Iodine and Iodides, Bromine and Bromides unchanged. Acid Citric, Tartaric, and Cream of Tartar quiet, but fairly steady. Sulphate of Ammonia dull and weak. Cocaine steady. Phenacetin and Sulphonal without change. Cascara Sagrada firm and tending upwards. Chlorate of Potash dearer and excited. Borax and Acid Boracic firm. Camphor very firm, with an upward tendency. Codliver Oil quiet. Glycerin firm. Opium, Morphia, and Codeia steady and unchanged. Phenazone dull and weak. Antipyrine Knorr in good demand. The following are particulars of prices actually ruling for articles of chief interest.

ACETANILIDE—Is weak at 11d. to 1s. per lb. for quantity. The reduction in value is attributed to pressure to sell on part of the makers, combined with the low price of Benzole.

ACID BORACIC—Is firm at 24s. for crystals and 26s. per cwt. for powder.

ACID CARBOLIC.—Market is quiet at 6½d. to 6½d. per lb. for 35 to 36° C. ice crystal for large quantity and bulk packing; 39 to 40° C. ice crystal, 7d.; 39 to 40° C. detached crystals, 8d. per lb. Crude: 60° F., 1s. 11d. per gallon; 75° F., 2s. 3d. per gallon. Liquid: 95 per cent., of pale straw colour, 1s. 2d. to 1s. 3d. per gallon in 40-gallon casks.

ACID CITRIC—Is quiet at 1s. 2½d. to 1s. 3d. per lb. on the spot.

ACID OXALIC—Firm at 3¼d. to 3½d. per lb. for crystals; ¼d. per lb. more for powder.

ACID TARTARIC—Steady at 1s. 1d. per lb. for English, and 12½d. per lb. for foreign.

ALUM.—Loose lump, £5 7s. 6d. per ton; ground in bags £6 per ton.

AMMONIA COMPOUNDS.—Sulphate is lower and very quiet at £9 10s. for grey October, 24 per cent. London. Carbonate steady at 3d. to 4d. per lb., according to quality and package. Chloride: chemically pure small crystals, 30s. to 32s. per cwt., free from metals, 25s. 6d. to 26s. 6d. per cwt. Oxalate, 5¼d. to 5½d. per lb. Sulpho-cyanide lower at 1s. to 1s. 1d. per lb. Sal ammoniac: Sublimed No. 1, 35s. per cwt.; No. 2, 33s. per cwt.; crushed (for batteries), 35s. to 37s. per cwt. respectively; powdered, 36s. to 38s. per cwt.

ARSENIC—Is steady at 19s. per cwt. for powder, and 34s. per cwt. for lump.

ASAFETIDA.—The late arrival will not be landed in time for this week's drug auctions.

BLEACHING POWDER—Is firm at £6 10s. to £7 per ton on the spot.

BORAX—Is rather firmer at 14s. 3d. to 14s. 9d. per cwt. for lump and 14s. 6d. to 15s. per cwt. for powder.

BROMIDES AND BROMINE—Are unchanged at prices given last week.

CAMPHOR.—Crude continues very firm. Japan is quoted 105s. per cwt., c.i.f., and China 95s. per cwt., c.i.f. Refined is strong, and a further advance seems probable.

CASCARA SAGRADA—Is firm with an improved tendency, old Bark being held for 25s. per cwt. and upwards.

CHAMOMILES.—Prices are maintained, and in view of the small crop it is difficult to believe that lower prices will rule. Quotations range from 65s. to 75s. per cwt., according to quality.

CINCHONIDINE—Continues in good demand, and 7½d. to 7¾d. per oz. is the general quotation.

CINCHONA BARK.—At the monthly auctions on Tuesday small supplies only were offered, and with a good demand practically the whole sold at full to rather dearer rates. *Succirubra* especially was dearer owing to the demand for cinchonidine. The following are the particulars of the sales:—*Ceylon*: 148 bales offered and 98 bales sold, according to analysis, *Succirubra*, natural stem chips and shavings, fair to good 2¼d. to 2½d., ordinary renewed ditto at 2d.; *Officinalis*, natural stem chips at 2¼d. to 2½d. *East Indian*: 471 bales offered and 370 bales sold, red stem chips and shavings, fair at 2d. to 2½d., renewed ditto at 2½d. to 2¾d. *Officinalis*, natural chips and shavings, fair at 2¼d. to 3d. Ledger, natural stem and chips at 2¾d. to 3½d., branch at 3½d. *Java*: 755 bales offered and sold, Ledger stem chips, ordinary to good at 2¾d. to 4½d.; Ledger branch, common to fair at 1d. to 2¾d., Ledger root 1½d. to 2½d. *South American*: 106 bales Bolivian cultivated Calisaya quills offered and sold, fair to good at 4¾d. to 5d. *African*: 260 bales offered and sold, fair quill at 4¾d. to 4¾d., broken quill and chips at 4¾d. to 4¾d.

CLOVES.—Privately. *Zanzibar* are quiet, with little business passing and an easier tendency. Sales for January and March delivery have been made at 3½d., and there are further sellers at this price. At auction of 43 cases *Penang*, 7 cases sold, without reserve, at 10d. for good bright picked; also 110 cases from *Penang*, low dark mixed, unpicked, at 4½d. to 4¾d. Some very inferior, mixed with stems, 3¼d. to 3¾d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol* weak at 1s. 1¼d. per gallon for commercial and 2s. per gallon for pure. *Benzole*, dull, at 9d. to 9½d. per gallon for 50 per cent. for prompt delivery, and 8½d. to 8¾d. per gallon for 90 per cent. *Crude Naphtha*, 30 per cent. at 120° C. 4d. per gallon. *Solvent Naphtha*, 95 per cent. at 160° C., 1s. 6d.; 90 per cent. at 160° C., 1s. 2d.; 90 per cent. at 190° C., 1s. 3d. per gallon.

COCAINE—Is steady at 9s. 9d. per oz. for the *Hydrochlorate* in 25 oz tins for 100 oz. lots, there were, however, a few sellers from second hand at slightly below this price. Buyers will do well to insist upon having only well-known and reliable brands of this article.

CODEIA steady at 12s. 6d. per oz. for the pure in quantity and 1s. per oz. less for the salts.

COD-LIVER OIL.—Market remains quiet at 80s. to 85s. f.o.b. for new *Norwegian* non-congealing oil in 25-gallon tin-lined barrels.

CREAM OF TARTAR.—First white crystals on the spot, 72s. to 77s. per cwt., and 74s. to 80s. per cwt. for powder, both according to quality.

GINGER.—*Cochin* continues dull, 871 bags rough being all bought in, medium and small washed at 24s.; of 98 cases 38 cases sold, small native partly cut 32s. to 32s. 6d., ordinary small B cut 58s. *Jamaica* also dull, of 165 barrels only 3 barrels mouldy were sold at 70s. 6d.

GLYCERIN—Is firm at 51s. to 52s. 6d. per cwt. for *English* in tins and cases, according to quantity, and 54s. to 65s. per cwt. for *German* brands, according to brand.

IODIDES AND IODINE—Are in good demand at unchanged prices.

IPECACUANHA—Is very firm, and a small business has been done in *Rio* at 10s. per lb. *Carthagen* has been dealt in at 7s. per lb.

JAPAN WAX—Quiet. Good squares quoted 33s. to 35s. per cwt., on the spot.

MENTHOL—Is firm at 7s. 1½d. to 7s. 3d. per lb., according to quantity.

MERCURIALS.—Makers' prices are unchanged at 2s. 3d. per lb. for *Corrosive sublimate*, 2s. 7d. per lb. for *Calomel*, and 2s. 11d. per lb. for *Red oxide crystals* and *levigated* for 5 to 10 cwt' contracts.

MORPHIA—Quiet at 5s. per oz. for the *Hydrochlorate* powder in bulk.

NITRATE OF SODA—Is quiet at £7 12s. to £7 15s. for ordinary, and £8 to £8 2s. 6d. per ton for refined.

OILS (ESSENTIAL).—*Peppermint* is exceedingly quiet, and American H.G.H. is still quoted 5s. 6d. to 5s. 7½d. per lb. on the spot, whilst no business is doing for forward delivery. For Wayne County the demand is also slow, and quotations range from 3s. 6d. to 4s. 3d. per lb., as to quality. *Star Aniseed* quiet at 6s. 10½d. to 7s. 1½d. per lb. *Cassia* very dull at 4s. 9d. to 5s. 9d. per lb. as to percentage. *Cajeput* dearer at 4s. to 4s. 3d. per bottle as to quantity. *Citronelle* dull at 1s. 1½d. to 1s. 1¾d. per lb. on the spot in tins; drums, ¼d. per lb. less. *Lemongrass* steady at 3¼d. to 3½d. *Lavender*; French is dearer at 4s. to 6s. 3d. per lb. as to quality.

OILS (FIXED) AND SPIRITS.—*Linseed* quiet but steady, on the spot, pipes £16 17s. 6d., barrels £17 7s. 6d. *Rape* firm, ordinary brown on the spot £21 15s., refined £23. *Cotton* steady, London crude spot £13 17s. 6d., refined spot £15 10s. to £16, according to make. *Olive*, green oils, steady at £29 to £32 per ton, table oils 4s. to 6s. per gallon, according to quality. *Nut* 37s. 6d. per cwt. *Sesame*, 35s. to 38s. per cwt. as to quality. *Castor*: Italian tasteless 4½d. to 4¾d. per lb., French medicinal 37s. 6d. per cwt. *Coconut*, firm, Ceylon on the spot £24 10s. *Cochin*, spot £27 10s. *Palm*: Lagos on the spot £22 15s. *Turpentine* quiet, American spot 23s. 6d. per cwt. *Petroleum Oil*: The market is advancing, Russian spot 5½d. per gallon; American 5½d. per gallon. *Water White* 7d. per gallon.

OPIUM—Is quiet, prices remaining nominally same as quoted last week.

PERMANGANATE OF POTASH—Is believed to have touched bottom prices at 60s. per cwt. for *small crystals*, and 65s. per cwt. for *large crystals* in ton lots.

PHENACETIN.—A good article is obtainable at 3s. 9d. to 4s. 3d. per lb., according to quantity, for both *crystals* and *powder*. *Bayer's* make is maintained at 5s. 6d. per lb. (we mentioned this last week, by a printer's error, under heading of sulphonal, a mistake which was, however, obvious).

PHENAZONE—Is very quiet, price being weak. Price of *Dr. Knorr's Antipyrine* remains unchanged.

POTASH COMPOUNDS.—*Chlorate* dearer and excited, price for early delivery 4d. to 4½d. per lb. *Bromide* firm at 1s. 9½d. per lb. *Iodide* 10s. 3d. per lb. *Bicarbonate*, 30s. to 35s. per cwt., according to brand. *Cyanide* tending lower for forward delivery, quotations for 98 to 100 per cent., white cake, range from 1s. to 1s. 1d. per lb. *Prussiate*, steady at 6½d. to 7d. per lb. for the yellow, and 1s. 1d. to 1s. 2d. per lb. for the red. *Oxalate*, the neutral is unchanged at 5d. per lb. *Fermanganate* is lower, consequent upon keen competition among makers, quotations are 52s. 6d. per cwt. for small crystals, and 57s. 6d. per cwt. for large. *Bichromate* steady at 3½d. to 3¾d. per lb.

QUICKSILVER—Firm at £7 5s. per bottle from importers and 1s. less from second hands.

QUININE—Is firm, makers' price remaining, however, so far unchanged at 10d. per oz. for best brands of *German Sulphate of Quinine* for 1000-oz. lots in 100 oz. tins, there being hardly any sellers from second hand below this figure, while the prospect of an advance in price is freely spoken of.

SAFFRON—Remains firm at 40s. to 45s. per lb. for *Valencia*.

SALTPETRE.—*English* refined, 20s. per cwt. in large casks; kegs, 21s. per cwt.

SHELLAC.—Whilst the market is quieter, prices are very firm. Moderate sales have been made at steady prices, including *TN Orange* at 67s. per cwt., basis fair, and *HC Garnet* at 67s. 6d. for fair free, and 67s. for matted. For arrival sellers ask rather more money, and this for the moment prevents business.

SODA COMPOUNDS.—*Crystals* steady at 57s. per ton, exship-terms. *Ash* firm at £5 to £5 10s. per ton, as to strength. *Acetate* unchanged at 35s. 6d. per cwt. for the chemically pure, and 13s. 6d. per cwt. for the ordinary refined. *Hyposulphite* quiet at 6s. to 8s. per cwt., as to brand. *Bicarbonate* steady at £7 5s. per ton for the 97 per cent. and 18s. 6d. per cwt. for the fully bicarbonated quality. *Bromide* unchanged at 2s. per lb. *Iodide* steady at 11s. 7d. per lb. *Nitrate* £7 12s. 6d. per ton for the ordinary and £8 2s. 6d. per ton for the refined.

SPICES (VARIOUS).—*Black Pepper* dull; 1160 bags all bought in, Penang at 4¾d; Singapore also 4¾d. *White Pepper*; 116 bags Palembang sold, without reserve, at 7d.; Siam bought in at 8¾d; and Singapore at 8¾d. to 8¾d. *Chillies*: 86 bales Zanzibar bought in at 38s. *Capsicums*: 1 bale Natal bought in at 75s. *Mace*: 7 cases good ordinary red Penang sold at 1s. 7d; 29 packages West India sold, ordinary to good fair, 1s. 3d. to 1s. 7d.; low pickings, 1s. to 1s. 1d. *Nutmegs* are dull at previous rates, except bold, which remain firm. *Pimento* is flat, and 515 bags were all bought in at 4¾d. to 4¾d.

SUGAR OF LEAD—Firm. *Foreign*, 27s. 6d. per cwt., landed terms; *English*, 31s. per cwt.]

[SULPHATE OF COPPER—Dearer, at £17 to £18 per ton, according, to brand and delivery.

SULPHONAL—Is still quoted by the two chief makers 7s. 3d. per lb. in bulk.

SULPHUR—Firm. *English*: Roll, 7s. 6d. to 8s. per cwt.; flowers 11s. per cwt. *Foreign*: Roll, 6s. 6d. per cwt.; flowers, 7s. per cwt

THYMOL—Is rather dearer at 7s. 3d. to 7s. 6d. per lb.

TURMERIC—Is quiet but steady, the moderate sales including *Bengal* at 19s. per cwt.; *China* bulby finger at 16s. 6d. per cwt.; and fair *Cochin* split bulbs at 10s. 6d. per cwt.

To-day's drug auctions passed off quietly without any particular change in values. The price of *Ipecacuanha* was firm, other values being also fairly maintained as far as business was actually effected. The following are the particulars of goods offered and sold:—

ACONITE ROOT.—10 bags of fair quality were held for 27s. 6d. per cwt.

ALOES.—32 boxes livery capey *Barbadoes* sold cheaply at 14s. per cwt.; 10 cases fair *Cape* bought in at 26s. per cwt.

AMBERGRIS.—1 box good grey, of good flavour, bought in at 100s. per oz.; 1 tin black undeveloped at 50s. per oz.

BALSAM PERU.—2 cases bought in at 8s. 3d. per lb.

BALSAM TOLU.—8 cases of good quality taken out at 1s. 9d. per lb.

BELLADONNA ROOT.—3 bales of fair quality held for 40s. per cwt.

BIRD LIME.—5 cases *Japanese*, offered with all faults, sold, subject to approval, at 3d. per lb. for re-weights

BUCHU LEAVES.—Good green rounds were bought in at 6d. to 9½d. per lb., fair ditto at 5¾d., a bid of 5d. being declined.

CARDAMOMS.—5 cases good to fine *Mangalore* were taken out at 3s. 9d. per lb. Fine, bold pale *Mysore* realised 4s. 2d. per lb.; second size, 3s. 8d. per lb.; small ditto, 3s. 1d. per lb.; dwarf, 2s. 4d. per lb.; splits, 2s. 2d. to 3s. 5d. per lb. Decorticated dearer at 3s. 3d. to 3s. 4d. per lb. for good, and 2s. 6d. per lb. for pale.

CASCARILLA {BARK.—73 packages part sold at 60s., for nice bright small to bold quality.

CHILLIES.—15 bales good *Zanzibar* were held for 37s. 6d. to 40s. per cwt.

CIVET.—3 horns of fair quality bought in at 12s. per oz.

CINCHONA BARK.—10 bales flat *Calisaya* sold at 9d. per lb. down to 4d. for 2CCD. 77 serons crown and grey bark sold at 1s. 1d. per lb. down to 6d. for 1CCD, and 2d. to 3d. for 3CSD. 18 bales yellow bark were held for 8d. per lb. 1 case red bark taken out at 7s. per lb. 3 bales *Maracaibo* sold without reserve at 3½d. for 1CCD.

COD-LIVER OIL.—10 barrels *Norwegian*, January, 1897, import, bought in at 75s. per barrel.

COLOCYNTH.—5 cases dull small to medium Turkey were bought in at 1s. per lb.

COLOMBO ROOT.—10 bags washed with stem were held for 40s. per cwt.; very stemmy sorts sold at 18s.

CROTON SEEDS.—11 bags of only medium quality taken out at 85s. per cwt.

CUBEBS.—22 bags of fair quality, but slightly stalky were bought in at 25s. per cwt.

CUMMIN SEEDS.—15 bags fair *Malta* held for 28s. per cwt.

CUTTLEFISH BONE.—9 cases small to medium dull quality sold at 1½d. per lb., 14 cases fair medium rather darkish realising 2¾d. per lb.

DAMIANA LEAVES.—5 bales rather yellow held for 7½d. per lb.

DRAGON'S BLOOD.—2 cases bright seedy block bought in at £8 per cwt.

ERGOT OF RYE.—25 bags wormy *Spanish* taken out at 8½d. per lb. Another lot of sound *Spanish* was held for 8d. per lb. fair *Russian* bought in at 9½d. per lb.

ESSENTIAL OILS.—6 cases West Indian distilled *Lime Oil* bought in at 3s. 3d. per lb. 5 cases *Cinnamon Leaf* bought in without mention of price. 1 case *Spearmint* taken out at 4s. per lb. 4 cases *Cinnamon* held for 1s. 6d. per oz.; 39 cases offered without reserve, selling at 3½d. to 3¾d. per oz. 2 cases French *Geranium* held for 1s. 3d. per lb.; 50 cases *Lemongrass* for 3¾d. per oz.; 1 case James B. Horner's *Oil Wintergreen* for 4s. 6d. per lb.; 5 cases James B. Horner's *Oil of Sassafras* for 2s. per lb.; 6 cases *Eucalyptus Globulus Flatypus* brand for 2s. 6d. per lb.; 1 drum *Citronella* for 1s. 2d. per lb.

GALANGAL ROOT.—10 bales were held for 26s. per cwt.

GAMBOGE.—11 cases bought in at £8 10s. for fair bright softish pipe, down to £6 5s. for pickings.

GENTIAN ROOT.—20 bales fair dry held for 18s. per cwt.

GUAZA.—18 bales siftings were held for 3¾d. per lb.

GUM AMMONIACUM.—8 cases bought in at 35s. per cwt. for blocky

clean, some small, free drop, and 20s. per cwt. for dark. 2 cases fair clean drop, part blocky, at 60s. per cwt.

GUM ARABIC.—5 bags red gum of low quality were bought in at 15s. per cwt. 4 cases grain at £6 15s.

GUM BENZOIN.—Medium to fair to good *Sumatra* was bought in at £6 to £7 10s., a bid of £7 for the better quality being declined, 8 cases *Penang* were bought in at 60s. per cwt.; 18 cases *Palembang* sold without reserve at 87s. 6d., down to 23s. 6d. for inferior.

GUM GUAIAECUM—20 packages part sold at 1s. 10d. per lb. for good glassy block down to 1s. 3d. per lb. for not quite so good.

GUM KINO.—3 cases *African* bought in at 4s. 6d. per lb.

GUM MYRRH.—Good bright sorts were bought in at 100s. per cwt.

HONEY.—70 packages *Jamaica* sold freely at 19s. to 21s. per cwt. 5 quarter casks ditto bought in at 21s. 22 cases *Australian* held for 21s. per cwt.

IPECACUANHA.—About 40 bale *Rio* were offered, part of which sold at 9s. 11d. to 10s. per lb., holders being very firm. For *Carthagera* there was a good demand for export, and from 6s. 11d. to 7s. 2d. per lb. was paid, the latter figure showing an advance of 2d. per lb. on private sales.

KAMALA.—5 cases of dull appearance bought in at 6d. per lb.

KOLA NUTS.—1 bag fair small *Grenada* bought in 7d. per lb., other lots of *West Indian* being held for 3d. to 6d. per lb.

LIME JUICE.—4 packages concentrated *West Indian* held for £15 per 108 gallons. 5 puncheons ordinary commercial quality held for 1s. 3d. per gallon.

MATICO LEAVES.—9 bags fair green partly broken were held for 6½d. per lb.

MUSK.—4 caddies *Tonquin*, small to medium pods blue, good thin skin and fairly dry, sold cheaply at 70s. per oz.

NUX VOMICA.—100 bags good bold bright *Cochin* were held for 10s. per cwt., 34 bags small dull for 6s. per cwt.

ORANGE PEEL.—3 cases darkish thin cut were held for 6½d. per lb. 3 bales old sold without reserve at 2d. per lb., and 2 cases at 3¾d. per lb.

RHUBARB.—31 cases rather rough horny round high-dried bought in, 6d. per lb. being apparently the price required, while 3 cases offered without reserve sold at 6d. per lb., 1 case flat *Canton* pickings sold at 11d. Small trimming round *Canton* held for 1s. 4d. per lb. Good round *Shensi* sold at 2s. 9d. per lb.

SARSAPARILLA.—17 bales *Jamaica* were taken out, a bid of 1s. 7d. per lb. not being entertained; 2 bales ditto of another parcel, rather dark in colour, sold at this price, the balance being bought in at 1s. 10d. 12 cases *Lima* were taken out at 1s. 4d. per lb.; 14 bales ditto selling at 1s. 2d. per lb. for 1 CCD down to 11d. for 2 CCD.; 3 serons *Honduras* 1 CCD bought in at 1s. 8d. per lb.

SENNA.—About 600 bales *Tinnivelly* offered and sold with good competition. Small leaf realised 2d. to 2½d. per lb.; medium 2½d. to 3d. per lb., whilst boldish leaf was dearer, up to 5d. per lb. Only a few bales *Alexandrian* offered but these being of indifferent quality no bids were made.

SQUILLS.—36 bags held for 3d. per lb.

STAR ANISEED OIL.—30 cases *China*, guaranteed genuine, sold cheaply without reserve at 6s. 4d. to 6s. 5d. per lb.

STROPHANTHUS SEEDS.—3 bags good fair green *Kombe* were bought in at 3s. 3d. per lb.

TAMARINDS.—5 barrels *West Indian* sold cheaply at 8s. 6d. per cwt.

TONQUIN BEANS.—5 casks fair *Angostura*, slightly damp, were taken out at 3s. 10d. per lb. 10 cases fair frosted *Para* part sold at 2s. per lb.

TURMERIC.—40 bags finger *Madras* taken out at 26s. per cwt.; 3 bags bulbs at 11s.

VERMILION.—2 cases *China* bought in at 2s. 2d. per lb.

WAX.—Of 12 packages *Jamaica*, 1 case sold at £6 10s. per cwt.; remainder being bought in at £6 15s.; 24 mats *Madagascar* bought in at £6 10s.; 10 bales *Madras*, at £5 15s.; fair *Zanzibar* at £5 5s.

WILD CHERRY BARK.—1 bale of fair quality bought in at 6d. per lb.

Mr. CHARLES CHRISTEY, of the firm of G. N. Souratty and Co., Colonial Brokers, of 38, Fenchurch Street, E.C., died very suddenly on the night of the 12th inst., of bronchitis. It will be remembered that Mr. Souratty died suddenly a few months ago, two deaths have, therefore, occurred in this firm, both the partners having joined the majority.

Newcastle Chemical Report.

OCTOBER 12, 1898.

Not much change in general business on this market, and value of heavy goods practically unaltered. Prices are:—Bleaching Powder: £6 to £6 5s. Soda Crystals: Basis, 45s. Caustic Soda: 70 per cent., £7 5s. Alkali: £4 5s. Sulphur: £5 per ton.

Manchester Chemical Report.

OCTOBER 12, 1898.

The much to be regretted decline in exports of heavy chemicals continues, chiefly, as for many months past, to the United States. The exports of chemicals and chemical and medicinal preparations show an increase of 5.6 per cent., but, on the other hand, Alkali shows a decrease in quantity of 20.3 per cent. and Bleaching Materials 25.6, and in value of 13.2 per cent. in Alkali and 35.0 in Bleaching Materials. Some idea of the decrease to the United States may be gathered from the fact that the exports of Alkali for September are 50,047 cwts., as against 101,472 cwts. in 1897, and 52,149 cwts. of Bleach, as against 66,348 cwts. in 1897. In this market things are steady and prices fairly firm. For next year, however, lower figures are ruling. Bleaching Powder ranges from £4 12s. 6d. to £4 15s., although for prompt it is £5 on rails, softwood casks. Ammonia Alkali, 58 per cent., does not seem to have altered much, and may be quoted £3 17s. 6d., while Soda Crystals are at £2 7s. 6d. in bags on rails, usual addition for casks. Chlorate of Potash has advanced to 4d. per lb. Arsenic is without material alteration and firm. Aniline Oil is quoted 5d., and Salt 4½d. Benzols are lower, 90's ranging from 8½d. to 9d., and 50's to 90's, 9d. to 9½d. Naphthas are easier, but unchanged. Permanganate of Potash is quoted £49 10s. per ton *c.i.f.*, Manchester, and the tendency is upward. Glycerin is firm for local makes at the rates of last week.

Liverpool Market Report.

OCTOBER 12, 1898.

AMMONIA SALTS.—*Carbonate*, 3d. per lb. *Sal Ammoniac*, 33s. and 35s. per cwt. *Sulphate* is lifeless at £9 17s. 6d. per ton.

BEE SWAX.—11 bags of Californian sold at £6 10s. per cwt., and 1 ton of Chilian at £6 15s. to £6 17s. 6d. Subsequently some fine Chilian made £7 to £7 2s. 6d. per cwt.

CANARY SEED.—A little more interest has been taken in this the last few days, and sales of 450 bags of Turkish at 28s. per 464 lbs. have resulted, since which retail amounts have changed hands at 28s. 6d. The price for Turkish is from 28s. 6d. to 30s. per 464 lbs.

COPPERAS.—Welsh, 37s. per ton; Lancashire 35s.

COPPER SULPHATE.—Is firm at £17 2s. 6d. per ton on the spot, or £17 12s. 6d. to £18 for next year's delivery.

HONEY.—Finest Californian is very scarce, and 42s. 6d. is asked for it, at which price several lots have found purchasers. Small sales of Chilian Pile 2 at 22s. 6d. per cwt. are also reported.

LINSEED.—Continues very firm at high rates. Calcutta seed October and November shipment being 37s. 6d. per 416 lbs., and North American 34s. 6d.

OILS (FIXED) AND SPIRITS.—*Castor* is rather quiet at the moment, and prices quoted are: Calcutta, "good seconds," 3½d. per lb.; French, 1st pressure, 3½d. per lb.; Madras, 3d. to 3½d. *Olive* is unchanged from last week, with a firmness in Spanish oils showing no immediate prospect of easier rates. *Linseed* of Liverpool make is slightly lower, being now priced at 18s. to 19s. per cwt. *Cottonseed* is likewise a turn easier, 15s. 9d. to 16s. *Spirits of Turpentine* is in fair demand at the advanced price of 24s. per cwt. or 1s. higher than last week.

POTASH SALTS.—*Bichromate*: 3½d. per lb. *Chlorate* dearer, 4d. to 4½d. per lb. *Cream of Tartar* continues scarce and firmly held for 75s. per cwt. *Pearlashes* are quiet at 34s. to 35s. per cwt. *Potashes* remain with a slow sale at 22s. 6d. per cwt. *Prussiate* quiet, 6½d. per lb. *Saltpetre*, 21s. per cwt.

SODA SALTS.—*Bicarbonate*, £6 15s. per ton. *Borax*, £13 10s. to £14 per ton. *Caustic*, 76 to 77 per cent., £7 12s. 6d. per ton; 70 per cent., £7. *Crystals*, £3 per ton. *Nitrate* is selling steadily at 7s. 7½d. to 7s. 9d.

WAX.—Japan: 50 cases were sold on private terms.

Announcements.

Tuesday, October 18.

ROYAL PHOTOGRAPHIC SOCIETY, 5A, Pall Mall East, London, W. at 8 p.m. New methods of developing Daguerreotype plates will be explained by Colonel J. Waterhouse.

Wednesday, October 19.

ROYAL MICROSCOPICAL SOCIETY, 20, Hanover Square, London, W., at 8 p.m. A paper on "Reproduction of Diatoms," will be read by J. Newton Coombe, also Part 3 of the "Report on the Recent Foraminifera of the Malay Archipelago," by F. W. Millett.

THE WESTERN CHEMISTS' ASSOCIATION (OF LONDON), Westbourne Restaurant, 1, Craven Road, W., at 9 p.m. Annual meeting and election of the Committee for the ensuing year.

Thursday, October 20.

CHEMISTS' ASSISTANTS' ASSOCIATION, 73, Newman Street, London, W. The ex-President, Mr. T. Morley Taylor, will read a paper on "Vegetable Secretions."

Trade Notes.

PEPTARNIS (PEPTONE OF BEEF) has been introduced into this country by LIEBIG'S EXTRACT OF MEAT CO., LIMITED, 9, Fenchurch Avenue, London, E.C., specially with a view to meeting the necessity for an invalid food which satisfactorily combines the qualities of being highly nourishing, easy of digestion, palatable, and inexpensive. It is understood to be manufactured from specially selected cattle by a process which does away with the objectionable flavour so often noticeable in peptonised foods, and people who can digest nothing else are said to take Peptarnis with advantage. The following is the published analysis of Peptarnis:—

Water.....	28.95	per cent.
Gelatin.....	3.92	"
Albumin.....	1.85	"
Albumoses.....	23.42	"
Pancreas Peptone.....	23.06	"
Nitrogenous Meat Bases.....	8.94	"
Fat.....	0.18	"
Sodium Chloride and Phosphates.....	9.68	"

100.00

The total nitrogen equals 9.95 per cent. Peptarnis is retailed in tins at 1s., 1s. 9d., and 3s. 3d. each.

THE GALEN MANUFACTURING CO., LIMITED, send their latest illustrated catalogue, which has just been issued, and offer to forward a copy to any chemist who may apply to the firm. A sample of Lister's double cyanide gauze, manufactured by the firm, accompanies the catalogue. We understand there are so-called double cyanide gauzes on the market, which are simply dyed material treated with zinc carbonate, but that there is no record of mercurialism following the use of Milne's cyanide gauze.

MESSRS. JAMES TOWNSEND AND SON, of Exeter and London, send specimens of their almanacs and calendars for 1899, also of their handbills, chemists' labels, and an abridged price-list of patent medicines and proprietary articles. The octavo illustrated almanacs contain much useful domestic and other information, while the literary matter is quite abreast of the times. A purse-almanac is very neat, as are also the bouquet and pocket almanacs, and several small calendars. The "Household Assistant and Medical Guide" is another useful publication of this enterprising firm of chemists' printers. Particulars and prices may be obtained on application to the firm.

MESSRS. W. J. BUSH & Co., LTD., have published in volume form 'Current Observations on Essential Oils,' which should prove of value to all who have occasion to buy or test those products. The observations have been made on oils produced in Messrs. Bush's laboratories in London or the South of France, and of the purity and genuineness of which, therefore, an absolute degree of certainty was forthcoming. They extend over several years, and fresh reports are promised at future intervals.

Marriage.

CHERRY—COLES.—On October 8, at the Church of St. Lawrence, Milcombe, Oxfordshire, by the Rev. J. Mountain, M.A., Frederick Cherry, M.P.S., pharmaceutical chemist, to Emma E. Coles, eldest daughter of Mr. Jas. Coles, of Milcombe.

OBITUARY.

CADMAN.—On October 5, Daniel Charles Cadman, Pharmaceutical Chemist, Blackheath, S.E. Aged 59. Mr. Cadman had been a member of the Pharmaceutical Society since 1870.

VIGGARS.—On October 5, George Daniel Viggars, Chemist and Druggist, Tunstall. Aged 36. Mr. Viggars was an Associate of the Pharmaceutical Society.

SMITH.—On October 7, John Smith, Chemist and Druggist, late of Saxmundham. Aged 70.

Publications Received.

OBSERVATIONS ON THE VEGETATION OF LORD HOWE ISLAND. By J. H. MAIDEN, of the Botanic Gardens, Sydney. Pp. 47, and 4 plates.—Also, A CONTRIBUTION TOWARDS A FLORA OF MOUNT KOSCIUSKO, by the same author. Pp. 21. Sydney: William Applegate Gullick, Government Printer. 1898. From the Author.

COMMERCIAL ORGANIC ANALYSIS. By ALFRED H. ALLEN, F.I.C., F.C.S. Second Edition, revised and enlarged. Vol. iv. Pp. xi. + 580. Price 18s. London: J. and A. Churchill, 7, Great Marlborough Street, W. 1898. From the Publishers.

Receiving Orders in Bankruptcy.

(From the London Gazette.)

Thomas T. Liddle (trading as T. & J. Liddle), glass manufacturer, Eslington Glass Works, Gateshead,
William T. Coombs, chemist and druggist, 4, Neville Street, Canton, Cardiff, Glam.

John Hoy, chemist and druggist, 22, Bridge Street, Leeds.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Photographic mounts, Bristol cartes, 3s.; G.B.E., 10s.; cabinets, 10s.; G.B.E., 15s.; quarter-plates, 6s.; half-plates, 12s. 1000; plate-sunk mounts, 12 by 10, 40s. 1000. Samples free.—Edward Peck, East Dereham, Norfolk.

Magic Lanterns, second-hand; triples and binoculars; oxyhydrogen microscope; marvellous panphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Six Pieces Perfume Ribbon, each 36 yards long (216 yards), assorted colours, post free, 5s.—Edward Peck, East Dereham, Norfolk.

On Sale, cheap, a Barclay's five-gallon air pressure filter or percolator, only been used twice, as good as new. What offers? or will exchange.—Berry's Drug Stores, Market Street, Farnworth, near Bolton.

O'Brien's Check Till for sale, used only six months, price 40s. cash.—J. R. Oliver, Stanhoe, Norfolk.

Surplus.—1 lb. pot. iodide pur., 9s. 6d.; 2 lb. 18s.; 1 lb. quin. sulp. B.P., 12s.; dozen Williams' 23s. 9d., 3 dozen at 23s. 7d. Carriage paid. Cheque or London References.—Eastman, Forest Lanc, Stratford.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Allen, Balkwill, Bayley, Blythe, Bourne, Bristow, Conyngham, Cowley, Cowling, Craeknell, Daniel, Espinasse, Ferrall, Groth, Hall, Harrington, Hebb, Hogg, Hughes, Jones, Kermath, Kershaw, Kirkby, Kraemar, Lloyd, Matthews, Merrikin, Mollison, Moss, North, Owen, Panchaud, Pater, Pears, Poppelreuter, Reynolds, Ridlington, Robins, Ross, Smith, Summers, Wallace, White, Wyatt, Wyeth.

PRACTICAL PHOTOGRAPHIC NOTES.

TARTAR EMETIC is a salt which may possibly be asked for by photographers. It is quite new to photographers, but as a preliminary bath, either before or after exposure, of a strength of 2 per cent., M. Mercier, of Paris, has found that it will cure an over-exposure of at least 500 times. The plate is merely bathed in the solution for two minutes, dried, and then developed, preferably with a hydroquinone developer of the following composition:—

Hydroquinone	8 g.
Sodium Sulphite	100 g.
Sodium Carbonate	75 g.
Potassium Bromide	2 g.
Distilled Water	1000 g.

BRENCATECHINE OR PYROCATECHINE is another developer which is not new, but to which some attention has been directed lately, due entirely to the production of it on a large scale by Ellon and Co., of Charlottenburg, Berlin. It is an open question whether it presents any great advantage over the commonly used developers, but it is cleanly, keeps well, and is open to control by dilution or the addition of bromide. A satisfactory formula is—

No. 1.	
Pyrocatechine	20 g.
Sodium Sulphite	100 g.
Distilled Water	1000 C.c.
No. 2.	
Sodium Phosphate	188 g.
Sodium Hydrate	20 g.
Distilled Water	1000 C.c.

For use mix 1 part of No. 1, 1 part of No. 2, and 1 part of water. To make No. 2 dissolve the phosphate in 750 parts of water, the hydrate in 250 parts of water, and mix the two. The developer is applicable to both negative and positive work.

STAND DEVELOPMENT is the name that has been given to a particular method of development in which the exposed plates are placed in a grooved trough, the latter filled with a weak developer and the whole allowed, in vulgar parlance, to rip till done. In cases of over-exposure this may be in a quarter of an hour, in cases of under-exposure, an hour. No attention is required, the plates may be simply left in the solution, and looked at every quarter of an hour till finished. We have been trying this lately and have hit on a simple developer that acts excellently, its composition is as follows:—

Metol	4 g.
Hydroquinone	6 g.
Sodium sulphite	50 g.
Potassium ferrocyanide	25 g.
Potassium bromide	0.5 g.
Potassium carbonate	100 g.
Water to	1000 C.c.

For use dilute 1 part with 60 parts of water. When used in the concentrated form this makes a capital developer for ordinary negative development, and with four times the quantity of water it is good for lantern slides and bromide paper. Photographic dealers who do not know anything about stand development, but who have a chance to fit out a novice with apparatus and want to get into his good graces, should strongly recommend stand development, and give him the above. The results obtained will make the novice a firm friend and a good customer for ever.

POSSIBLY SOME CHEMIST may be asked to make up the following intensifier, which is lauded as being non-poisonous and effective for moderate intensification:—Immerse the negative in

Ammonia 0.880	100 C.c.
Water	100 C.c.

for a couple of minutes or less, and then place in

Cadmium Bromide	1 g.
Alcohol	1000 C.c.

This was suggested first of all in 1889, and was for many years accepted without demur, and, we think, without trial. It was then pointed out that as an intensifier it was practically useless, the sole action being due to the alcohol, which caused a slight contraction of the gelatin and aggregation of the silver particles which could not be called intensification.

IRISH NEWS.

DURING THE PAST WEEK events of pharmaceutical interest have crowded rapidly on one another, each day bringing something fresh in its train. Matters have resumed their normal aspect in the Society's deliberations, and the three new Councillors, Messrs. Brittain, Tait, and Michie have made their *début* with the usual pharmaceutical fanfare. The famous *bordereau*, as the sevenfold manifesto, already referred to, has come to be called, is still shrouded in mystery, and in connection it is noteworthy that a reward of £5 is offered through the public press for such information as will lead to the discovery of the writer or the printer; up to the present, however, the "fiver" is going a-begging.

ON THE 12TH INST., a Committee meeting of that portion of the Pharmaceutical Society interested in the scientific gatherings purposed to be held during the ensuing winter evenings, met at 67, Lower Mount Street, when, it is understood, arrangements were made for the compilation of a syllabus of lectures, papers, etc., to be contributed by the craft and its friends. The opening meeting will be held on November 14, and it is the President's earnest desire that the gathering at that and subsequent meetings shall be largely attended, all assistants and apprentices being cordially invited. It is to be hoped that the worthy President's exertions to make these educational meetings a success will be recognised by a crowded house. There is a wide field, in the matter already entered on the syllabus, for interchange of thoughts and ideas, and it now remains for the general body of pharmacists to respond by their presence to the welcome extended to them by Mr. Downes.

MR. L. HEPENSTAL ORMSBY, M.D., a gentleman well known in Irish medical and pharmaceutical circles, delivered last week, on the occasion of the opening for the winter session of the County Dublin Infirmary, an interesting address on "A Century's Progress in Surgery," in the course of which he made special reference to the functions of the pharmacist in present-day surgery. He said if he were asked what had brought about the remarkable changes in surgery during the present century as compared with the last, he would say in the first place old customs and modes of practice had either disappeared or had been modified. For instance, the complete abandonment of excessive doses of mercury to patients who could be met with in the hospitals in bygone days, leaning over the sides of their beds and pints of saliva running from their mouths, their teeth loose, and a foetid odour exhaled from their breath; uncleanly and ill-smelling ointments and irritating lotions had given place to light, cleanly, and simple dressings and lotions in the treatment of wounds and ulcers. These circumstances assisted and conferred an incalculable boon on sick and suffering thousands. Then, again, might be mentioned the various aids to diagnosis by the invention of many surgical and medical appliances, the establishment of chemical, bacteriological, and other laboratories, the introduction and universal adoption of anaesthetics in the practice of operative surgery, the bloodless method of amputating and excising limbs as carried out by Esmarch's elastic bandage, antiseptic treatment of wounds, the adaptation to surgery of electricity, the Röntgen X rays and cautery, and the construction of new and improved operating theatres replete with all aseptic instruments and appliances, with sterilising room attached. If he were asked what he considered had done most to advance operative surgery during the last fifty years he would at once say, the general use of anaesthetics and the antiseptic treatment of wounds. Surgeon Ormsby's address was listened to attentively by a large number of medical men, many of whom were more or less connected with pharmacy past and present, and his words found a responsive echo in the minds of his hearers, as was evidenced in the subsequent discussion on the paper.

LAST WEEK, BEFORE THE DUBLIN RECORDER, a case of interest to those who combine physics and pharmacy was brought on for hearing. It was an action by Dr. Hamilton, Ballynahinch, a medical practitioner, to recover from a patient named Campbell the sum of £13 2s. for services, etc., rendered. The point arising in the case was the plaintiff's right to sue an uncertificated bankrupt, as the defendant was, and as to whether the latter was liable for services rendered to him while he remained uncertificated. It was contended by plaintiff's counsel that the bankrupt was liable, and that as he could make contracts and maintain actions for goods sold and

personal services, he was liable in an action for the recovery of medical fees and for medicines supplied. His Honour pointed out the distinction between the English and the Irish bankruptcy laws, the latter being specific on the point that after-acquired property did not vest in the assignee. If a decree were given it could not be levied, because the property was vested in the assignee. Plaintiff's representative urged that if a decree were granted the sheriff could return it *nulla bona* and then a claim could be made on the defendant's personal income. The Court adjourned the action for inquiry on the points raised by counsel.

AT THE OPENING MEETING IN DUBLIN last week of the Photographic Society of Ireland's winter session an interesting lecture was given by the President, Mr. Louis Werner, together with an elaborate exhibition of lantern slides. There was a large audience. Mr. Werner, who discoursed on pictorial photography, defined the relations between photography and pictorial art, and pointed out that, without trespassing on the domain of the painter, photography had an art of its own. He condemned the retouching methods which are at present so generally employed in portraiture, and showed that they in many cases interfered with the anatomical accuracy of portraits. Dealing with the methods to be adopted by the photographer, he spoke as to the necessity of following the example set by painters in the selection of subjects and the manner in which they were to be treated. An interesting description of an ingenious instrument known as Ives' photo-chromoscope was then given, and it was shown that by the imposition of three different photographs, each of which was taken in one of the three primary colours, an effect something like what might be looked for in instantaneous colour photography, if such a process ever came to be invented, was produced. The meeting concluded after a very fine display of lantern slides, amongst the best of which were several representing scenes in London on a wet day. It is of interest to note that many of the most prominent representatives of pharmacy have of late added the sale of photographic sundries to their concerns, and find it a very profitable extra.

LAST WEEK AT CHURCH STREET, Sir Charles Cameron, City Chemist, delivered an interesting lecture on "Flames." He dwelt at length on the nature of flames and the uses to which they might be put in the economy of life. Their functions in the production of heat and artificial light and the various modes of their production were dealt with, and the various phases of the lecture were illustrated by experiments.

DR. HADDEN, compounder of medicines for the past twenty years to the Skibbereen Union, has resigned his position on the score of age, and has been granted a substantial retiring allowance. The guardians of the Union want to confer the vacant appointment on Dr. Jennings, a local practitioner, the only one in the neighbourhood who possesses the diploma of the Apothecaries' Hall of Ireland, and give him £32 a year salary, but fears are expressed that the Local Government Board will insist on the dispensary doctor doing his own compounding in future, and with a view of keeping on good terms with the Board they have wisely resolved to inquire therefrom whether they are bound to appoint a qualified man as compounder of medicines, and as to whether the number of tickets issued for the past two years warrants the appointment.

THE RATHKEALE GUARDIANS who were recently surcharged by the Local Government Board in respect of certain medicines irregularly supplied, have received from the Local Government Board a letter to the effect that in view of the medical officer's explanation of the circumstance the surcharge will not be pressed, but think the doctor should be careful in future to observe the rules governing a distinct requisition for drugs. The letter has evoked much discussion, and a reply has been sent to Dublin pointing out that the guardians have every reason to believe that no medicines of an extraordinary nature were ordered by their medical officer, except such as were required for immediate and urgent use, and that as there was apparently no valid reason for the surcharge they request that the record be forthwith cancelled.

PHARMACY WAS WELL REPRESENTED at the distribution of prizes in connection with the Masonic Female Schools, on Friday last. The function, which partakes of a local pageant, attracts yearly a large and representative gathering of the brethren and the fair sex. The spectacle this year was on all fours with that held for

over the past hundred years in Dublin, and amongst those present were the following disciples of Galen: Grand Royal Arch Chapter of Ireland, Robert Montgomery, Janitor; Sir Charles Cameron, Great Seneschal; Grand Priory of Ireland; Dr. Alexander Gordon, L.P.S.I., Sword Bearer; Mr. Robert Keating Clay, J.P., Solicitor to the Pharmaceutical Society of Ireland, attended as Grand Treasurer-Elect, Grand Lodge of Ohio, and amongst the other members of the Order present were Messrs. T. W. Robinson, T.C., L.P.S.I., G. Lane McCormack, L.P.S.I., W. F. Wells, P.K., M.P.S.I., Dr. Clendinning, L.P.S.I., etc.

MR. J. B. BOLGER, L.P.S.I., late senior compounder at Messrs. J. J. Graham's Medical Hall, Dublin, has opened a well fitted-up pharmacy at Main Street, Maryborough.

DR. MCWALTER, proprietor of Leonard's Medical Halls, Dublin, has acquired an additional establishment at 76, Dame Street, which he will shortly open as a south city branch pharmacy.

MR. WILLIAM MOSS, wholesale druggist, Roe Street, Clifton Park, who was recently adjudicated a bankrupt, has made an offer of 7s. 6d. in the £, which has been accepted by his creditors. The composition was made at the second sitting, and the amount will be paid in three instalments of 2s. 6d. each.

THE FOLLOWING DRUG AND MEDICINE CONTRACTS have been announced during the past week:—Newry Board of Guardians, Messrs. John Clarke and Co., Belfast, for medicines, and Messrs. S. Connor and Sons, Newry, for medical and surgical appliances.

THE LOCAL GOVERNMENT BOARD is inquiring generally as to the safe custody of drugs and medicines by Boards of Guardians throughout the country, whether the supplies are kept under lock and key, and also as to the safe custody of poisons.

AT AN INQUEST held last week on the body of a child, whose mother gave it a dose of laudanum to "keep it quiet," the Coroner warned parents against giving laudanum to their children except under medical advice, and hoped the local chemists would carefully discriminate in supplying the drug to the public.

PHARMACEUTICAL SOCIETY OF IRELAND.—Pharmaceutical Licence Examination: W. F. Knight and J. P. Morrissey passed. Three candidates have been rejected.

FRENCH NEWS.

CONTINENTAL ANGLO-AMERICAN MEDICAL SOCIETY.—The most important medical association in Europe, so far as British and American practitioners are concerned, is the Continental Anglo-American Medical Society. This is an organisation entitled to respect, not only from its long-established position, but from the talent and ability to be found in its ranks, for it embraces members located and engaged in active practice in all the principal cities and health resorts of Europe and Northern Africa—men who would adorn any union, whether professional or social. Although the Society was founded on a social basis "to serve as a bond of union between British and American practitioners established on the Continent of Europe and Northern Africa," its weight in professional matters, and such things as pertain to the practice of medicine, is becoming greater every year. One strange point about this Society lies in the fact that no one is eligible to membership who does not possess a French qualification, so that the high standard and elevating influence of the Society are self-evident. The Honorary Presidents for Great Britain and Ireland are Lord Lister, Sir Samuel Wilks, F.R.S., and Mr. T. W. Nunn, F.R.C.S. For the United States Dr. J. S. Billings, Dr. S. Weir Mitchell, Dr. W. M. Polk, Dr. A. Jacobi, Dr. E. Keyer, and Dr. W. T. Lusk. According to the rules of the Society, three of the nine members composing the Executive Committee retire every year, and three new members, who are to serve in turn three years, are elected to fill their places. The retiring members this year were replaced by Dr. the Hon. Alan Herbert, who was re-elected; Dr. Brandt of Nice; and Dr. Thomas Linn, of Paris and Nice, the founder of the Society. This was but a small part of the business transacted at the annual meeting of the Society, held at the apartment of Dr. Ball, 4, Rue de la Paix. Dr. Brandt occupied the chair. The minutes of the

ast meeting having been read, and other minor matters disposed of, the great question of medical advertising came up for discussion. Whilst entertaining distinctly the time-honoured prejudice against individual advertising in the daily press, no objection was made to the insertion of a list of the Society's members in medical journals or such papers as afforded space for medical and scientific matters, provided such list appears as information beneficial to the public, and not as an advertisement. The anniversary meeting, held at Paris on October 11, was a successful one, and adjourned, to be followed by the annual banquet, which took place at 8 p.m. in one of the handsome salons of the Hôtel Ritz, Place Vendôme. After dinner the Hon. Hector Fabre, C.M.G., Commissioner-General of Canada, who presided at the table, proposed in appropriate words "The Queen," "The President of the United States," and "The President of the French Republic," paying a glowing tribute to Dr. Alan Herbert, who replied in fitting terms, referring to Dr. Linn as the founder of the Society. It was near midnight when this pleasant professional and social anniversary—a combination of medicine, music, and flowers—ended.

MR. PASSERON, partner in the well-known firm of Nicholls and Passeron, Chemists to the Queen, at Nice, has retired, the term of association having expired on October 14. Mr. Nicholls will continue, as heretofore, to direct the affairs of his important house, which is the best known high-class pharmacy on the Riviera.

UNIVERSITY OF BORDEAUX.—The Registers for entries to the mixed faculty of medicine and pharmacy will be open from October 21 to November 5 for medical students, and from November 1 to 15 for pharmaceutical students. The medical examinations commence November 4, and the pharmaceutical examinations about the end of this month. All students called up in November to finish their military service, who have yet an examination to pass, are expected to acquaint the Secretary in writing, giving the probable date of their call to serve under the colours.

TREATMENT OF WHOOPING COUGH.—A new method for the successful treatment of whooping cough by an apparatus designed by Messieurs Hugnet fils, and now in use at a medical establishment in Paris, has recently been introduced. The details are briefly as follows:—The patient breathes air forced into the room by a ventilator worked with a gas-engine. This air is deprived of its impurities in passing through layers of wadding, thence over an antiseptic liquid. The oxygen is converted into ozone by means of an ozonising apparatus possessing a powerful bobbin. It is then conducted over appropriate liquids, where it is charged with medicated vapours, such as of eucalyptol, phenol, etc., according to the ideas of the doctor in charge of the case. Finally, the air enters a heated tube through which it passes and reaches the chamber where the patient is comfortably installed, having nothing to do but breathe this new medicated air, which enters in abundance. The products of exhalation are passed off by means of another ventilator, distinct from the first, but worked by the same machine. In this manner a plentiful supply of fresh air is ensured without the inconvenience of a draught. After the first seance, which is usually of an hour's duration, the attacks become less in number per diem, and diminish in intensity. Generally speaking, nine or ten visits to this establishment suffice to effect a radical cure. In many instances five or six visits have sufficed.

REMOVAL OF PICRIC ACID STAINS.—Monsieur Prieur, of Besançon, suggests the following as a rapid means of removing the yellow stains of picric acid from the skin and linen. With a solution of lithia carbonate in distilled water it simply suffices to rub the stained skin to remove the traces of the acid. For linen, the spot is damped and then rubbed with a pinch of the carbonate, or the stained portion may be dipped into the solution.

USE OF PICRIC ACID IN ECZEMA.—Experiments have recently been made with picric acid in the treatment of acute eczema, and have been attended with much success. The affected surface is painted with a solution prepared with one part acid in 86 parts distilled water. The pruritus soon disappears after the application, and a kind of protecting layer is formed, under which cicatrisation is rapidly completed, when the crust (which generally occurs after a few days) of the skin is dry and covered with

a newly-formed and very thin epidermal layer. The same treatment may be employed upon children with eczema of the face or scalp. According to the author, picric acid is not toxic, and may safely be employed upon large surfaces denuded of their epidermis.

ENGLISH NEWS.

THE CHEMISTS' ASSISTANTS' UNION held its first annual general meeting at the Horse Shoe Hotel, Tottenham Court Road, on Thursday, October 6, when the chair was taken by Mr. Whineray, who, after remarking upon the progress made, called upon Dr. Dutch to address the meeting. Dr. Dutch advised chemists to take a leaf out of the Medical Council's books regarding unqualified practice, and also to support only those medical men who prescribed from the Pharmacopœia, and not those who prescribed every foreign nostrum and compressed tablet that was put on the market. The meeting was next addressed by Mr. Glyn-Jones, who urged the assistants to form a thoroughly organised Union. He spoke at length upon the organisation and objects of the Union, and suggested that a draft scheme be drawn up by the Council and forwarded to every local chemist's association for discussion. Subsequently it was decided that the attention of the Pharmaceutical Society be respectfully drawn to the practice of dispensing poisons by unqualified persons in doctors' surgeries, and that they be urged to take every possible step to minimise the evil. A smoking concert will be held in the interests of the Union at an early date.

CHEMISTS AND JURY SERVICE.—Mr. Hunt, the local secretary for Plymouth, at the annual meeting of the local association recently, mentioned the difficulty experienced by pharmaceutical chemists in Plymouth of obtaining exemption from jury service owing to the jury lists not being duly exhibited on the church doors, and read correspondence relating thereto. Mr. Hunt stated that he was still endeavouring to have this omission rectified.

CHEMISTS' ASSISTANTS' ASSOCIATION.—The fourth series of cinderella dances in connection with the C.A.A. will consist of four dances, to be held at the Dorset Hall of the Portman Rooms, Baker Street, W., on Thursdays, October 27 and December 8; Wednesday, January 4, 1899; and Thursday, March 33. Tickets will be issued as follows:—

	Patrons. Members.	Non- Members.
Admitting two to the series	15s.	17s. 6d.
Admitting one to the series.....	9s.	11s.
Admitting two to a dance	4s. 6d.	5s.
Admitting one to a dance	2s. 6d.	3s.
Admitting a lady, 2s.		

The tickets can be obtained from the Hon. Secretaries, Mr. Chas. Morley, 3, Bucklersbury, E.C., and Mr. H. H. Robins, 113, Ridley Road, Forest Gate, E.

AT THE TECHNICAL SCHOOL, BOOTLE, LIVERPOOL, a course of lectures on Organic Chemistry, consisting of about twenty-eight in number, will be delivered by Mr. R. E. Kenyon, M.Sc., F.C.S., during the winter session, on Thursday evenings, at 7.30, followed by practical work in the laboratory on Fridays, from 7.30 p.m. to 9.30 p.m. The fee for the double course is 12s. 6d. The class will not be held unless at least six students give in their names, and as four have already joined, local pharmacy will surely make up the deficit.

ACACIA HALL.—In pursuance of Mr. Wellcome's long-cherished plan, Messrs. Burroughs, Wellcome and Co. have just acquired the old manor house and grounds at Dartford, Kent, known as Acacia Hall, and are erecting a gymnasium, laying out the grounds for sports and pastimes, and adapting the buildings for use as a club house.

THE INTERNATIONAL CONFERENCE ON SCIENTIFIC LITERATURE.—The Royal Society gave a dinner, on October 10, at the Hôtel Métropole to the delegates from foreign Governments attending the International Conference which is at present dealing with the question of an international catalogue of scientific literature. Lord Lister occupied the chair, and among those present were Sir John Evans, Sir John Gorst, M.P., Sir E. Frankland, Sir Norman Lockyer, Sir Douglas Galton, Sir William Crookes, Professor

Koberts-Austen, Professor Michael Foster, Professor Rücker, Dr. Mond, Dr. Armstrong, and the following foreign and colonial representatives:—France: Professor Darboux, Professor Mascart, and Dr. Deniker; Germany: Professor Klein, of Göttingen; Austria: Professor Weiss and Professor Boltzmann; Hungary: Professor Heller and Dr. Theodore Duka; United States: Dr. Cyrus Adler; Belgium: Le Chevalier Descamps, M. Lafontaine, and M. Otlet; Holland: Professor Korteweg; Sweden: Dr. Dahlgren; Norway: Dr. Brunchorst; Mexico: Señor F. Don Troncoso; Switzerland: Dr. Graf and Dr. Bernouli; Queensland: Sir Horace Tozer; New Zealand: the Hon. W. Reeves; Natal: Sir W. Peace; Japan: Professor Yamaguchi.—Professor Rücker proposed the toast of "Science in all Lands," which was responded to in French by Professor Darboux, of the University of Paris. "Success to the Conference" was proposed by Professor Weiss, and responded to by Sir John Gorst, while Lord Lister acknowledged the toast of "The Royal Society," proposed by Professor Korteweg. Amongst other speakers were Professor Armstrong, Le Chevalier Descamps, delegate from the Belgian Government, Professor Klein, Sir Norman Lockyer, Professor Mascart, Sir William Crookes, Dr. Graf, and Dr. Cyrus Adler.

INSTRUCTION IN PHOTOGRAPHY AND PHOTO-ENGRAVING—In connection with the winter session trade classes at the Polytechnic, Regent Street, London, W., a six months' course of lectures and demonstrations in the practice and technique of photography will be given by Mr. Howard Farmer. Courses of lectures by specialists in other subjects will also be given, including colour photography, photo-lithography, photographic printing, bromide printing, bromide enlarging and enlarged negative making, finishing enlargements, retouching, photogravure, wet-collodion. For particulars of terms, hours, etc., application should be made to the Secretary.

FREEMASONRY AT READING.—At the installation of the Right Hon. Lord Wantage, V.C., K.C.B., as Provincial Grand Master of Berkshire at Provincial Grand Lodge, held at Reading on the 14th inst., his Lordship conferred the honour of Provincial Grand Steward upon Bro. W. R. Cook, W.M. of the Vale of White Horse Lodge, Faringdon, No. 1770.

DRINKING CARBOLIC ACID.—On Sunday afternoon last, Martha Hassal, aged eight years, residing with her parents at Thornton Street, Miles Platting, was playing with some other children in the scullery of the house. She presently left them, and running to her parents, said she had taken "something nasty." She then became unconscious, and was removed to the Royal Infirmary, Manchester, where it was found that she had swallowed carbolic acid. The child, who was in a serious condition, was detained in the institution.

DENTISTRY IN WORKHOUSES.—The King's Norton (Birmingham) Board of Guardians have instructed their superintendent to periodically examine the teeth of all the children in the workhouse, and to report all cases requiring attention to the medical officer. When necessary the children are to be treated by a surgeon dentist or taken to the Dental Hospital.

BORIC ACID AS A FOOD PRESERVATIVE.—Mr. W. Price, pharmaceutical chemist, Birmingham, was on the 14th inst. again selected by a representative meeting of ratepayers as the Unionist candidate for the St. Martin's Ward, which he has represented with so much credit in the past. Speaking as a member of the Health Committee, Mr. Price referred to the request made by a deputation which recently waited upon the Committee, to the effect that some definite declaration should be made for the guidance of the whole country in reference to the use of boric acid as a food preservative. He expressed thorough agreement with the request, and the Committee as a whole were of a like opinion. This was one of the questions the Government should take up without loss of time, because so far as the scientific experts had declared their opinions there appeared to be a great difference of opinion with regard to the effects of the acid upon the human system. Several prosecutions at Birmingham had resulted in convictions being obtained, but in other parts of the country prosecutions had failed. Medical experts had stated in evidence that in the small quantities in which it was introduced into food boric acid was not injurious. He would not set his own opinion against that of the experts, but it certainly was a

question whether the introduction of boric acid into milk, bacon, butter, and almost everything that was eaten, would not have some injurious effect, although taken in very small doses. He repeated that the Government should agree upon some standard for the guidance of health committees throughout the country.

SANITARY CONGRESS HEALTH EXHIBITION, BIRMINGHAM.—The Sanitary Institute's Medal for Aërated Waters in syphons and bottles has been awarded to "Camwal" waters, of which there is a very large exhibit. As is usual at these exhibitions "Camwal" is booming, and a large assortment of literature concerning table waters has been distributed.

NORTH-EAST LANCASHIRE CHEMISTS' ASSOCIATION.—A special general meeting of this Association will be held at the White Bull Hotel, Blackburn, on Tuesday, October 25, at 8.30 p.m., to receive a report from Messrs. Holt and Shorrocks, delegates to the annual meeting of the Federation of Local Associations, held at Belfast in August last. Resolutions will also be submitted:—

- (1) Urging all local associations to unite in demanding more vigorous action by the Pharmaceutical Council, more information of its intentions, and that these be persistently pressed forward to legislation, and that they invite the assistance and co-operation of the Medical Council.
- (2) Appealing to all chemists in the United Kingdom to discuss the question of "Company Pharmacy," recognising qualified companies (in such cases urging the proprietors to use their names on labels, etc.), to pass resolutions declaring that all unqualified practice of pharmacy, either collectively or singly, should be illegal.

MR. R. C. COWLEY, Principal of the Liverpool School of Pharmacy, has just published, in the shape of a neat card for the pocket, the substance of his paper on "Glucose Estimation at the Dispensing Counter," read at the last session of the Liverpool Chemists' Association. The card contains the method of manipulation, with the alterations necessary when dealing with a liquid of high or low glucose strength, and on the obverse are examples worked out together with useful tables. It is just what dispensers will appreciate, and a stamped directed envelope to Mr. Cowley will procure for them a copy.

POISONING HORSES.—The *Standard* reports a mysterious case of wholesale poisoning of horses at Abingdon. On Sunday, October 9, nearly sixty horses belonging to show people attending the annual fair were turned into a meadow adjoining the Thames. On Monday nearly forty showed symptoms of poisoning, and by noon on Tuesday about twenty had died. The matter is being investigated by experts from the Veterinary College, London.

FOOD AND DRUGS ACT PROSECUTIONS.—On October 10, Messrs. Boots (Limited), were charged at the Shire Hall, Nottingham, with selling a drug, viz., Gregory's powder, which was not prepared in accordance with the directions given in the British Pharmacopœia.—Inspector Crabtree gave evidence to the effect that he purchased 2 ozs. of Gregory's powder, loose, at Messrs. Boots' shop at Hucknall Torkard.—The public analyst's certificate showed that the powder was composed as follows:—Carbonate of magnesia, 66; rhubarb and ginger, 34. The B.P. gave the following formula:—Powdered rhubarb root, 2; ginger, 1; light magnesia, 6.—Dr. Bottrill for the defence, stated that this certificate was not inconsistent with the contention that the defendants were selling a pure article, though it was poor by reason of its age.—Mr. T. F. Harvey, pharmaceutical chemist, said he found that a quantity of Gregory's powder exposed to the air for three days absorbed about 14 per cent. of carbonic acid gas and water.—A fine of one guinea was imposed.—George Coombs, of Hucknall, was fined a similar amount for a like offence.—At the Swindon Petty Sessions on Monday, October 17, Jessie Boot, described as a chemist, though not registered as such, of Nottingham, and Henry Jones, of Bridge Street, New Swindon, were summoned on adjournment with selling lime water to the prejudice of the purchaser at Swindon on August 10.—Mr. Bevir prosecuted on behalf of the Wilts County Council, and Mr. A. Muir Wilson, of Sheffield, appeared for the defence.—Mr. Wilson having intimated that he was prepared to plead guilty to the summons against Jones, Mr. Bevir said he was quite ready to accept that plea and ask for a formal withdrawal of the case against Mr. Boot. The Analyst's certificate showed that the sample contained not more than a quarter of a grain of lime in

10 fluid ounces, whereas the proper proportion was 5 grains to 10 fluid ounces. There must have been some carelessness or negligence, and no doubt the defendant Jones was the person responsible, as it was from his immediate assistant that the purchase was made.—The defendant Jones said he was a qualified chemist, and was directly responsible for preparations made up at the Swindon shop. The lime water was made by his assistant, and he accounted for the deficiency from the fact that water was poured on the old lime and the bottle was not afterwards shaken.—The Chairman said the Bench would allow the case against Mr. Boot to be withdrawn on payment of the costs. With regard to Jones, although the pecuniary loss to the customer was very small, it was evident that there had been carelessness, and carelessness on the part of a chemist seemed to him to be extremely serious. At the same time the magistrates would only impose the light penalty of £1 and £1 16s. 6d. costs. The costs in Mr. Boot's case were £1 6s.

A PARTIALITY FOR SCENT.—John Wilson, 36, described as a clerk, having no home, was charged on remand at Bow Street on October 13 with theft. The evidence on the last occasion was to the effect that the prisoner went to the Palace Drug Stores, Bridge Street, and asked for a bottle of Dodd's mixture. While the manager was consulting a catalogue to see if the mixture was kept in stock, the prisoner took a bottle of scent from the counter, and place it in his pocket. It was now proved that two years ago prisoner was sentenced to eighteen months' imprisonment at the Old Bailey for stealing four bottles of scent, after seven previous convictions for similar thefts.—The prisoner was committed for trial.

PROFESSOR WILLIAM RAMSAY, one of the discoverers of the hitherto unknown elements of the air, is to lecture at Berlin on that subject on December 19, at the invitation of the German Chemical Society.

MANCHESTER LITERARY AND PHILOSOPHICAL SOCIETY.—The opening meeting of the new session was held on Monday night. Dr. Broadbent described further researches of his own in the life history of Vorticella, and illustrated his remarks by diagrams prepared from his own observations under the microscope. Mr. Mark Stirrup, who has been elected President of the Natural History Section, exhibited and described a large collection of corals from the Devonian and carboniferous rocks in districts round Torquay. Mr. W. Stanley exhibited and described a new microtome with a fine adjustment recently perfected by Mr. Aylward, made to cut section 1-500th of an inch in thickness, the cutting edge being fixed and the object from which a section is to be taken being moved, as in the Cambridge Rocking Microtome.

THE SENATE OF OWENS COLLEGE, MANCHESTER, has awarded a Dalton Chemical Scholarship to A. T. Moulpied, B.Sc., and a Pharmaceutical Entrance Exhibition to Wm. Botham.

NOTTINGHAM AND NOTTS CHEMISTS' ASSOCIATION.—The first general meeting of the winter session will be held at the Albert Hotel, Derby Road, on Wednesday, October 26, and the chair will be taken at 9 p.m. prompt, and a paper will be read by Mr. W. Gill entitled "Company Pharmacy, Considered with a View to Legislation thereon." Any paper given by Mr. Gill cannot fail to be most interesting, and the subject he has chosen should prove unusually so at the present time.

MR. DENCER WHITTLES, L.D.S., R.C.S., Eng., has been appointed dental surgeon to the Birmingham General Hospital.

A NEW POISONS BOOK.—Mr. Thomas Batty, chemist and druggist, 76, Upper Thomas Street, Aston, was called before the Birmingham Coroner (Mr. Isaac Bradley) on Wednesday to give evidence relative to the death of Ada Nellie Currier (19), who swallowed a quantity of vermin killer. Mr. Batty said the deceased, when she asked for vermin killer, stated that she required it for the destruction of cockroaches. He offered her a non-poisonous kind, but this she refused, insisting on having Battle's, which was eventually supplied to her. The Coroner called for Mr. Batty's poisons book, and having examined it, asked if it was one of Mr. Batty's own ideas? Mr. Batty replied that it was not, though it was a new style of book. The Coroner remarked it was the best he had seen. Instead of the names being written one under the other, there was a separate page for each purchase.

Mr. Batty said that under this system a purchaser was not able to see the name of the person who had previously signed the book.

WELSH NEWS.

INLAND REVENUE PROSECUTION.—At the Barry Dock Police Court on Friday, October 7, George W. Raynes, vendor of quack medicines, Barry Dock, was summoned for exposing for sale a bottle liable to stamp duty without the cover or wrapper of the Inland Revenue. It was stated for the prosecution that a purchase was made on the premises of a bottle of medicine—Rayne's Blood Mixture—which bore no stamp, and which was held out by a notice in the window to cure about a dozen different diseases, commencing with rheumatism, sciatica, and scrofula, and ending with scurvy, gravel, and glandular swellings. The stamp duty on the bottle amounted to 3d.—Raynes denied having sold the bottle of medicine, he being at the time in prison. It was, however, proved otherwise, and defendant was ordered to pay £1 and costs; in default, a fortnight's imprisonment.

SCOTTISH NEWS.

MR. THOMAS WALKER, for about thirty years Curator of the United College Museum, St. Andrews, died last week from the effects of carbolic acid poisoning. He was 71 years of age, and at one time carried on a grocer's business in St. Andrews. He was well known as a taxidermist, and was a general favourite with the students.

AN OVERDOSE OF LAUDANUM.—On Thursday, October 13, John Soutar (20), clerk, of Hawkhill, was admitted to Dundee Royal Infirmary suffering from the effects of laudanum poisoning. Soutar, according to his own statement, took an ounce and a half of laudanum at dinner time on Thursday to overcome nervous excitement. Towards evening he became so ill that he had to be conveyed to the Infirmary, where the usual antidotes were successfully applied.

Marriage.

CAMPBELL—BUCHANAN.—At 20, Henderson Street, Leith, on the 17th inst., by the Rev. James M. Scott, M.A., Donald Campbell, chemist, 255, Great Junction Street, Leith, to Mary, youngest daughter of the late John Buchanan, merchant, Glasgow.

Announcements.

Tuesday, October 25.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION, Great Northern Victoria Hotel, Bradford.—Inaugural meeting and address by Mr. A. H. Waddington, President.

NORTH-EAST LANCASHIRE CHEMISTS' ASSOCIATION, White Bull Hotel, Blackburn, at 8.30 p.m.—Special general meeting.

ROYAL PHOTOGRAPHIC SOCIETY, 5A, Pall Mall East, London, W., at 8 p.m. Papers will be read "On the Alleged Discovery of Photography in 1727," by R. B. Litchfield. "On the Grain of Photographic Negatives," by E. Duncan Stoney, communicated by Mr. Harry de Beer.

ON MONDAY, October 31, slides will be shown by members of the Affiliated Societies at the Exhibition of the Royal Photographic Society. With respect to the affiliation of photographic societies, there will be a meeting of the Committee of Delegates, on Friday, October 28, at 7.30 p.m.

Wednesday, October 26.

NOTTINGHAM AND NOTTS CHEMISTS' ASSOCIATION, Albert Hotel, Derby Road, Nottingham, at 9 p.m. Paper on "Company Pharmacy considered with a view to Legislation thereon," by W. Gill.

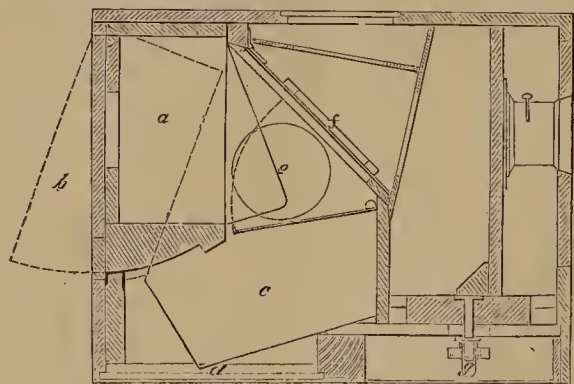
Thursday, October 27.

CHEMISTS' ASSISTANTS' ASSOCIATION, Dorset Hall, Portman Rooms, Baker Street, W., at 7.30 p.m. The first of the fourth series of Cinderella Dances.

NOTES OF NOVELTIES.

The "Fram" Hand Camera.

This camera, manufactured by W. Watson and Sons, 313, High Holborn, is constructed for twenty-four $\frac{1}{4}$ -plate films. The changing arrangement is of that kind known as "automatic," that is to say, the change is effected by mechanism actuated by some such proceeding on the part of the operator as pressing a knob or lever. In the present case, what appears to be a hinged flap at the back of the camera is drawn up by means of a handle. In reality it is the magazine containing the films that is partly drawn out. There are no sheaths, the films are separated by loose pieces of a suitable material and of the same size. In loading the magazine, therefore, all that has to be done is to insert the films and separators alternately. The changing mechanism is of a very simple nature, and unlikely to get out of order. When the magazine is in position for exposure the bottom film is held in position by projecting lips top and bottom. When it is required to change the film the magazine is swung backwards and at the same time the camera is tilted forward. By a very ingenious arrangement the projecting lips top and bottom are drawn aside,



thus allowing the first film with its separator to fall forward; at the same time similar lips are projected from the sides between the first separator and the second film, thus preventing any but the front film falling forward. Re-swinging the magazine into position withdraws the side lips and projects those top and bottom, the spring at the back of the magazine forcing the remaining films forward and the front one into register. The released film falls into a receptacle below.

The shutter is one giving time and instantaneous exposures from $1/75$ sec. downward, and is fitted with a mirror from which the actual picture, projected by the lens, is reflected upon a screen at the top of the camera. The objects before the camera are, therefore, shown the same size as they will be in the photograph, and can be focussed up to the moment of exposure. This arrangement gives practically all the advantages of a time lens camera. The camera is of attractive appearance and it is constructed so that it can easily be taken to pieces with a screwdriver in case of accident. An automatic recorder showing the number of plates exposed is provided, and there is an adjustment for focussing objects at varying distances. When loaded with twenty-four films the camera weighs 3 lbs. 8 oz. and it measures $8\frac{1}{2} \times 6\frac{3}{4} \times 5\frac{1}{4}$ inches. The diagram shows the internal construction of the camera; *a* is the magazine; *b*, the same swung to change a film; *c* the reservoir into which the exposed film falls; *d*, the door through which the exposed films are taken out of the camera; *e*, the revolving disc indicating the number of exposures made; *f*, the mirror attached to the shutter, which reflects the image on to the ground glass of the finder in the top of the camera; *g*, the lever and clamping nut, fixing the focus at any desired point. The price with R.R. lens and iris diaphragm is £8 10s.; with Goerz anastigmat, ser. iii., £11.

A Lanternist's Pocket Book.

MESSRS. W. BUTCHER AND SON, Blackheath, London, S.E., send a copy of their "Primus" Lanternist's Pocket Book for 1898. It contains reference tables of the size of disc obtainable, focus of lens required, distance between lantern and screen, amount of gas in cylinder, railway regulations for gases, and memoranda of requirements. There is also a diary and pages for a synopsis of engagements, for the record of gas used, list of own slides, and a list of borrowed slides. A very useful directory of dealers in lanterns and apparatus is given, and a list of lantern and lantern slide requisites. This pocket book is very compact and neatly got

up, and as it may be obtained free from all the principal dealers in photographic and lantern materials no lanternist should be without it.

EXTRACTS FROM CONSULAR REPORTS.

VITICULTURE HAS MADE ENORMOUS STRIDES IN RUSSIA during the last fifteen years. At one time confined to the south coast of the Crimea, it now extends in a northerly and north-easterly direction into the provinces of Kherson, Podolia, and Bessarabia, some of the plantations, notably that of Prince Trubetzkoi, covering an area of upwards of 500 acres. The area in Bessarabia under vine-cultivation in 1893 amounted to 108,000 acres, while in 1897 it was 175,000 acres. The quality of the Crimean and Bessarabian wines, both red and white, according to Acting Consul-General Mackie, should render them acceptable in England and other countries, the red bearing a close resemblance to burgundy, the white partaking of the nature of hock. The expansion of viticulture has led to the establishment in Odessa of two champagne factories. One of these is reported to have worked under most favourable circumstances for some time, and has competed most successfully with French champagne, but the other has not yet commenced operations.

REFERRING TO THE POSSIBLE INDUSTRIES in and around Sevastopol, Vice-Consul Cooke is of opinion that a manufactory of soda, both caustic and crystallised, should be a paying affair. These manufactories are reported to be very few and far between in Russia, and the products are very dear. A firm of Moscow merchants, representing a manufactory in the interior, replying recently to an inquiry, quoted something very high as the price of sodas, but intimated that no orders could be booked for six months ahead. Soap and candles, it is thought, could also be profitably manufactured.

THE STEADY DECREASE IN THE FOREIGN OPIUM IMPORTS into China is strikingly demonstrated in the report of Consul Fraser on the trade of Wuhu for the year 1897. The quantity of opium imported in 1885 was estimated at 649,906 lbs., value £484,475; ten years later it had decreased to 336,533 lbs., value £240,030; while in 1897 the total import was given as 207,627 lbs., value £152,978. This decrease in the arrivals of the foreign drug, and the increased use of the native, so far as these mark a diminution of the drain of China's money to foreign countries, are considered by the Chinese as subjects of congratulation, although the large consumption of opium by the people is looked upon by them as a national misfortune.

CHEMICAL FIRE ENGINES.—In an interesting report on the fire department of the city of Boston, Massachusetts, Consul-General Sir D. Colnaghi briefly describes the chemical engines, which are a distinct feature of American fire appliances. They form a useful piece of apparatus, always ready to go to work, the hose being light and easily handled. The capacity of the chemical engines of the Boston department is from fifty to one hundred gallons. They generally consist of two tanks with the necessary appliances hung on four wheels, and on account of their lightness they are drawn with great speed to a fire, carbonic acid being the working and extinguishing agent. The total number of fires extinguished by the chemical in 1897 was 241. During the same year 472 fires were extinguished by little hand or portable extinguishers. These are filled with water, soda, and a small bottle of vitriol. By turning a small valve on the top of the extinguisher the bottle is broken, which causes a pressure sufficient for the play of water on the fire through a small hose.

HARASSING PARCEL POST REGULATIONS are reported as having been introduced in China, whereby the receiver of a parcel from say Great Britain has to pay a substantial sum, in spite of the fact that the sender has paid in full "at the other end." The public strongly object to this imposition, but the "Imperial" post holds firmly to its regulations.

THE BRITISH EXPORTS of chemicals and chemical and medicinal preparations for August this year were valued at £612,241, as against £599,190 for the same month in 1897, showing an increase of £13,051. The imports of chemicals, dye stuffs, and tanning substances also show a substantial increase for August, 1898, as compared with last year, when the total value was £360,704, while this year it was £377,046, an increase of £16,342.

MARKET REPORT

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

London Report.

OCTOBER 20, 1898.

Business has again been rather quiet during past week, although on the whole a somewhat better feeling appears to prevail, this is however tempered by the fear of dearer money. Quinine is firm, the probability of an advance in price being freely spoken of. Cocaine is firm. Same may be said of Quicksilver, an advance in price of which latter article being confidently predicted. Mercurials unchanged. Acid Citric, Acid Tartaric, and Cream of Tartar quiet. Glycerine steady. Codliver Oil quiet and dull. Opium, Morphia, and Codeia quiet, and practically unchanged. Acid Boracic and Borax quiet. Sulphonal and Phenacetin unchanged. Acetanilide weak. Potash Permanganate slightly better. The following are actual prices ruling for articles of chief interest:—

ACETANILIDE—Is weak at 11d. to 1s. per lb. for large quantity.

ATROPINE—Is firm at 17s. 10d. per oz. for the *alkaloid* and 15s. 6d. per oz. for the *Sulphate B.P.*

ACID ACETIC—Is in good demand; quotations remain as follows: 30 per cent., 14s. 3d. per cwt.; 33 per cent. (B. P.), 15s. 3d. per cwt.; 60 per cent., 25s. per cwt.; 70 per cent. 28s. 6d. per cwt.; 80 per cent., 32s. per cwt.; 85 per cent., 34s. per cwt.; 90 per cent., 35s. 9d. per cwt.; and 98-100 per cent. (glacial), 39s. 3d. per cwt.

ACID BORACIC—Steady at 24s. per cwt. for *crystals*, and 26s. per cwt. for *powder*.

ACID CARBOLIC—Market is quiet at 6½d. to 6¾d. per lb. for the 35-36° C. *ice crystals*, 7d. to 7½d. for the 39-40° C. *ice crystal*, and 7½d. to 8d. for the 39-40° C. *detached crystals* for quantity and in large bulk packing. *Crude* quiet at 1s. 11d. per gallon for the 60° F., and 2s. 3d. per gallon for the 75° F. *Liquid*: 95 per cent. of pale straw colour 1s. 2d. to 1s. 3d. per gallon, in 40 gallon casks, and for large quantities.

ACID CITRIC—Quiet at 1s. 2½d. to 1s. 3d. per lb. for *crystals* according to holder.

ACID OXALIC—Steady at 3¼d. to 3½d. per lb. for *Crystals*; ¼d. per lb. more for *powder*.

ACID TARTARIC—Easier at 12¾d. to 1s. 1d. for *English crystals* on the spot. *Foreign crystals* 12¼d. to 12½d. per lb.

ALUM.—Loose lump £5 7s. 6d. per ton; ground in bags £6 per ton.

AMMONIA COMPOUNDS.—*Sulphate* very dull but unchanged at £9 10s. per ton for grey prompt 24 per cent. London. Hull and Leith same price. *Carbonate* unchanged at 3d. to 4d. per lb., according to quantity and package. *Bromide* firm at 2s. 1d. per lb. *Iodide* quiet at 13s. 7d. per lb. *Chloride*: Chemically pure small crystals 30s. to 32s. per cwt. free from metals, white 25s. 6d. to 26s. 6d. per cwt. *Oxalate* 5½d. to 5¾d. per lb. *Sulphocyanide* quiet at 1s. to 1s. 1d. per lb. *Sal ammoniac*: Sublimed firsts 35s. per cwt., seconds 33s. per cwt., crushed (for batteries) 35s. and 37s. per cwt. respectively, powdered 36s. and 38s. per cwt.

APOMORPHIA—Firm at 17s. 9d. to 18s. 6d. per oz., according to quantity.

ARSENIC.—Lump is steady at 34s. per cwt., powder being quiet at 18s. per cwt.

BLEACHING POWDER—Steady at £6 10s. to £7 per ton on the spot.

BORAX—Is steady at 14s. 3d. to 14s. 9d. per cwt. for lump, and 14s. 6d. to 15s. per cwt. for powder.

BROMIDES—Steady at 1s. 9½d. per lb. for *Potass. Bromide*; 2s. 1d. for *Ammon. Bromide*; 2s. 0½d. for *Soda Bromide*; 1s. 11d. for *Bromine*; in 20 case lots.

BISMUTH.—The *metal* remains at 5s. per lb., the price of the *sub-nitrate* being unaltered at 4s. 10d. and the *subcarbonate* at 5s. 5d. per lb. in 5-cwt. lots.

CAMPHOR—Is very firm both for *crude* and *refined*, it being rumoured that an advance in price of the *refined* article is impending.

CASCARA SAGRADA.—Some business has been done at dearer rates, 23s. per cwt. for new and 26s. 6d. per cwt. for good old bark.

CINCHONIDINE—Continues in active demand and business has been done at 7¼d. per oz. in large bulk.

CLOVES.—Privately *Zanzibar* are in good demand and prices are higher, business done comprises: October to December delivery at 3½d. to 4d., and January to March same figure. At auction 280 bales fair *Zanzibar* sold at 3½d.; 5 cases *Penang* sold, ordinary 6½d.; fine picked 10½d. to 10¾d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol* quiet at 1s. 2d. to 1s. 3d. per gallon for commercial and 2s. to 2s. 3d. per gallon for the pure. *Benzole*: 50 per cent. 9d. to 10d. per gallon; 90 per cent. 8½d. to 9d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C., 4d. per gallon. *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 6d.; 90 per cent. at 160° C., 1s. 2d.; 90 per cent. at 190° C., 1s. 3d. per gallon.

COCA LEAVES—Are very firm, good green *Truxillo* held for 8d. per lb.

COCAINE—Is firm at 9s. 9d. per oz. for best brands of *Hydrochlorate* for 100-oz. lots in 25-oz. tins. So far the anticipated advance has therefore not taken place. Makers are, however, firm at above figure, stating that the cost of the *Crude* would certainly warrant a further advance in price of the refined article.

CODEIA—Steady at 12s. 6d. per oz.

COD-LIVER OIL—Remains a quiet and somewhat disappointing market, new non-congealing *Norwegian Oil* being quoted 80s. to 87s. 6d. per barrel of 25 gallons in tin-lined barrels, according to position and brand.

COLCHICUM SEED—Is scarce, and 50s. per cwt. is now asked.

CREAM OF TARTAR—Is quiet. First white *crystals* on the spot 72s. to 77s. per cwt., and 74s. to 80s. per cwt. for *powder*, both according to quality.

EXTRACT FELICIS MARIS (Oil of Male Fern)—Is quoted at 4s. per lb. for cwt. lots for a good thick quality, a more fluid article, which would consequently contain more moisture and less active principle, being quoted at rather less money.

ESERINE (PHYSOSTIGMINE).—Makers quote 1s. 6d. per gramme, a make supposed to be of French origin, but which is said to be impure and therefore valueless, is stated to be offering at a lower figure.

GENTIAN ROOT.—There have been sales of good quality at 18s. per cwt., which shows rather lower value.

GINGER.—*Cochin* continues dull. Of 535 bags rough only 241 bags sold; ordinary washed, slightly wormy, 21s.; fair washed, 23s. Of 51 cases cut kinds 20 cases sold; medium and small native, part cut, 49s. No *Jamaica* offered.

GLYCERIN—Is steady at 52s. 6d. to 55s. per cwt. for *English* and 55s. to 65s. per cwt. for *German* double distilled chemically pure white 1260° quality in tins and cases.

GOLDEN SEAL ROOT—Is inquired for, but stocks here are very small. To come forward 2s. per lb. *c.i.f.* is asked.

GUM ACACIA.—The business in Soudan sorts is restricted owing to an expectation that large arrivals might take place in the near future, which would, of course, cause a decline. At present quotations range from 70s. to 80s. per cwt., according to quality.

GUM TRAGACANTH.—The position of this article is strong, yet business has been but small. Importers are very firm as to price, and this buyers hesitate to pay. *Firsts* are quoted at £14 10s. per cwt., *Seconds* £13 per cwt. *Thirds* £11 10s. per cwt., lower qualities down to £5 per cwt.

HONEY.—*Californian* is scarce, and 40s. to 42s. 6d. per cwt. is asked. It is stated that the crop of *English* honey is very short this year.

HYPHOSPHITES.—Makers' prices are 3s. 3d. per lb. for *Lime, Soda, or Potash Salts*, in 10 cwt. lots.

IODIDES.—Convention prices remain 10s. 3d. per lb. for *Potass Iodide*, 13s. 7d. per lb. for *Ammon Iodide*, 11s. 7d. per lb. for *Sodii Iodide*, 11s. 9d. per lb. for *Iodine Resublimed*, and 13s. 9d. per lb. for *Iodoform, Crystal, Powder or Precipitated*.

IPECACUANHA.—So far buyers are holding off as much as possible rather than meet the views of holders. Prices both for *Rio Carthagena*, remaining nominally unchanged from last week.

JALAP ROOT.—Is very firm, and fair small heavy is held here for 6d. per lb.

LITHIA.—Makers are firm at 10s. 8d. per lb. for the *carbonate*, 6s. 11½d. for the *citrate crystals*, and 7s. 5½d. for the *citrate powder* in 2 cwt. lots.

MENTHOL.—In better inquiry, price ranges from 7s. to 7s. 3d. per lb., according to quantity.

MERCURIALS.—Are firm in view of the fact that an advance in price of *Quicksilver* is thought probable. Makers still quote for ½-ton lots *Corrosive Sublimatè*, 2s. 3d. per lb.; *Calomel*, 2s. 7d. per lb., and *Red Oxide cryst. or levigated*, 2s. 11d. per lb.

MORPHIA.—Quiet at 5s. per oz. for the *Hydrochlorate powder* on contract.

NITRATE OF SODA.—Quiet at £7 12s. 6d. to £7 15s. per ton for the ordinary, and £8 to £8 2s. 6d. for the refined quality.

OILS (ESSENTIAL).—*Peppermint*: American continues quiet; H.G.H. quoted 5s. 6d. per lb. on the spot. *Wayne County*: Choice quality is scarce, and is quoted 4s. per lb. *c.i.f.* terms. *Star Aniseed* is very dull of sale, 6s. 9d. per lb. is the price on the spot. *Lemongrass* quiet at 3½d. per oz. *Cajuput* in good inquiry at 3s. 10d. to 4s. per bottle. *Cassia* quiet at 4s. 9d. to 5s. 9d. per lb., as to quality. *Citronella* slow of sale at 1s. 1½d. per lb. in tins; drums, ¼d. per lb. less.

OILS (FIXED) AND SPIRITS.—*Linseed* dearer at £17 7s. 6d. for spot pipes, London; barrels, £17 12s. 6d. *Rape* dearer at £22 for ordinary brown on the spot; refined, £23 10s. *Cotton* steady, London crude spot, £13 17s. 6d.; refined spot, £15 to £16, according to make. *Olive*: Green oils firm at £29 to £32 per ton; table oils, 4s. to 6s. per gallon, as to quality. *Cocoonut* firm; Ceylon, on the spot, £24 10s.; Cochin, £27 10s. *Palm*: Lagos, on spot, £22 10s. *Turpentine* dearer and very firm at the advance; American spot, 24s. 3d. per cwt. *Petroleum*: The market is strong at a further advance; Russian, on the spot, 5½d. per gallon; American, 6½d. per gallon; Water white, 7½d. per gallon.

OPIUM.—Is steady but quiet, prices on this side remaining nominally unchanged, while in *Smyrna* market is weak at a decline of about 3d. to 4d. per lb. bringing values there to a trifle below the parity here. It is said that the late rains having facilitated the completion of the autumn sowings is the cause of the decline in value on the other side.

PHENACETIN.—Inferior makes are being hawked round at low prices, the price for a really good and reliable article remains, however, unchanged at 3s. 9d. to 4s. 3d. per lb. for crystal or powder, according to quantity. "Bayers" make is still quoted at 5s. 6d. per lb. in bulk.

PHENAZONE.—Is quiet without further change in price, a good article being obtainable in quantity and bulk packing at 8s. to 8s. 6d. per lb., price of *Antipyrine Knorr* remains unaltered.

PILOCARPINE.—Is quoted by makers at 1s. 4d. per gramme for the *Hydrochlorate* and *Nitrate* salts.

PODOPHYLLIN.—Is firm owing to higher rates now being asked for the root which, especially for the autumn drug, is likely to be scarce this season.

POTASH COMPOUNDS.—*Chlorate* is very firm, and 4d. to 4½d. per lb. is asked for early delivery. *Bromide* is steady at 1s. 9½d. per lb. *Iodide* is quiet at 10s. 3d. per lb. *Bicarbonate*, 30s. to 35s. per cwt., according to brand. *Prussiate* firm at 6½d. to 7d. per lb. for the yellow, and 1s. 1d. to 1s. 2d. per lb. for the red. *Cyanide*, whilst still somewhat scarce for prompt delivery, is easier for forward at 1s. to 1s. 1d. per lb. for 98 to 100 per cent. white cake. *Bichromate* firm at 3½d. to 3¾d. per lb. *Oxalate* is steady at 5d. per lb. for the neutral. *Permanganate* is dull of sale at 52s. 6d. per cwt. for small, and 57s. 6d. per cwt. for large crystals.

POTASH PERMANGANATE.—Best makes are now quoted: 52s. 6d. per cwt. for *small crystals* and 5s. more for *large crystals*; the low price to which the article had been driven having apparently checked production and frightened off weak producers.

QUICKSILVER.—In fair demand at £7 5s. per bottle from importers, whilst second-hand holders quote £7 4s. per bottle, it is believed that an advance in price is impending.

QUININE.—Is firm at 10d. per oz. for best German brands of *Sulphate* in 100 oz. tins and for 1000 oz. lots, there being no sellers of these brands at a lower figure from second-hand, while an advance in makers' prices is confidently predicted in some quarters.

SALICINE.—Is unchanged, 10s. 6d. per lb. being makers' price for fair quantities.

SALTPETRE.—*English* refined, 20s. per cwt. in large casks; kegs, 21s. per cwt.

SENEKA ROOT.—Good *Minnesota* is wanted, but there seems to be very little here. To arrive 1s. 1¾d. per lb. *c.i.f.* is asked.

SHELLAC.—The market has become very dull, and at the auctions on Tuesday rather lower prices had to be accepted, in order to bring about business. A total of 1105 cases offered and 590 cases sold: *Second Orange*, of 816 cases 544 sold, cakey SG in diamond at 77s., bright free ditto being bought in at 85s., and SR in diamond at 82s., good pale part broken sold at 67s., good bright at 65s., bright shivered block at 64s., flimsy palish weak at 63s., good bright red broken at 62s. to 63s., curly bronze at 63s., good strong red at 62s. to 63s., strong red curly cakey at 62s. 6d., fair reddish little mixed and cakey at 61s. to 62s., strong free claret colour at 62s., broken red cakey at 61s. to 62s., red liver at 60s. to 61s., ordinary liver part flint block at 59s. *Garnet*: Of 64 cases 25 sold, fair ruby at 59s., blocky ditto 53s., blocky Rangoon at 57s. *Button*: Of 225 cases 21 sold, genuine stamped at 89s., BL 4 at 48s., common blocky at 37s. to 38s., the remainder bought in, including genuine blocky at 88s., good firsts at 84s., blocky ditto at 74s. to 77s., cakey seconds at 74s., blocky circle 2's at 69s., and dark thirds at 64s. The shipments from Calcutta for the first half of October were heavy as compared with same period last year.

SODA COMPOUNDS.—*Crystals* firm at 57s. per ton, ex-ship terms *Ash* unchanged at £5 to £5 10s., according to strength. *Acetate* steady at 35s. 6d. per cwt. for the chemically pure, and 13s. 6d. per cwt. for the ordinary refined. *Bicarbonate* unchanged at £7 5s. per ton for the 97 per cent., and 18s. 6d. per cwt. for the fully bicarbonated quality. *Hypsulphite* quiet at 6s. to 8s. per cwt., according to brand. *Bromide* steady at 2s. per lb. *Iodide* dull at 11s. 7d. per lb. *Nitrate*, £7 12s. 6d. per ton for the ordinary, and £8 2s. 6d. for the refined.

SPERMACETI.—American is dearer at 1s. 3½d. per lb., packed in 60 lb. boxes.

SPICES (VARIOUS).—*Black Pepper*: 56 bags Singapore sold at 4½d.; 50 bags Aleppy at 4¾d., and 80 bags Tellicherry at 4¾d. *White Pepper*: 102 bags Siam sold at 4¾d.; 12 cases extra fine Singapore bought in at 10½d. *Chillies*: 1 bag fine African, from Chinde, sold at 42s.; 4 bales, per land carriage, sold at 32s. 6d. *Cinnamon*: 10 bags Ceylon sold, broken quill, 9d.; quillings, 8½d.; 60 bags coarse bark bought in at 5½d. *Mace*: 21 cases Penang bought in, pickings at 1s. 4d.; 10 packages West Indian sold, ordinary to fair, 1s. 3d. to 1s. 7s.; good, 1s. 8d. to 1s. 10d.; pickings, 1s. 1d. *Nutmegs* are firm for bold; 20 cases Penang sold, 64's at 2s. 7d., 66's 2s. 4d., 89's 1s. 9d.; 31 packages West India sold, 84's at 1s. 8d., 111's and 100's 1s. 1d. to 1s. 2d. *Pimento* quiet but steady; 260 bags sold at 4½d. to 4¾d.

SUGAR OF LEAD.—*English* steady at 31s. per cwt. *Foreign* firm at 27s. 6d. per cwt.

SULPHATE OF COPPER.—Is very firm at £17 to £18 per ton, according to brand.

SULPHONAL.—Both *crystals* and *powder* are still obtainable in limited quantity from the two principal makers at 7s. 3d. per lb. for bulk packing.

SULPHUR.—Steady, *English* roll, 7s. 6d. to 8s. per cwt.; flowers, 11s. per cwt. *Foreign* roll, 6s. 6d. per cwt.; flowers, 7s. per cwt.

TONQUIN BEANS.—*Angosturas* are in large supply, and new beans are rather pressed for sale at 4s. per lb. Old beans are held for 5s. per lb.

TURMERIC.—*Bengal*, without reserve, sold at 17s. 3d. to 17s. 6d. per cwt. for fair finger, slightly wormy. Other descriptions were bought in.

Newcastle Chemical Report.

OCTOBER 19, 1898.

The market continues to move slowly. Shipments of Soda Crystals to the Channel ports may be said to be on a larger scale, but principally against running contracts. Prices keep as follow:—Bleaching Powder: £5 10s. to £6. Soda Crystals: Basis, 45s. Caustic Soda: 70 per cent., basis, £7. Soda Ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5 5s. Sulphur: £5 per ton.

Liverpool Market Report.

OCTOBER 19, 1898.

Quotations have been subjected to alterations on the higher scale since last week, as regards Honey (particularly fine Californian), Linseed and its oil, and Spirits of Turpentine. This latter has advanced 1s. per cwt., and closes very firm. The alterations in the price of chemicals are but two, Arsenic and Sulphate of Copper, which have advanced. Business, taken as a whole, has been slow, but prices show no weakness.

AMMONIA SALTS.—Sulphate is a shade easier, £9 12s. 6d. to £9 15s. per ton.

ARSENIC.—Lump, £30 per ton. Powdered is dearer, £16 15s. to £17 per ton.

BEEWAX.—28 packages of Gambia sold at fully late rates; 7 sacks of Chilian sold at £6 17s. 6d. to £7 12s. 6d.

BLEACHING POWDER.—£5 5s. to £5 15s.

CANARYSEED.—Turkish seed is steady at 28s. 6d. to 30s. per 464 lbs. About 60 bags of Spanish sold from store at 33s.

COPPERAS—Is still firm at 37s. to 39s. per ton.

COPPER SULPHATE—Is dearer at £17 5s. to £17 10s. per ton for spot, and £18 for spring delivery.

HONEY.—The stock of finest Californian held here is quoted at 42s. 6d. per cwt. Sales of Chilian Pile X. have been made at 36s. per cwt.

LINSEED—Is moving steadily upwards. Calcutta, November to December shipment, brings 38s. 6d. per 416 lbs.; American ditto, 36s. 6d.; River Plate on the spot, 250 tons sold at 35s., or an advance of 9d. per 416 lbs.

OILS (FIXED) AND SPIRITS.—Castor is only in quiet demand with unaltered rates. Calcutta 3³/₄d. per lb., French 3d. to 3¹/₄d., and Madras 2¹/₄d. per lb. Olive, of Spanish production is selling steadily on the spot at £28 to £30 per tun. No business doing "to arrive." Linseed, of Liverpool pressing, is firmer at the improved price of 18s. 6d. to 19s. per cwt. Cottonseed, Liverpool refined, in export barrels, is quiet at 15s. 9d. to 16s. per cwt. Spirits of Turpentine have experienced two separate advances during the week and are now at 25s. per cwt.

POTASH SALTS.—Bichromate, 3¹/₂d. per lb.; Chlorate, 4d. to 4¹/₂d. per lb.; Cream of Tartar, 75s. per cwt., is not in much demand, but price is firm. Pearlash, 34s. to 35s. per cwt.; Potashes, 22s. 6d. per cwt.; Prussiate 6³/₄d. per lb.; Saltpetre, 21s. per cwt.

SODA SALTS.—Bicarbonate, £6 15s. per ton; Borax is very firm at 14s. per cwt.; Caustic, 76 to 77 per cent. £7 12s. 6d. per ton; Crystals, £3 per ton; Nitrate is in moderate demand and price steady at 7s. 7¹/₂d. to 7s. 9d. per cwt.

TURMERIC—40 bags of Bombay bulb sold ex quay at 10s. per cwt.

Manchester Chemical Report.

OCTOBER 19, 1898.

A fair turnover continues in heavy chemicals and drysalteries, locally. Caustic Soda is in good demand, and Soda Ash and Ammonia Alkali about the same as last week. Bleaching Powder is fairly firm for prompt delivery at £5 to £5 5s. per ton, soft wood casks on rails. Salt Cake is higher and strong at 27s. per ton in bulk on rails. Sulphate of Ammonia is firmly held, and is quoted £9 7s. 6d. per ton, on rails, Lancashire. Coal Tar products are somewhat dull, except Pitch, which is quoted 19s. f.a.s., Manchester Ship Canal, and 24s. to 25s. West Coast. Anthracene is unchanged at 4d. A and 3d. B quality. Benzols continue flat at 8¹/₂d. to 9d. for 90's, and 9d. for 50's to 90's. Carboic Acid moves fairly. Miscible Naphtha is unchanged, but solvent wood (white, colourless) is moving freely at 3s. to 3s. 3d., according to quantity. Sulphate of Copper firm at £18 per ton, prompt delivery, best brands here. Owing to increasing freights, Brown Acetate of Lime is firm at £5 7s. 6d. per ton for American, c.i.f., Manchester; Welsh ranges from £5 5s. to £5 7s. 6d., station here. Tin salts are higher, owing to the rise in the metal. Sulphur dull.

ITEMS OF INTEREST.

DISINFECTANT AND DEODORISER FOR A SICK ROOM.—Zinc sulphate, 100 grammes; sulphuric acid, 5 to 10 grammes; mirbaue oil, 2 grammes; indigo blue, 0.15 gramme. Five grammes are placed in the bed-pan before use. Urine and excreta are deodorised immediately by the salt. Decomposition being arrested, microscopical examination may, if required, be deferred until the following day.—*Zeit. d. allg. oest. Apoth. Ver.*, lii., 359, after *Allg. Med. Cent. Ztg.*

PEA-NUT MEAL BISCUITS.—The fact that pea nuts or earth-nuts contain but little, if any, carbohydrates, has led to the use of pea-nut meal in making bread and biscuits, which are highly palatable and useful in cases of diabetes and obesity.—*Med. Mod.*, vii., 134.

DIDYMIUM CHLORIDE AS A GERMICIDE.—According to Droisbach, this salt may be used as a powerful disinfecting and protective remedy. Diluted 1:500 or 1:1000, it prevents putrefaction and is more effective than carbolic acid, boric acid, cupric and ferrous sulphates or zinc chloride. It occurs in commerce as a concentrated rose-red solution of 25 to 30 per cent. It does not stain, is non-corrosive and may be used as a preservative for skins, wood and such-like. The price is not high, as it is obtained as a by-product in the production of rare earths used for incandescent lamps.—*Pharm. Zeit.*, xliii., 579.

SODIUM PERMANGANATE AS AN ANTIDOTE.—F. Scribeber suggests the use of sodium permanganate instead of the potassium salt as an antidote for phosphorus or morphine poisoning, since it is less toxic and may be used in large doses without danger. He advocates washing out the stomach with a 2 per cent. solution of the salt, and then introducing half a litre of the same, allowing it to remain.—*Therap. Gaz.*, viii., 201, after *Centralbl. für innere Med.*

Receiving Orders in Bankruptcy.

(From the London Gazette.)

William B. Brodie, Surgeon, 23, Rawson Street, Farnworth, near Bolton.

James A. Fox, soap manufacturer, Lion Works, Dale Street, Macclesfield.

John S. Carleton, medical practitioner, Manor House, Newnham, Gloucester.

Partnerships Dissolved.

(From the London Gazette.)

J. H. Waters and John R. Kemp, Physicians, Surgeons, 10, St. James's Street, London, W., so far as regards J. H. Waters.

H. Bennett and Thomas G. Cook, Mineral Water Manufacturers, Tong Street, Rochdale.

Arthur Hince and Joseph Thomas, Mineral Water Manufacturers, Cwm Dale, Church Stretton, Salop. Debts will be received and paid by Arthur Hince.

Publications Received.

A SYNOPSIS OF THE BRITISH PHARMACOPŒIA, 1898. Compiled by H. WIPPELL GADD. Third edition. Pp. 183. London: Baillière, Tindall, and Cox. 1898. From the Author.

TRANSACTIONS OF THE GRANT COLLEGE MEDICAL SOCIETY, BOMBAY, from January to December, 1897. Pp. xi. + 60. Bombay: The "Tatva-Vivechaka" Press. 1898. From the Publishers.

QUANTITATIVE PRACTICAL CHEMISTRY, Part I.—Elementary Stage. By A. H. MITCHELL, B.Sc. (Lond.), F.C.S. Second Edition. Pp. 70. Price 1s. net. Also QUANTITATIVE (VOLUMETRIC) AND QUALITATIVE ANALYSIS, Part 2.—Advanced Stage. By the same Author. Second Edition. Pp. 79. Price 1s. net. Reading: The National Publishing and Supply Association, Ltd., 26, Bridge Street. 1898. From the Author.

Trade Notes.

MR. H. WIPPELL GADD'S 'Pocket Synopsis of the British Pharmacopœia' has now reached its third edition. The whole of the matter has been carefully revised for this edition, and some additional information is now given, which it is hoped will render the book still more useful to practitioners and students, both medical and pharmaceutical.

SOUTHALL BROS. & BARCLAY, LTD.—The statutory meeting of this Company was held at the Offices, Lower Priory, on Tuesday, Mr. Thomas Barclay presiding. The Chairman, in the course of a brief statement, reported that the business had been transferred to the Company in due form, and an application had been made to the Stock Exchange for a settlement. The called-up shares had been fully subscribed; in fact, 168,807 applications were received for 46,667 shares to be allotted. Care had been taken as far as possible to allocate the shares amongst customers, whilst the heads of the departments and the travellers were also interested in the business. It was proposed to pay interest on the shares half-yearly, viz., on January 1 and on July 1, and interest for the first half-year would date from July 21 last. The business had been established for nearly eighty years; it had grown steadily, and it was continuing to grow. The whole of the former partners were directors of the Company, a fact sufficient in itself to guarantee that the business would be conducted on the same successful lines. A vote of thanks was passed to Mr. Barclay for presiding, on the motion of Mr. J. K. Andrews (Astwood Bank), seconded by Mr. G. White (Dudley).

MESSRS. A. DE ST. DALMAS AND Co., of Leicester, have established a depot in Hamburg with a view of extending their trade to Germany, and have appointed the firm of Otto Fuerst, Hamburg, their sole representative for that country. The firm has published a German price-list of the well-known medical plasters, printed in colours, and every effort is being made to bring the goods prominently before the German public.

IMITATION OF PEARS' SOAP IN GERMANY.—It will be interesting to soap manufacturers and makers of similar preparations to learn that it has been attempted in Germany to palm off upon the public a soap got up in the style of Pears' soap, and with wrapper to the outward appearance exactly the same as the original, only the wily German has used the name "Pearls" instead of Pears, which, with the otherwise exact imitation of print, colours, etc., of the wrapper is hardly noticeable to the eye of one not much accustomed to the original. Of course, the price was ridiculously cheap, and the piece was sold at 25 pfennig, equal to 3d. It is presumed that the soap was not only sold in Germany, but was also intended for export, as it contained on the back the distinct mark "Made in Germany," which would not have been put on if the soap was only intended for home consumption. However, the matter was sure to be found out sooner or later, and as this soap came under the notice of Mr. Otto Fuerst, of Hamburg, who is an importer of British manufactured druggists' and chemists' specialties, he reported the case to Messrs. Pears, Ltd, calling their attention to the fact that their soap was being imitated. As soon as the representative of the firm arrived in Hamburg he obtained, in conjunction with Mr. Fuerst, proof of the sale of the soap, and reported the matter at once to the police as being a fraud. The authorities have taken the matter up, and it is probable that not only the manufacturer, but also the seller, will be heavily punished, as it is not only an infringement of the registration of the label (Trade Mark Protection Act), but also a direct swindle, as Pears' soap was asked for and an inferior imitation supplied. The former will be perhaps not quite so heavily punished as the latter; but there is no doubt that the manufacturer of the soap will be heavily fined for his little enterprise, which will give a lesson to the majority of the German manufacturers not to trifle with the imitation of British goods again. The matter rests now with the Public Prosecutor, who will no doubt see that justice is done without any further trouble or expense to Messrs. Pears, Ltd. It can only be considered praiseworthy that Mr. Otto Fuerst has taken so much interest in the protection of British manufactured goods.

OBITUARY.

HALEY.—On October 5, Edward Haley, Chemist and Druggist, Bradford (Yorks). Aged 60.

Advertisements.

(Received too late for Classification).

ENGAGEMENT wanted as MANAGER or SENIOR. Qualified. London preferred. RHEI, Hancock's, Shelden St., Paddington.

VICTORIA CHILDREN'S HOSPITAL, Park St., Hull. 60 beds and out-patients.

Resident LADY DISPENSER wanted. Fully qualified. Salary £35 per annum, with board and laundry. Preference given to a lady who could devote the mornings to canvassing for new subscriptions.

Applications, stating age and experience, with copies of three recent testimonials, to be addressed to the HON. SECS and delivered at the Hospital by noon on Thursday, 27th October.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

OFFERED.

Books.

For Sale.—Muter's 'Analytical Chemistry' (7th edition), Ince's 'Latin Grammar,' Johns' 'Flowers of Field,' Woodward's 'Arithmetical Chemistry' (Parts I. and II). Good as new. What offers?—R. Allan, Irving Street, Dumfries

Minor Lectures for disposal. Cost £2 2s. Price 7s. 6d. Address—Minor 141, Verulam Road, St. Albans, Herts.

Pereira's 'Materia Medica,' 2 vols. in 3, genuine, 1855, fair condition; 7 numbers 'Dispensatory,' unbound; 14 numbers 'Household Physician,' unbound; 4 vols. 'Practitioner's Library,' viz., Trevis on 'Intestinal Obstruction,' Carter and Frost on 'Ophthalmic Surgery,' Savage on 'Insanity,' Bryant on 'Diseases of Breast'; all splendid condition.—Wild, 36, Queen's Road, Liverpool

Jago's 'Chemistry,' Cripps's 'Pharmacy,' Wright's 'Physics,' Oliver's 4s. 6d 'Botany,' and other books for Minor students; list on application.—Jackson 4, Arbour Street, Southport.

Miscellaneous.

6 lbs. Opium Turc Elect. Opt., at 11s., less quantity 12s.; cash with order.—Palmer, Thornbury, Glos.

Magic Lanterns, second-hand; triples and binoculars: oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Six Pieces Perfume Ribbon, each 36 yards long (216 yards), assorted colours post free, 5s.—Edward Peck, East Dereham, Norfolk.

WANTED.

Old Electric Lamps and Scrap Platinum for prompt cash.—P. Rowsell 9, Derwent Grove, East Dulwich, London, S.E.

Marked Copies of the following Newspapers, etc., have been received during the week: the Evening Dispatch, the Western Morning News, Irish Figaro, Work, the New Penny Magazine, Evening North Wilts Herald.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Bayley, Blythe, Browne, Bruce, Burroughs, Butcher, Cannon, Cassell, Clarkson, Cook, Curtis, Dey, Dott, Eberlin, Evans, Ferrall, Forrett, Francis, Freeman, Fuerst, Gadd, Gibson, Gifford, Groome, Harrison, Hawkes, Johnson, Jones, Lunan, Maitland, Marchant, Marsden, Merson, Mitchell, Mumbray, Newsholme, Paley, Plarr, Proctor, Richardson, Robins, Smith, Swift, Trimmer, Watson, Wright.

WILKINSON & SIMPSON Ltd.

**MANUFACTURING CHEMISTS
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TINCTURA AURANTII, B.P. 1898 (from Selected Fruit).

Winchesters, 3/6 per lb. ; 6 Winchesters, 3/- per lb.

12 Winchesters and upwards, Special Price on application.

FREE—
NEWCASTLE-ON-TYNE.

SYR. FERRI PHOSPH. CO. (Parrish)

SYR. FERRI PHOSPH. c. QUIN. et STRYCH. (Easton)

SYR. HYPOPHOSPH. CO.

COD-LIVER OIL. Finest Norwegian. Non-freezing.

MAY WE SUBMIT YOU
SAMPLES
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Offices, Warehouses, and Pharmaceutical Laboratories: 24 to 32, NEWGATE STREET.

Factory and Drug Mills: DISPENSARY LANE, LOW FRIAR STREET.

PRICES CURRENT ON APPLICATION.

CLOSE QUOTATIONS TO LARGE BUYERS.

LIEBIG COMPANY'S EXTRACT.

5% Cash Bonus Closes on
31st inst.

CORNEILLE, DAVID & CO., 4, Fenchurch Avenue, LONDON, E.C.

PERFECTION IN PILL-MAKING.

WAND'S Pills are the Best—Soluble and Effective BEST INGREDIENTS ALWAYS USED.

WE FREQUENTLY RECEIVE UNSOLICITED OPINIONS:—

Feb. 3rd, 1898, SCOTLAND.—A Surgeon writes:—"Repeat Pill order. The results were satisfactory; I mean perfectly satisfactory. So is the solubility. My tests are not chemical, but tests under the conditions of actual work. I am quite satisfied with your productions."
Dec. 17th, 1897, WEST INDIES.—"I was much pleased with the Pills you sent me, and am enclosing further order."
Feb. 3rd, 1898, BRISTOL.—"I have had a few lots from you and find them very good."
May 11th, 1898, TIVERTON.—"Much pleased with your pills."
Aug. 26th, 1898, WEST INDIES.—"Your goods have given every satisfaction."

See Favourable Opinions in "THE LANCET," "BRITISH MEDICAL," "CHEMIST AND DRUGGIST," "BRITISH AND COLONIAL."

HOME AND COLONIAL BUYERS SHOULD SAVE MONEY BY BUYING WAND'S SOLUBLE EFFECTIVE PILLS BULLETS, SHOT, or PELLETS as HARD AS NAILS we do not make.

Effects obtained by Testing 25 Pills and 1 Tablet from 12 Makers.

"Nineteen of these Pills and the Compressed Tablet of Bland's Pill were knocked into a board with a blow of the hammer, and without crushing or apparent damage. Surely no comment is needed on the solubility of a pill, whether coated or uncoated, which is sufficiently hard to penetrate a board."—JOURNAL OF MEDICINE AND SCIENCE, Sept., 1897. (The Official Organ of the Maine Academy of Medicine.)
"Some factory-made coated pills were taken by a patient. After a few days eight of these pills re-appeared, having apparently passed through the body unchanged. The pills were discontinued, but for days continued to make their re-appearance. This naturally annoyed the prescriber, and rendered the position of all concerned rather an ignominious one."—CHEMIST AND DRUGGIST, May 29th, 1897.

WE MAKE PILLS, SOLUBLE PILLS

OF THE HIGHEST QUALITY, PEARL or SWEET-COATED, ANY COLOUR (VARNISHED, SILVERED or BLACK PILLS), FINISH UNSURPASSED, and Supply SMALL LOTS at BOTTOM PRICES.

We supply a 50-gross Selection (Minimum 10 gross) at 50-gross Rates. All Net Cash with Order.

No.	FORMULA.	10 gr.	50 gr.
533.	Pil. Aper. c. vel sine Calomel	3½d.	3d.
43.	" Chamomile	4½d.	4d.
997.	" Dandelion	3½d.	3d.
476.	" Gout and Rheumatic ..	5½d.	5d.
192.	" Podoph. Co.	10d.	9d.
A.	" Digestive	4½d.	4d.
217.	" Rhei et Ricini	3½d.	3d.
2.	" Aloes et Asafet.	3½d.	3d.
3.	" " Ferri	3½d.	3d.
1150.	" Aloes et Ferri c. Pulegii	3½d.	3d.
6.	" Asafet. Co.	3½d.	3d.
9.	" Coloc. et Hyoscy. ..	10d.	9d.
8.	" Coloc. Co.	10d.	9d.

No.	FORMULA.	10 gr.	50 gr.
109.	Pil. Ferri (Blaud)	2½d.	2½d.
13.	" Hydrarg.	3½d.	3d.
127.	" Hyd. c. Rhei	4½d.	4d.
14.	" Hyd. Subchlor. Co. ..	3½d.	3d.
15.	" Ipecac. c. Scillæ	3½d.	3d.
17.	" Rhei Co.	3½d.	3d.
19.	" Scillæ Co.	3½d.	3d.

Little Pill Series.

18	Little Liver Pills	3d.	2½d.
412.	Little Cough Pills	4d.	3d.
400.	Little Antibilious Pills ..	4d.	3d.

BLAUD PILL. SELLS WELL.

1 gross in metal-capped bottle 3/6 per doz. bottles; 6 doz. at 3/3; 12 doz. at 3/-, car. paid. Pink or White Pearl-Coated. Neat and telling Label in Blue. Makes a good Counter Display.

LITTLE LIVER.

R. Aloin, Jalapin aa ½ gr.; Podoph. ¼ gr.; Ext. Hyoscy. ¼ gr.; Ext. Nucis Vom., Capsicine aa ¼ gr. M. Ft. pil. 2½d. per Gross in 50-gr. lots.

Special for Glycerine Suppositories. Children's 9d. boxes, 3/6 per doz. Adult 1/- boxes, 5/- per doz. Carriage Paid.

SPECIAL for COMPRESSED TABLETS.

SOLUBLE **WAND'S** **PEARL COATED**
FULL STRENGTH
PILLS
ANY COLOR **SWEET COATED**
WHEN DESIRED.

All Carriage Paid in Great Britain.

Tins and Packages Free.

WAND, Manufacturing Chemist, LEICESTER.

NOTTINGHAM AND NOTTS. CHEMISTS' ASSOCIATION.

On Wednesday evening the first meeting of the winter session was held at the Albert Hotel, Mr. E. GASCOYNE (Vice-President) occupying the chair.—The CHAIRMAN referred to the fact that Messrs. Sergeant and Gill, who had been deputed to interview Mr. Yoxall, M.P. for West Nottingham, had persuaded him to withdraw his proposed amendment to the Pharmacy Acts Amendment Bill, and Mr. SERGEANT then explained what passed on the occasion referred to, after which Mr. GILL proceeded to read a paper on

Company Pharmacy.

He referred to the fact that during the passage of the Pharmacy Bill through the House of Lords, the Lord Chancellor called attention to the fact that the Pharmacy Acts did not cover the case of drug stores carried on by joint-stock companies or corporations, though common-sense required that such bodies should be treated in the same way as individuals. That opinion was endorsed by Lord Herschell, and eventually an amendment to the Bill was introduced in the name of the Lord Chancellor himself. That amendment, however, was subsequently withdrawn, but the pronouncement by the highest legal authority in the realm remained; and pharmacists would be wanting in their duty if they did not attempt to give effect to the views that had been expressed. With that object in view the Federation of Local Pharmaceutical Associations had suggested that the matter should be discussed by local associations throughout the country with the view of some definite and equitable line of policy being formulated. They must look upon this question of company pharmacy solely in respect to the influence it had on the public welfare. When a customer bought tea, sugar, meat, or cabbages he could easily tell by physical tests whether such commodities were what they ought to be, but with regard to drugs it was far different. The chemist knew that a drug which physically appeared to be all right may chemically be all wrong, and to guard against this he must either chemically test his stock-in-trade, or buy only from firms who would do it for him. Whichever course was adopted he must add to what might be called the market value of drugs, the cost of expert scientific supervision of their manufacture and storage, which was an important item financially. This placed drugs in a class by themselves. They constituted a domain into which none but the expert should be allowed to enter, for the moment they admitted the unqualified into competition with the qualified, then the professional safeguard was removed. Price and not quality became the determining factor, and a dangerous system was introduced which could not fail to have a degrading effect on the ranks of legitimate pharmacy, and diminish the safeguarding influence which the Pharmacy Act intended to supply. Undoubtedly this was the tendency which company pharmacy had started. He could assert with confidence that if it was dangerous for an unqualified individual to carry on the business of a chemist and druggist, it was equally, nay more, dangerous for an unqualified company to do so, for a company as such had neither body nor soul on which punishment could be inflicted if any mishap occurred, because of its transactions. The argument that the law was satisfied if an assistant, who was a registered chemist, had the control of an unqualified company's business was plausible, but he ventured to say that it would not bear the test of close scrutiny as to how it worked out in fact. These companies were formed for a definite purpose. They were all familiar with the philanthropic motives set forth in their advertisements, but as business men they knew that such statements were pure fables. The directors controlled the business, and the qualified assistant was only a cover to evade the law. His employment was not an adequate public safeguard. After laying aside all issues of doubtful importance, they had arrived at two conclusions which were sufficient to warrant them claiming an amendment of the law. These were: (1) It could not be right, and ought not to be legal for a company to do that which it was illegal for an individual to do; and (2) that a pharmacy managed by a registered chemist who was simply a salaried assistant of unqualified directors, could not afford adequate protection for the safety of the public. He thought it was very necessary that the word "persons" should be introduced into the Pharmacy Acts in order to prevent the use of registered titles by unqualified persons trading as joint-stock companies, and it was the duty of the Pharmaceutical Society to formulate a little measure dealing with this important and serious

evil, and endeavour to get it enacted. They might do worse than take it to the Lord Chancellor himself with the request that he would keep a fatherly eye on it during its passage through the stormy seas of Parliamentary debate.—A discussion followed the reading of the paper, which was opened by Mr. WARRENER, who remarked that Mr. Gill had pointed out an excellent way by which an alteration of the disastrous state of affairs in connection with company pharmacy could be secured.—Mr. LUMBY also approved every word Mr. Gill had read. He thought that in addition to the name of the registered assistant employed at a joint-stock drug store being printed on every label of poison or medicine dispensed, that name should also appear over the shop door.—Mr. BEILBY strongly sympathised with Mr. Gill's condemnation of the letter "s" being omitted from the word "person" in the Acts, so rendering company pharmacy possible, but he was afraid the time had gone by when they could expect from Parliament a Bill to prevent infringement of the rights of pharmacists.—Mr. EBERLIN contended that the law as it at present stood covered the case. If a test case were tried he believed the former ruling would be reversed. The registered assistant merely covered the company, and it seemed a farce that the law should allow seven persons, all unqualified, to start in trade whilst it denied that privilege to an individual. Messrs. Beverley, Sergeant, Brown, Wilson, and Freeman having also taken part in the discussion, the CHAIRMAN said Mr. Gill had made out as good a case as it was possible to do against company trading, but he differed from him as to the probability of getting any redress from Parliament. It was one of the great blots in the Act of 1868 that one man should be allowed to cover any number of shops. He was not speaking now of companies but of qualified chemists. With regard to company trading, he had not the slightest hope of any amendment of the Act that would do away with it. If chemists would combine and advertise a thorough exposure of company pharmacy, that would do more than any Act that could be passed.—Mr. GILL replied on the discussion, and moved—

That this meeting of Nottingham and Notts Chemists' Association, in consideration of the important pronouncement on company pharmacies recently made by the Lord Chancellor, and endorsed by the Ex-Lord Chancellor, would respectfully and strongly urge the necessity of the Pharmaceutical Society taking early action with a view to securing amendment of the Pharmacy Act in the direction of preventing companies doing that which it is illegal for a person to do.

—Mr. SERGEANT seconded the resolution, which was carried *nem. con.*

PHARMACY NEWS.

Special Notice.—The Editor will be glad if local secretaries and other members of the Pharmaceutical Society, or any other readers of the Journal, will send him marked copies of newspapers containing matters of interest to chemists and druggists, or communicate to him any items of news regarding the craft and those engaged in it.

IRISH NEWS.

DURING THE LAST WEEK the following drug and medicine contracts have been entered into: Dr. J. F. O'Ryan, Tipperary, for the supply of medicine to the Kilrush Union. The guardians complimented Dr. O'Ryan on the excellent quality of his drugs. Messrs. Clarke and Co., Belfast, the lowest of several tenders, have secured the contract for the supply of drugs to the Mill Street Union. At Naas Union the guardians state they are unable to check the prices, etc., in the tenders, so many of the articles named in the list being outside the official number.

IT IS NOT IMPROBABLE that the vacancy on the Council of the Pharmaceutical Society, caused by the recent death of Mr. Murray, M.C.P.S.I., Monaghan, will be filled by a representative of the druggist party from Ulster. The feeling exists that the chemical and drug section of the trade is not sufficiently represented on the Council, and the appointment of an additional druggist representative thereon would be a politic as well as a popular move on the part of the Society.

THERE IS TALK IN DUBLIN of the revival of the metropolitan branch of the Chemists' and Druggists' Society of Ireland. Already one gentleman representing a large section of the trade has set the ball rolling, and it is probable the preliminary steps to recommence the Association will have been taken by the time these notes appear

in print. Those concerned state that they are desirous of having an organisation working practically for the good of the rank and file of the business, and see no reason why the Society which flourished in 1890 should not take its place amongst kindred bodies.

THE DEATH HAS OCCURRED, at Queenstown, of Mr. William Savage, a popular young pharmacist who only a short time ago left Ireland for the Cape Colony with every prospect of a brilliant career, and whose return to his native soil on account of ill-health was the subject of sympathetic comment.

THE OPENING MEETING of the winter session of the Ulster Amateur Photographic Society has been held in Belfast under very favourable auspices. A demonstration on "Bromide Enlarging" was given, and a paper on "Enlarging" was read by Mr. Hyde. The lantern was worked by Mr. A. R. Hogg, registered druggist, of the firm of Messrs. Lizars and Co., chemists. An enjoyable evening was spent.

A PENNYWORTH OF STRYCHNINE purchased last week from a Londonderry chemist to poison mice has been swallowed by the buyer—a local vintner. "Death from poison" was the verdict.

THE FIRST MEETING of the newly-formed Dental Students' Society of Ireland was held last week at Dublin, when a paper on the "Six-Year Molar" was read by Dr. Story. The Society has been formed for the advancement of dental science among students, and is progressing rapidly.

THE MCGOVERN DOG DOCTOR continues to go between the Local Government Board and the various Boards of Guardians in Ulster. The former refuse to admit McGovern's claims to the right to prescribe for hydrophobia, or to recognise his sanatorium as an hospital, and the guardians are equally strong in their support of the "Cavan canine curer." The legal mill will not improbably begin to grind in the matter, as the unions are deciding in favour of the local man, and prosecutions are threatened against the refractory guardians.

DURING THE LAST COUPLE OF WEEKS the Pharmaceutical Society have brought two prosecutions against alleged offenders against the Pharmacy Act of 1875. One was in Dublin and the other in Cork. In the former case the defendant, a Mrs. Barnes, was charged with keeping open shop for the retailing and dispensing of poisons and for compounding a medical prescription. She was able to prove by producing a deed executed three years ago by Mr. C. B. Vance, L.P.S.I., that the pharmacy was let to that gentleman on a yearly tenancy, and Mr. Vance having satisfied the Court that the prescription was compounded by his qualified manager, the Society made the *amende honorable*, and the case fell through.

IN THE SECOND CASE, heard on Friday, October 21, at the Cork Police Office, Mr. Mayne, R.M., delivered his decision in the case of the Pharmaceutical Society against Messrs. J. Waters and Son, Winthrop Street, the evidence having been given at a previous hearing. The defendants were charged (1) that they described themselves as dispensing chemists, none of them being registered, or entitled to be registered; (2) for describing themselves as chemists and druggists, none of them being registered, or qualified to be registered, and (3) for keeping open a shop for the sale of poisons, they not being entitled to do so under the Pharmacy Act of 1875. Mr. A. Julian, solicitor, prosecuted on behalf of the Pharmaceutical Society, and Mr. George Lawrence (instructed by Mr. A. Blake) defended.—Mr. Mayne, in delivering his judgment, said he had delayed his opinion in the case because he was anxious to have the fullest possible opportunity of considering the judgment delivered in the House of Lords in the case of the Pharmaceutical Society against the London Supply Company, and also the decision of the Queen's Bench in Ireland in the case of the same Society against Alexander Boyd and Co., not, he need scarcely say, for the purpose of criticising those judgments, for that would simply be presumption on his part, but for the purpose of ascertaining how far those cited cases and the case of Messrs. Waters and Sons were analogous. It occurred to his poor judgment and he now found that they ran on practically parallel lines. In fact, he could see no difference whatever in the cases he saw decided and that of Messrs. Waters and Son. At least he could not see any such

difference as would justify him in departing from the rulings in the cases cited. Therefore he felt constrained to dismiss this case on the merits.—Mr. Lawrence applied for costs in each case.—Mr. Mayne refused to make any order.

THE BATTLE OF THE FROGS.—Last week, in the Dublin Law Courts, Messrs. Boileau and Boyd, Limited, chemists and druggists, were sued by Mr. J. E. Garratt, London, to recover £2 10s. 6d. discount, alleged to be due in reference to the sale to the defendants of a quantity of lozenges known as "Frog in your Throat." The defendants ordered twenty-five gross, and paid for part of the consignment, agreeing to hold the remainder on sale or return. The price was 60s. per gross, and out of the amount a stated discount was to be allowed if the "Frogs" were paid for within a certain period. The parties, however, fell out in the matter of discount, and hence the present action. The Recorder gave a decree for the amount claimed.

THE FOLLOWING HAVE BEEN ELECTED in connection with the annual meeting of the Royal College of Physicians of Ireland:—Dr. E. McDowel Cosgrave, L.A.H., Examiner to the Pharmaceutical Society of Ireland, to be an examiner in biology under the conjoint examination scheme; Dr. Ninian Falkiner, ex-pharmacist, as examiner in materia medica and pharmacy; Dr. Edwin Lapper, examiner in chemistry. These gentlemen are well-known figures in Irish pharmaceutical circles.

MESSRS. J. WATERS AND SONS, Limited, Cork, have opened a drug and medicine dispensing department to their concern in that city, under, they state, the charge of a qualified pharmaceutical chemist.

SCOTTISH NEWS.

THE KINNINMONT GOLD MEDAL has been this year awarded to Martin Meldrum, Glasgow, who has obtained the highest percentage of marks ever awarded in this competition. This is the second year in succession that this honour has been gained by a student of the Glasgow School of Pharmacy, of which Mr. John Lothian is the Principal.

THE SALE OF MEDICATED WINES.—At this week's licensing court in Glasgow, an application was made by Mr. Charles Holdway Osmond, chemist and druggist, for a licence for his premises at 362, Dumbarton Road, Partick, to enable him to sell medicated wines. At the Court it was explained that he was frequently asked to supply medicated wines, but was unable to do so, and that the Partick people had to travel into the city to get such medicine. There were only three such licences in Glasgow, it was pointed out, so that the hardship was all the greater. The Bench, however, would not entertain the petition, and Partick is still without its supply of medicated wines. In this connection a decision by the Glasgow City Parish Council is somewhat *à propos*. At a recent meeting attention was called to the medical officers of the Board prescribing stimulants, and now the following circular letter has been sent to each of the out-door medical officers and the various dispensaries:—

The Medical Committee desires that when medical officers find it proper to prescribe alcoholic stimulants for the sick poor, they shall endeavour to do so in such a manner as to cause what they prescribe to be recognised as medicines and not as popular stimulants. The Committee considers these, in all cases should be dispensed in the usual way in medicine bottles labelled with directions as to doses, etc., and that it would be preferable to prescribe them in combination with other preparations, so as to disguise their well-known characters.

It may be possible for the pharmacist to disguise the well-known taste, but will he be able to disguise the well-known effects?

THE BUSINESS OF CHEMIST AND BOOKSELLER (established over a century), which belonged to the late George Waldie, is still carried on as a chemist and bookseller's business, and was lately acquired as a branch shop by C. M. Spence, chemist and bookseller, of 133, High Street, Linlithgow. In connection with this business the following note, which appeared in a recent issue of the *People's Friend*, is particularly interesting:—"Professor Simpson is said to have obtained his first hint about chloroform from Mr. Waldie, a chemist and bookseller at Linlithgow. One day Mr. Waldie happened to have some of the liquid in a saucer when a gentleman entered the shop with a little dog. The chloroform was placed

upon the ground to be out of the way, and presently the dog was discovered lying by the side of the saucer unconscious and apparently dead. After a time the dog regained consciousness. Mr. Waldie began to think he had made a discovery, and after some experiments with cats, with the same result, he interviewed Professor Simpson."

ENGLISH NEWS.

AN EVENING MEETING of the Pharmaceutical Society will be held at 17, Bloomsbury Square, W.C., on Tuesday, November 8, at 8 p.m., when Professor W. Ramsay, D.Sc., F.R.S., will deliver a lecture on "The New Gases of the Atmosphere" (illustrated by experiments). The chair will be taken by the President, Mr. Walter Hills.

PRESENTATION TO MR. G. T. W. NEWSHOLME.—The annual meeting of the Sheffield Microscopical Society was held on Friday evening last at the Rutland Institute, Dr. Geo. Wilkinson, the President, in the chair. Among those present were Mr. G. T. W. Newsholme, Mr. J. Newton Coombe, Mr. Winder, Mr. J. Austin (Secretary), and about twenty others. The annual report stated that during the year the membership had increased from eighty-three to one hundred and twenty-one, and there had been an improvement in the finances of the Society. During the session fourteen fortnightly meetings had been held. Regret was expressed at the withdrawal of Mr. G. T. W. Newsholme from the office of Honorary Secretary after ten years' service. Dr. Porter was elected President for the ensuing year; Dr. Wilkinson, Mr. Winder, Mr. Newsholme, and Mr. C. Hoole, Vice-Presidents; Mr. Tolputt, Treasurer; and Mr. J. Austin, Hon. Secretary. At the close of the business meeting Dr. Wilkinson formally presented to Mr. Newsholme his portrait in oils, which had been subscribed for by the members in recognition of his services as Secretary. The portrait was painted by Mr. J. H. Bentley, R.B.A., who is a member of the Society. Dr. Wilkinson said when Mr. Newsholme accepted the office the Society was in low water, and its subsequent success was very largely due to his labours. At the present time the Society occupied a better position than it had ever been in before, the reason being that Mr. Newsholme had been the life and soul of the organisation. Testimony to the value of Mr. Newsholme's services was given by Mr. Coombe, Mr. Winder, and several other members. Mr. Newsholme, in returning thanks, said the ten years that he had spent in the service of the Society formed the happiest period of his life. He spoke of his belief in the value and usefulness of such societies, pointing out what a stimulus they were capable of affording to the serious study of important branches of science.

CHEMIST SUED FOR DAMAGES.—At the Blackburn County Court, on Monday, before His Honour Judge Coventry, Mary Ann Kay, 68, Moorgate Street, Blackburn, sued Joseph William Butterfield, chemist, Market Street, Darwen, for £20 damages for injuries sustained in consequence of alleged carelessness and negligence in extracting teeth. Plaintiff stated that in April last she suffered from toothache and visited defendant's shop. She told him she wanted to have three teeth extracted, two of which were in front of her mouth and one at the back. He examined the teeth, and pointed out that the two front teeth were only slightly decayed, and suggested that she should let them remain. Plaintiff however expressed a desire to have all three taken out, and he extracted them. During the operation he used three different syringes for the purpose of injecting "eucaine" into the gums, apparently because the first two syringes were clogged. He told her to bathe her gums with alum water. She became ill, and her husband noticing white matter on her gums, he acquainted defendant with the fact. Defendant told her husband to bathe the gums with alum water and Condy's fluid. Witness, however, at the end of twelve days, called in Dr. Walters, who said she was suffering from septic poisoning. She was medically attended for nine weeks. A small portion of the exposing portion of the bone had to be removed. In cross-examination, the plaintiff said she stopped bathing with alum water, and also went out to the fair whilst she was ill without any other covering but her hat. Dr. Walters stated that while unclean instruments might have set up the septic poisoning, there were half-a-dozen other things which might do the same. He could not say that the septic poisoning in this case was due to unclean syringes or to any specific cause. Mr. Broadbent, who

appeared for the defendant, said that after the doctor's evidence he thought there was no case for him to answer. His Honour concurred, and in non-suiting the plaintiff said she had not proved any neglect or carelessness on the part of the defendant, who was awarded his own and witnesses' costs.

PLYMOUTH PHOTOGRAPHIC SOCIETY.—At a meeting of the above, held on the 21st inst., Mr. J. D. Turney, pharmaceutical chemist, read an excellent paper on "Elementary Optics as Applied to Photography," by Mr. Child Bayley, Secretary of the Royal Photographic Society. The various points were lucidly explained by the aid of a clever series of diagrams shown by aid of the lantern, and at the conclusion Mr. Turney was heartily thanked.

MANCHESTER PHARMACEUTICAL STUDENTS' EXCURSION AND A PRESENTATION.—On Saturday last the students of the Manchester College of Pharmacy took an excursion to Knutsford, the last conducted by their demonstrator, Mr. F. Pilkington Sargeant, who is leaving to establish a school of pharmacy in Yorkshire. At five o'clock the party arrived at the principal hotel in the town, where a substantial tea was awaiting them. After tea, Mr. A. C. Critchley, Ph.C., of Blackburn, took the chair, and the loyal toasts having been honoured, he called upon Mr. Walter Harlow to make a presentation to Mr. Sargeant, consisting of a beautifully illuminated testimonial, bearing the names of over sixty past and present students, together with a "Fram" microscope and accessories by Watson and Sons. Mr. Harlow, in making the presentation, thanked Mr. Sargeant for his untiring energy in the fulfilment of his duties, and concluded by wishing him, on behalf of the students, every success in his new undertaking. Mr. Howell then, on behalf of the junior students, presented Mr. Sargeant with a silver mounted ebony stick, bearing a suitable inscription. Mr. Sargeant then thanked the students for their handsome presents. The toast of the Manchester College of Pharmacy, coupled with the name of Mr. Chas. Turner, was then proposed, and duly honoured. The rest of the evening was spent in the dilution of a splendid musical programme, prepared by Messrs. Hodgson and Heaton. A vote of thanks to the performers and the National Anthem concluded one of the brightest of pharmaceutical outings.

SILVER WEDDING.—On the occasion of their silver wedding Mr. and Mrs. F. Harwood Lescher, on the 18th inst., entertained the whole of the staff of Messrs. Evans, Lescher and Webb, to the number of 224, to supper at the Holborn Town Hall. After all had been seated Miss Crump presented Mrs. Lescher with a basket of flowers, accompanying it with the wish that both she and Mr. Lescher might live to see their golden wedding. Supper was then partaken of, at the conclusion of which Mr. Lescher proposed the health of "The Queen." The toast of the evening was reserved to Mr. H. George, the senior representative of the house, who in a very able speech proposed the health of Mr. and Mrs. Lescher, which met with a hearty reception at the hands of all present, accompanied by musical honours. Mr. George then asked Mr. and Mrs. Lescher to accept as a memento of the occasion a silver tea service as coming from the whole of the staff. Mr. Lescher in rising to give thanks on behalf of himself and wife for such a mark of respect, expressed the pleasure it gave to him of having so many round him to enjoy a social evening together. The toast of "the Staff" was proposed by Mr. Lescher, and responded to by Mr. J. T. Collis, and Mr. F. J. Brockies. The Liverpool house (Evans, Sons and Co.), and Montreal house (Evans and Sons, Limited), was proposed by Mr. Harold Webb and responded to by Mr. J. J. Evans, head of the Liverpool house. Mr. D. Rushforth proposed the health of Mr. E. A. Webb, regretting his absence through ill health, his son (Mr. Harold Webb) responding on behalf of his father. The Chairman then proposed the health of Mr. E. Evans, the senior partner of both houses, Mr. J. J. Evans responding on his behalf. Dancing was then indulged in by most of those present, others passing the time away in social conversation, etc. Most of the company remained until the stroke of twelve, thus terminating a most pleasant evening in the firm's history.

LECTURE ON TUBERCULOSIS.—In connection with the opening of a new sanatorium for Huddersfield at Mill Hill, Dalton, on Saturday, October 22, Sir W. H. Broadbent, M.D., who is a native of Longwood, now part of the municipal borough of Huddersfield, and who performed the opening ceremony, after-

wards delivered a lecture in the Lecture Hall of the Technical College, on "The Prevention of Consumption and other forms of Tuberculosis." There was a crowded audience, and the lecture, which was illustrated by means of a lantern manipulated by Messrs. Houghton and Moody, was listened to with great interest throughout. He pointed out that tubercle is not inherent, and showed how consumption is usually contracted and the measures required for the prevention of the disease.

DEATH OF MR. HUGH LEE PATTINSON.—The death is announced of Mr. Hugh Lee Pattinson, who was at one time identified with the extensive chemical works of H. L. Pattinson and Company, Felling. Mr. Pattinson, who was in his sixty-ninth year, died in London, where he has for some years resided, on Friday, October 21. The deceased gentleman was the son of the well-known discoverer of the process of de silverising lead.

FIRE AT A DRUGGIST'S WAREHOUSE.—A fire burst out on Saturday, October 22, about 2 p.m., at 36A, Aldersgate Street, City. The property attacked consisted of a lofty warehouse of six floors. Engines quickly attended from Clerkenwell, Watling Street, Whitefriars, and Holborn. Soon a score of steamers, about 120 firemen, and three extension ladders were on the spot. The odour from the burning scents and drugs could be detected at a considerable distance, the fumes almost overpowering the firemen. When the fire was overcome, about 10 o'clock at night, the upper portions of the warehouse had been practically gutted, and much damage had been caused to the lower floors and the contents by heat, smoke, water, and breakage. The cause of the outbreak has not been ascertained.

LAUDANUM POISONING.—An inquest was held on Tuesday, October 18, at Worsborough Bridge, touching the death of Lynette Bamford, aged 12 months, daughter of a miner, of Henry Street. The evidence of the mother, Harriet Bamford, was that the child had been suffering from diarrhoea for three weeks, and had been under the care of Dr. Sykes. On the previous Friday evening she gave the child a dose of the medicine, as she thought, but found when the child vomited that she had given her laudanum instead of medicine. She at once gave an emetic, and took the child to Dr. Banham, who prescribed. The verdict of the jury was, "Died from diarrhoea, bronchitis, and pneumonia, accelerated by the mother having inadvertently given her a dose of laudanum in mistake for medicine."

BUSINESS CHANGE AT PLYMOUTH.—Mr. Goodwin, M.P.S., has purchased the business of Mr. Towan, chemist and druggist, Mutley Plain.

MR. J. M. FURNESS, chemist and druggist, of Fitzwilliam Street, who has represented St. Philip's ward on the Sheffield City Council for many years, has been returned unopposed this year. The Mayor-Elect of Rotherham this year is Mr. F. Mason, chemist and druggist, of High Street. Mr. Mason has already been returned unopposed for the south ward of that borough.

A CHEMIST'S ASSISTANT AND HIS ANNUITY.—Vice-Chancellor Hall, of the Chancery Court of Lancashire, held at the Assize Courts, Manchester, on Tuesday, had before him the case of *Fawcett v. Fawcett*, in which the plaintiff sought to restrain the defendant, his father, from parting with an annuity of his of £100. Plaintiff is a chemist's assistant living at Rochdale, his father residing at Southport. The serious part of the matter was an allegation by the son that his father took him to an hotel in that town, and after plying him with liquor got him to sign certain papers giving his father possession of the annuity. The Judge granted an injunction over next Monday in the terms prayed for.

EXETER PUBLIC ANALYST.—At a meeting of the Exeter City Council on Wednesday last, the Town Clerk reported that the Sanitary Committee and a Sub-committee from the Albert Memorial Museum Committee had had a Conference upon the subject of the appointment of a public analyst, with a view of securing the services of a gentleman who would also be qualified to lecture at the College, and also upon the subject of the use of the laboratory at the Museum. In the opinion of the Conference it was desirable that advantage should be taken of the vacancy in the office of public analyst to appoint a fully qualified man competent to assist in the educational work of the College. The

Conference recommended that if possible a site for the analyst's laboratory should be found adjoining the present commercial laboratory at the College. The report was adopted.

MR. CHARLES SHAPLEY, Chemist, of Torquay, has retired from therepresentation of the Strand Ward on the Torquay Town Council.

MARKET REPORT.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

London Report.

OCTOBER 27, 1898.

There has been rather more doing in the drug and chemical markets during the past week. There has, however, at the same time, been no really great activity, while the changes in values which have taken place are practically unimportant. Cardamoms are rather dearer. Ipecacuanha not quite so firm. Cascara Sagrada is dearer. Ergot of Rye has advanced considerably. Borax and Acid Boracic firm. Acid Citric dull. Acid Tartaric and Cream of Tartar quiet. Quicksilver and Mercurials without change. A reduction on part of makers in price of Quicksilver Preparations is, however, stated to have been decided upon for first November. Acetanilide weak. Phenazone, Antipyrine, Sulphonal, and Phenacetine, and Cocaine unchanged. Iodine and Iodides, Bromine and Bromides also without change. Quinine firm, with an advance in price predicted for the not too distant future. Opium, Morphia and Codeia unchanged. Sulphate of Ammonia again lower. The following are prices actually ruling for articles of principal interest:—

ACETANILIDE—Remains weak at 11d. to 1s. 1d. per lb., according to quantity.

ACID BORACIC.—Firm at 24s. per cwt. for *crystals*, and 26s. per cwt. for *powder*.

ACID CARBOLIC—Is in good demand at 6½d. to 6¾d. for 35°-36° C. *ice crystal*, in large bulk packing; *crude*, 60° F., 1s. 11d.; 75° F., 2s. 3d. per gallon; *Liquid*, 95 per cent., of pale straw colour, 1s. 1d. to 1s. 2d. per gallon, in 40 gallon casks.

ACID CITRIC—Is exceedingly dull, and normally quoted 1s. 2d. to 1s. 2¼d. per lb. from second hands.

ACID OXALIC—Firm but unchanged at 3¼d. to 3½d. per lb. for *Crystals*, ¼d. per lb. more for *Powder*.

ACID TARTARIC—Very quiet at 1s. 0½d. to 1s. 1d. per lb. for English *crystals*, on the spot, and 12¼d. to 12½d. per lb. for foreign.

AGAR AGAR—Is very firm, 1s. 6d. per lb. is being asked for sound of fair colour.

ALUM.—Loose lump, £5 7s. 6d. per ton; ground, in bags, £6 per ton.

AMMONIA COMPOUNDS.—*Sulphate* very dull and lower at £9 8s. 9d. per ton for grey prompt, 24 per cent., London; Hull, £9 7s. 6d.; and Leith, £9 8s. 9d. *Carbonate* steady at 3d. to 4d. per lb., according to quantity and package. *Bromide* steady at 2s. 1d. per lb. *Iodide* quiet at 13s. 7d. per lb. *Muriate*: Chemically pure small crystals, 30s. to 32s. per cwt.; free from metals, white, 25s. 6d. to 26s. 6d. per cwt. *Oxalate*, 5¼d. to 5½d. per lb. *Sulphocyanide* quiet at 1s. to 1s. 1d. per lb. *Sal ammoniac*: Sublimed firsts, 35s. per cwt.; seconds, 33s. per cwt.; crushed for batteries, 37s. and 35s. per cwt.; powdered, 38s. and 36s. per cwt. respectively.

ARSENIC—Steady at 18s. per cwt. for best white powder on the spot.

BARBADOES TAR—Is firm at 35s. to 37s. 6d. per cwt. on the spot.

BAYBERRY BARK—Is likely to be scarce this winter, and rather extreme prices are possible; at present 2½d per lb. is quoted.

BLEACHING POWDER.—Firm at £6 10s. to £7 per ton on the spot.

BORAX—Firm at 14s. 3d. to 14s. 9d. per cwt. for lump and 14s. 6d. to 15s. per cwt. for powder.

BROMINE AND BROMIDES—Are without change from last week.

BURGUNDY PITCH.—Good natural is quoted at 22s. 6d. per cwt.

CAMPHOR.—Crude remains very firm, and for arrival 98s. per cwt. *c.i.f.* has been paid for *China*, and 106s. per cwt. for *Japan*. Refined is very firm.

CASCARA SACRADA.—This article has become much firmer and dearer, business in new bark having taken place at 24s. to 25s. per cwt., whilst for old bark 28s. per cwt. is asked. There seems now very little doubt that decidedly higher prices will have to be paid before long.

CHIRETTA—Is very scarce and for ordinary dark 6d. per lb. is sked.

CLOVES.—Privately *Zanzibar* quiet but steady, buyers October to December delivery at 3½d., and sellers January to March at same figure. At auction only 53 cases *Penang*, 1895 import, offered and sold, without reserve, dark unpicked 4½d., fair dull 7d., good 8½d. to 8¾d. Of clove stems 280 bales *Zanzibar* were offered and 80 bales sold at 2d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol* commercial 1s. 1½d. to 1s. 3d., pure 2s. to 2s. 3d. per gallon. *Benzole*: 50 per cent. 9d., 90 per cent. 8d. per gallon. *Crude naphtha*: 30 per cent. at 120° C. 3½d. *Solvent naphtha*: 95 per cent. at 160° C. 1s. 6d. per gallon.

COCAINE—Is unchanged at 9s. 9d. for best German brand of the Hydrochlorate in 25 oz. tins, and for 100 oz. lots.

COCA LEAVES—Have been inquired for this week, and a small business has been done at 8d. per lb. for fair green *Trucillo*.

CODEIA—Is still quoted by the makers 12s. 6d. per oz.

COD-LIVER OIL—Remains *in statu quo* at 82s. 6d. to 85s. per barrel for best new non-congealing *Norwegian* oil in tin-lined barrels of 25 gallons.

CREAM TARTAR—Is quiet with prices unchanged. For first white *crystals* on the spot 72s. to 77s. per cwt., and 74s. to 80s. per cwt. for *powder*, both according to quality.

ERGOT—Has been in strong demand for American account, and prices have at last made a decided move upward. Sound *Spanish* is quoted at 1s. 4d. per lb.; weevily ditto, 1s. 1d. per lb. *Russian* has been done at 11d. per lb. The crops are said to be failures.

GENTIAN ROOT.—Is in fairly good demand at 18s. per cwt. for fair.

GINGER.—*Cochin* very slow of sale. Of 483 bags rough, only 81 bags sold: Mouldy rough, 20s.; first-class sea-damaged, 19s. 6d.; 179 cases cut kinds bought in, except 8 cases mouldy native, part cut, which were sold at 42s. 60 bags *African* bought in at 24s. Of 99 barrels *Jamaica*, about half sold at firm rates; common small and dark, 65s. to 68s. 6d.; middling washed, 70s. to 72s.; good middling bright, 76s. to 80s.

GLYCERIN—Is steady but firm at 52s. to 55s. for *English* and 55s. to 65s. per cwt. for best white double-distilled chemically pure 1260° quality in tins and cases.

GOLDEN SEAL ROOT—Is very scarce, both here and in New York. Price is nominally 2s. 2d. per lb.

HONEY.—Californian continues in request, 40s. to 42s. 6d. per cwt. being required.

IODINE AND IODIDES.—Prices remain unchanged.

IPECACUANHA—Remains steady at 10s. to 10s. 1d. per lb. for *Rio*, and 7s. 3d. for *Carthagera*.

ISINGLASS.—At the periodical auctions on Tuesday supplies were on a moderate scale, but only one-half was disposed of. *Saigon* leaf was about 2d. to 3d. per lb. dearer, and *Brazil* lump also sold well at an advance of 1d. per lb. *Para* sold at 3s. 7d. to 3s. 9d. per lb. for first pile.

JALAP.—This tuber is dearer in New York, price there being above our market. There are sellers here at 6½d. per lb.

JAPAN WAX—Is very quiet, good squares on the spot 33s. 6d. per cwt.

MANDRAKE ROOT—Is dearer for autumn dug root at 2½d. per lb.

MENTHOL.—More business has been doing in this article, and prices are firm at 7s. to 7s. 3d. per lb.

MERCURIALS—Are unchanged from last week, it is, however, stated that makers will, on November 1, reduce their prices ½d. per lb. for a large quantity, and 2d. per lb. for small lots, the object

of the reduction being said to be to prevent underselling on part of buyers who book a large quantity at a time. Some people appear still to have to learn the golden principle of "live and let live."

MORPHIA—Remains without change at 4s. per oz. for the *Hydrochlorate* powder in quantity and bulk packing.

NITRATE OF SODA—Is quoted £7 10s. to £7 12s. 6d. for the ordinary quality and £8 to £8 2s. 6d. per ton for the refined.

OILS (ESSENTIAL).—*Peppermint*: American is easier, with sales of H.G.H. at 5s. 4½d. to 5s. 6d. per lb., and Wayne County at 3s. 6d. to 4s. per lb. as to quality. *Japan* quiet at 3s. 3d. per lb. for dementholised. *Star Aniseed* very dull at 6s. 3d. per lb. on the spot. *Cassia* is quiet, with quotations quite nominal. *Citronella* very difficult of sale; drums quoted 12½d. per lb.; tins, 12¼d. to 12½d. per lb. *Cinnamon*: Good realises 1s. 6d. to 2s. 6d. per oz. as to quality. Leaf oil, 2d. per oz. *Lemongrass* slow of sale at 3½d. per oz.

OILS (FINED) AND SPIRITS.—*Linseed*: Owing to the advance in the seed, this has advanced to £17 15s. for spot pipes, London; barrels, £18 2s. 6d. *Rape*: Very firm and rather dearer at £22 5s. for ordinary brown on the spot; refined, £23 15s. *Cotton*: London crude spot, £14; refined spot, £15 5s. to £16, according to make. *Olive*: Green oils £29 to £32 per ton; table oils, 4s. 3d. to 6s. per gallon, as to quality. *Coconut*: Firm but unchanged at £24 10s. for Ceylon on the spot, and £28 for Cochin, same position. *Palm*: Firm at £22 10s. for Lagos on the spot. *Turpentine*: Much dearer, but closing quiet at 26s. 9d. per cwt. for spot American, November to December 26s. 9d., January to April 27s. 3d. per cwt. *Petroleum Oil*: A firm market at 5½d. per gallon for Russian and 6½d. per gallon for American on the spot. *Petroleum Spirit*: Dearer at 7¾d. per gallon for American.

OPIUM—Is quiet and practically without change in value from last week.

PHENACETIN.—3s. 9d. to 4s. 3d. per lb. is still the price of a really reliable article in bulk packing for both *crystals* and *powder*.

PHENAZONE—Without change, same can also be said of *Antipyrine Knorr*.

POTASH PERMANGANATE.—One of the principal makers, with a view to putting a violent end to the underselling which has been going on on the part of the smaller makers, suddenly reduced this price to 48s. per cwt. for *small crystals* for ton lots, at which price he found, however, so many buyers, that perhaps he now rather "feels sorry he spoke." Anyhow, he is not anxious to do further business at the figure, and the position of the article, so far from becoming weaker, has distinctly strengthened.

POTASH COMPOUNDS.—*Chlorate* firm at 4d. to 4¼d. per lb. for early delivery. *Bicarbonate* steady at 30s. to 35s. per cwt., according to brand. *Bromide* firm at 1s. 9½d. per lb. *Iodide* quiet dull at 10s. 3d. per lb. *Prussiate* steady at 6¾d. to 7d. per lb. for the yellow, and 1s. 1d. to 1s. 2d. per lb. for the red. *Cyanide*: The 98 to 100 per cent. white cake is quoted at 1s. to 1s. 1d. per lb. *Bichromate* steady at 3½d. to 3¾d. per lb. *Permanganate* quiet at 50s. per cwt. for small, and 55s. for large crystals. *Oxalate* firm at 5d. per lb. for the neutral.

QUICKSILVER—Steady at £7 5s. from first hands, and £7 4s. from secondhands.

QUININE.—Whilst, owing to a firmer bark market, an advance is thought likely, no special demand has so far set in, and the *Sulphate*, in 100 oz. tins and 1000 oz. lots, can still be obtained at 10d. per oz. for best German brands.

SALICINE—Is in good demand at 10s. 6d. per lb. for fair quantity.

SHELLAC.—The market remains very quiet, with a small business doing in fair *TN orange* at 66s. per cwt. The speculative market is easier, with sales for December delivery at 67s. 6d. per cwt. for *TN orange*.

SODA COMPOUNDS.—*Crystals* steady at 57s. per ton, ex-ship terms. *Ash* firm at £5 to £5 10s. per ton, according to strength. *Bicarbonate*: £7 5s. per ton for the 97 per cent., and 18s. 6d. per cwt. for the fully bicarbonated, chemically pure article. *Hypo-sulphite* quiet at 6s. to 8s. per cwt., according to brand. *Bromide* firm at 2s. per lb. *Iodide* quiet at 11s. 7d. per lb. *Bichromate*: 2¾d. to 3d. per lb. *Nitrate*: £7 12s. 6d. per ton for the ordinary, and £8 2s. 6d. for the refined. *Acetate* steady at 35s. 6d. per cwt. for the chemically pure, and 13s. 6d. per cwt. for the ordinary refined.

SOY.—Good *China* sells on a small scale at 1s. 4½d. per gallon.

SUGAR OF LEAD—Is firm at 31s. per cwt. for *English* and 27s. 6d. per cwt. for *Foreign*.

SPICES (VARIOUS).—*Black Pepper*: only 37 bags damaged Singapore offered and sold, first-class at 4½d. *White Pepper* in slow demand: only 120 bags Singapore sold, ordinary mixed small 7½d. to 7¾d.; fair to good fair, 8d. to 8¾d.; fine bold, 9d. *Cayenne Pepper*: 24 crates containing tins, Nepal, bought in at 1s. 3d. *Chillies* dull: 285 bales, Zanzibar, all bought in at 37s. 6d. to 40s. *Cassia Lignea*: 175 boxes bought in at 56s.; of 250 bales broken, 60 bales sold at 32s. 6d. *Cinnamon Chips*: 12 bags Ceylon sold at 4¾d. *Mace*, quiet: 9 cases Penang sold, middling red, 1s. 9d.; good red, 2s. to 2s. 1d.; 7 packages West India sold at 1s. 3d. to 1s. 5d.; good red, 1s. 9d. *Nutmegs*, dull at about previous rates. *Pimento* in better demand: of 346 bags, 143 bags sold at firmer rates, fair 4¼d. to 4¾d.; one lot exceptionally fine, clean, at 4¾d.

SULPHATE OF COPPER.—Is dearer at £17 10s. to £18 5s. per ton for immediate delivery, according to brand.

SULPHONAL.—Is still obtainable from the makers at 7s. 3d. per lb. in bulk.

SULPHUR.—Remains firm but unchanged. *Roll*: English 7s. 6d. to 8s. per cwt.; Foreign 6s. 6d. per cwt. *Flowers*: English 11s. per cwt.; foreign 7s. per cwt.

TURMERIC.—Prices remain steady, but business is on a small scale. Sellers of fair *Bengal* at 19s. per cwt.; *Coconada* finger, 26s. per cwt.; *Cochin* split bulbs, 10s. 6d. per cwt.

To-day's public sales passed off without any important changes in value. Cardamoms sold well, while Ipecacuanha was hardly quite so firm. Price realised for Cascarella showed an advance. The following are the particulars as far as it has been possible to give same up to time of going to press:—

ALOES.—40 kegs *Socotrine* part sold previously, balance held for 75s. per cwt.; 25 boxes fair livery *Curacao* were taken out at 30s. per cwt., only 16s. per cwt. being bid; 140 boxes *Barbadoes* practically all sold at 30s. to 35s. for fair livery, down to 21s. for dark ditto, and 15s. to 20s. for *Capey*.

ANATTO SEEDS.—26 bags of fair quality bought in at 4d. per lb.

ANISEEDS.—29 bags *Syrian* held for 20s. per cwt.

ANTIMONY.—39 cases *Crude Japan* sold at £22 10s. per ton; 1 cask *English Regulus* fetching £34 per ton.

AMBERGRIS.—1 tin chalky coat, good flavour, grey, held for 65s. per oz., 1 tin mixed, part undeveloped, part doubtful, selling at 10s. per oz., and 1 tin of only fair quality at 70s. per oz.

ASAFETIDA.—85 cases were all bought in at 45s. to 50s. for hard pinky heavy block up to 60s. per cwt. for fair almondy.

BALSAM COPAIBÆ.—29 tins bought in at 1s. 5d. per lb. for rather thin *Bahia*, an offer of 1s. 3d. per lb. for the lot not being entertained. 5 cases *Carthagenia* sold at 1s. 3d., 1 case inferior at 1s. per lb. 1 cask filtered *Maranham* was bought in at 1s. 8½d. per lb.

BALSAM PERU.—4 cases part sold at 8s. 3d. per lb.

BUCHU LEAVES.—Good green rounds were taken out at 6¼d. per lb. (price required being 5¾d.); medium green bought in at 5d., while 2 cases yellow leaves sold at 4½d. per lb., and 4 bales ditto at 3¾d. per lb.

CAMPHOR OIL.—100 cases refined white *Japan* sold without reserve at 16s. per cwt.

CAMPHOR.—6 cases *Refined*, in 1 oz. tablets (in 1 lb. boxes), sold cheaply, without reserve, at 1s. 1d. per lb.

CASCARA SAGRADA.—100 bags last season's shipment from San Francisco, and of fair quality, were held for 25s. per cwt.

CASCARILLA BARK.—46 packages part sold at 47s. to 48s. for fair thin, part bolder, balance being bought in. These figures show an advanced value of the article.

CARDAMOMS.—Were in active demand and the better qualities were fully 2d. per lb. dearer, good bold pale *Mysore* rather shelly realised 3s. 8d. per lb., second size 3s. 4d. per lb., small 2s. 6d. to 2s. 7d. per lb.; *Seeds* were easier at 2s. 11d. to 3s. 1d. per lb.

CASSIA FISTULA.—64 bags poor and very wormy pods sold for account of the Dock Company at 1s. 3d. to 1s. 9d. per cwt.

CINCHONA BARK.—26 bales *crown bark* part sold at 8d. to 10d. per lb., remainder being bought in at 5d. to 7d. per lb., 8 bales of lower quality selling at 4¾d. to 5d. 46 packages *red bark* part sold at 2s. 1d. to 3s., three lots consisting together of 4 packages being held for 5s. 6d. per lb.; inferior quality realised 3¾d. to 8½d. per lb.

COCULUS INDICUS.—2 bags fine quality sold at 9s. per cwt.

COD-LIVER OIL.—25 barrels *Norwegian* held for 80s. per barrel.

COLOCYNTH.—2 cases rather brownish *Turkey* held for 1s. per lb.

COLOMBO ROOT.—191 bags poor sorts were bought in at 13s. per

cwt., 80 bags rather better selling at 18s. 5 bales good washed but rather stemmy, held for 40s.

CROTON SEEDS.—11 bags *China* bought in without mention of price. Other 16 bags of good quality were held for 85s. per cwt.

CORIANDER SEED.—25 bags *Morocco* sold at 7s. per cwt., which shows an advance in value.

CUBEBS.—70 bags held for 24s. per cwt.

CUTTLE FISH.—40 mats small clean bone were held for 2½d. per lb.

DAMIANA LEAVES.—5 bales of fair quality failed to find a buyer,

DILL SEEDS.—83 bags of good quality held for 14s. per cwt.

DRAGON'S BLOOD.—1 case good reeds sold at £10 per cwt., and privately several cases more have been sold at same price, very dull seedy block is held for £6 10s. per cwt.

ERGOT OF RYE.—Fair *Spanish* slightly weevilly sold at 1s. 3d. per lb.

GAMBOGE.—20 cases bought in at £8 10s. to £9 10s. for fair bright pipe, part soft, down to £6 10s. to £6 15s. for pickings.

GENTIAN ROOT.—20 bales fair *French root* held for 18s. per cwt.

GUARANA.—6 packages, quality of which was only fair, were held for 1s. 2d. per lb., there being no demand.

GUM AMMONIACUM.—14 cases sold at 40s. per cwt. for good clean block, down to 29s. to 30s. for fair blocky.

GUM ARABIC.—5 bales medium *Turkey* sorts were bought in at 75s. per cwt., 2 bags *Australian* gum being taken out at 25s. 1 case fair pale grain sold at £6 15s.

GUM BENZOIN.—Medium seconds Sumatra sold at £6 12s. 6d. to £7 per cwt. down to £5 10s. for inferior, good almondy realising £10 10s. to £10 12s. 6d. Medium to bold fair free Siam realised £19 5s. to £20 15s. Small free held for £15 10s., bean size sold at £8 10s., dust and dark almondy at 60s. to 70s. per cwt.

GUM MYRRH.—4 cases rather darkish gum was bought in at £5 10s.; good pale sorts at 90s.; dark at 55s. to 60s.; pea siftings selling at 40s. per cwt.

GUM TRAGACANTH.—4 bags sold without reserve at 35s. per cwt.

HONEY.—50 packages *Jamaica* nearly all sold readily at 18s. to 22s. per cwt., according to quality.

IPECACUANHA.—Holders of *Rio* are still firm in their ideas, and only a few bales of thin wiry root sold below 10s. per lb., good realising 10s. 1d. per lb. For *Carthagenia* the demand was active, and 7s. 2d. was realised for good root.

ISINGLASS.—1 bale *Japan*, very badly sea-damaged, sold at the low price of 4d. per lb., sound *Agar-Agar* being worth 1s. 5d. to 1s. 6d. per lb., according to colour.

JALAP.—17 bales medium to fair *Tampico* held for 6½d. per lb.

KAMALA.—6 cases fair bright held for 9d. to 10d. per lb. price required being 7½d. per lb.

KOLA NUTS.—3 bales were held for 3d. per lb.

LAVENDER FLOWERS.—44 bale of very common quality were taken out at 20s. per cwt., only 8s. per cwt. being offered.

LAVENDER ROOT.—1 bale offered under this name, but which was probably *Cuscuta*, was bought in at 36s. per cwt.

LIME JUICE.—2 firkins bought in at 1s. 3d. per gallon, only 9d. per gallon being bid. One hogshead *Concentrated*, the analysis of which, by G. H. Ogston and Moore, was given as commercial crystallized citric acid 81.90 oz. per gallon, specific gravity 1.2618 at 60°, degree of citrometer 65½ at 60°, sold, subject to approval, at £12 per 108 gallons.

MUSK.—2 caddies fine blue skin *Tonquin* held for 70s. per oz.

NUX VOMICA.—Good bold pale *Cochin* sold at 9s. per cwt. down to 8s. 3d., medium realising 7s. 6d. per cwt.

ESSENTIAL OILS.—4 cases *Cinnamon* bought in at 1s. 8d. per oz., 5 cases *James B. Horner's Oil Sassafras* held for 1s. 6d. per lb., 2 cases *James B. Horner's Oil of Spearmint* for 4s. 2d. per lb., 1 case *James B. Horner's Oil of Wintergreen* for 4s. 6d. per lb., 6 cases *Eucalyptus globulus Platypus* brand, guaranteed to contain 55 per cent. of *Eucalyptol*, and also to answer the requirements of the B.P., 1898, for 2s. 4d. per lb., 10 cases *Cajaputa* of good quality held for 3s. 6d. per lb., 4 cases dementholised *Japan Peppermint* for 3s. 4½d. per lb., 2 cases *West Indian Oil of limes* for 4s. per lb., 1 case of very good quality selling 5s. 7d. per lb., 18 cases *Citronella* bought in at 1s. 1½d. per lb., 2 cases *French Geranium* at 11½d. per lb.

ORANGE PEEL.—13 cases bought in (1 case having been sold previously) at 7d. to 7½d. per lb. for good thin cut, and 4d. per lb. for thick cut.

ORRIS ROOT.—12 serons fair *Mogador* sold at 15s. per cwt.

PATCHOULY LEAVES.—30 bales held for 3½d. per lb.

RHUBARB.—Good round *Canton* pickings were held for 10d. per lb.; good bold round *Canton* for 1s. 2d.; 5 cases round *Canton* medium size good colour selling at 1s. 1d.; 1 case very rough round and flat ditto sold at 10d. per case, rough coated round at 10½d.; 1 case rough horny round *high dried* fetched 7d., good bright ditto realising 10d. to 11d. per lb.; 3 cases good small round *Shensi*, part trimming root was taken out at 3s. 3d. per lb., it being, however, understood, that rather less would have been accepted; 1 case rough flat pickings sold at 10d. per lb.

SARSAPARILLA.—6 bales *Guayaquil* sold at 11d. per lb. for 2 and 3 *CCD*. 2 bales *2CSD* having been sold previously at 9d. 82 bales *Lima* held for 1s. 2d. to 1s. 3d. per lb., 4 bales sea-damaged selling at 8d. to 10d. per lb. 24 bales *Jamaica* sold at 1s. 7d. to 1s. 8d. per lb. for sound, and 1s. 6d. per lb. for 1 *CCD* and 2 *CSD*. 2 bales *red native* sold at 1s. 1d. per lb.

SENNA.—About 500 bales *Tinnevelly* were offered, the whole selling at very full rates, for the finer grades up to 5½d. per lb. the lower and medium qualities, however, were about ¼d. per lb. cheaper. Small spotty leaves sold at 1¼d. to 2d. per lb. Medium spotty to fair green 2¼d. to 3d. *Pods*, fair pale 1½d. per lb., low dark ¾d. per lb. Arrivals are coming in slowly, and offerings in next auction will be small. *Alexandrian leaf* is scarce and wanted, but there is no demand for the lower grades.

SQUILLS.—48 bags of fair quality were held for 3d. per lb.

TAMARINDS.—20 barrels fair *West Indian*, part sold at 9s. 6d. per cwt.

TENEHAKA BARK (for dyeing purposes).—10 tons were offered and bought in at £35 per ton.

TONQUIN BEANS.—5 cases bought in at 10d. for foxy; 1s. 3d. per lb. for medium frosted *Paras*; 10 cases fair *Angostura* taken out at 3s. 6d. per lb.

TURMERIC.—30 cases ground bought in at 18s. per cwt.

VANILLA.—There is a good demand for all sorts, and full to rather dearer prices were paid at to-day's auctions. *Tahiti* are firmly held at 8s. per lb., a cheaper seller being cleared out. *Madagascar* sold well at 19s. 6d. to 22s. per lb., according to length, and 17s. to 19s. 6d. for splits.

VERMILION.—2 cases *China* bought in without mention of price.

WAX.—Medium to fair *Jamaica* sold at £6 10s. to £6 15s. per cwt.; 10 cases fair *Madagascar* realised £5 12s. 6d. good, ditto being held for £6 10s.; 1 case *Spanish* bought in at £6 5s.; 3 cases *East Indian* sold for £5 5s. per cwt.; 5 bags yellow *Carnauba* bought in at 55s. per cwt.; 50 cases good *Japan* taken out at 36s. per cwt.; 10 cases medium quality selling at 32s. 6d.

Newcastle Chemical Report.

OCTOBER 26, 1898.

A shade more is passing in Soda Crystals for the Channel ports; other heavy goods quiet. Quotations keep as follow: Bleaching Powder, £5 10s. to £6, according to markets. Soda Crystals, basis price, 45s. Caustic Soda, 70 per cent., basis, £7 to £7 5s. Soda Ash, £4 5s. Alkali, 52 per cent., £5. Sulphur, £4 15s. to £5 per ton.

Liverpool Market Report.

OCTOBER 26, 1898.

AMMONIA SALTS.—*Carbonate*, 3d. per lb. *Sal ammoniac*, 33s. and 35s. per cwt. *Sulphate* continues flat at £9 12s. 6d. to £9 15s. per ton.

ARSENIC.—Powdered is dearer at £17 per ton. Lump, £30.

BEE SWAX.—Peruvian has been selling at £6 12s. 6d. to £7 per cwt., and *Gambia* at £6 10s.

CANARYSEED.—Continues fairly steady in demand. About 500 bags of *Turkish* sold at prices between 28s. and 28s. 6d. per 464 lbs. ex-quay, and 28s. 6d. ex-store. *Spanish*, ex-store, 32s.

HONEY.—200 barrels of *Peruvian* sold at 20s. 3d. per cwt.

KOLA NUTS.—Dried have been moving off in small amount at 2d. per lb.

LINSEED.—Holders are very extreme in their ideas of the value of *Calcutta*, for which 38s. 9d. has been bid per 416 lbs., and refused. *American* is also unobtainable at even 37s. 6d. per 416 lbs. *Larnaca* has sold at 45s.

OILS (FIXED) AND SPIRITS.—*Castor* is lower in price, and demand is somewhat slack. *Calcutta* is quoted at 3½d.; *Madras*, 2½d.; and *French*, 2½d. to 3d. per lb. *Olive* continues at £29 10s. to £30 per tun for fine *Spanish*. *Linseed* is easier at 18s. 3d. to 19s. per cwt. *Cottonseed* of *Liverpool* refining is quiet at the easier rate of 15s. 6d. to 15s. 9d. *Spirits of Turpentine* has rapidly risen to the high price of 27s. 6d. per cwt., at which figure it is now steady, with a good demand.

SODA SALTS.—*Borax* is higher in price, £14 to £14 10s. per ton. Other salts unaltered from last week.

Manchester Chemical Report.

OCTOBER 25, 1898.

THERE appears to be a fair inquiry for both home and export in heavy chemicals, but the prices for next year, especially for Bleaching Powder, are extremely low. Bleaching Powder is quoted at £4 5s. per ton, softwood casks, on rails. For prompt, the price is £4 15s. to £5 per ton. In other respects, Caustic Soda, Soda Ash and Crystals are unchanged for prompt. The "boom" in Arsenic appears to have subsided, and it is now nominally £17, ex-ship. Brown acetate is moving steadily at £5 5s. to £5 10s., and will, no doubt, advance still further with rising freights. Tar products are weak, with the exception of Creosote. Both Benzols and Naphthas are a turn weaker. Solvent Wood Naphtha varies from 2s. 9d. to 3s., and Miscible 3s. 10d. to 4s. per gallon. Creosote is quoted at 7s. 8d. Sulphate of Copper remains firm at £17 10s. to £18 per ton for prompt, delivered Manchester. Aniline Oil and Salt still rule low.

Announcements.

Monday, October 31.

PHARMACEUTICAL SOCIETY OF IRELAND, 67, Lower Mount Street, Dublin, at 8.15 p.m.—Re-opening of the Society's schools and presentation of the Society's gold and silver medals, followed by an address on "The New Pharmacopoeia," by Professor C. R. Tichborne.

Tuesday, November 1.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION, County Restaurant, Bradford.—Social evening.

Wednesday, November 2.

PHARMACEUTICAL SOCIETY, 17, Bloomsbury Square, W.C.—Meeting of the Council.

Thursday, November 3.

CHEMICAL SOCIETY, Burlington House, W., at 8 p.m.—Papers on various subjects will be read by Messrs. E. Sonstadt, E. H. Bagnall, W. J. Pope, Sydney Young, F. E. Francis, and S. Young, D. H. Jackson and S. Young.

CHEMISTS' ASSISTANTS' ASSOCIATION, 73, Newman Street, W., at 9 p.m.—Short papers by members.

LEICESTER CHEMISTS' SOCIAL UNION, Clarendon Rooms, Granby Street, at 8.30 p.m.—Mr. T. Howard Lloyd will preside at a hot supper and musical entertainment. Tickets 2s. 6d. each.

LINNEAN SOCIETY, Burlington House, W., at 8 p.m.—Papers will be read by Professor H. Marshall Ward, and Miss Dale, and the Rev. T. R. Stebbing. Exhibitions by Professor Howes, Mr. Alan F. Crossman, and Messrs. H. and J. Groves.

MIDLAND PHARMACEUTICAL ASSOCIATION, Grand Hotel, Birmingham, at 8 p.m.—Inaugural meeting and reception by the President, to be followed by a lecture on "The Forest Trees of Great Britain," by Mr. G. Claridge Druce, concluding with a vocal and instrumental concert.

Friday, November 4.

IRISH PHARMACISTS' ASSISTANTS' ASSOCIATION, 67, Lower Mount Street, Dublin.—Address by Mr. Henry Hunt, the new President,

Trade Notes.

IDRIS AND CAMWAL.—A paragraph which appeared in a London evening paper on Tuesday last, with reference to the combination of these two firms is somewhat premature. We learn that though negotiations are in progress, nothing definite has been decided on. Should the amalgamation take place, we understand that as hitherto the sale of the well-known Camwal brand will be restricted to chemists who are shareholders, and that Messrs. Idris will continue the policy of confining their trade to chemists except in such instances as hotels, clubs, etc., where interests do not conflict. It is anticipated that should the proposed amalgamation take place one benefit that will accrue will be a considerable saving in the cost of production.

CHRISTMAS NOVELTIES.—Marshalls, Limited, of Red Lion Square, hit upon a happy idea when it occurred to them to make a new departure in connection with sachets. Instead of the ordinary envelopes (tasteful as many of them are), these perfumed sachets are made in various shapes; the most attractive, perhaps, are those in the form of butterflies. The series comprises about 40 different kinds, including such species as the Red Admiral, Peacock, and other well-known varieties. They are particularly adapted for ornamenting curtains, lamp shades, dresses, and in fact draperies of all kinds. They are supplied in glass top boxes for window or counter display, at 4s. 6d. per dozen, or 48s. per gross. Other series are the poppyland, violet and, for Christmas trade, the plum pudding sachets. Show cards may also be had. The demand at present is in excess of the supply, and orders are being filled in rotation. The same firm makes a specialty of sample sets of perfumes in cases, ranging from 6d. to 4s., at 21s. net, specially sorted for those customers who cannot visit the premises to make their own selection. A commendable feature about this firm's productions is that they are made in England, on their own premises in Red Lion Square.



Partnerships Dissolved.

(From the London Gazette.)

Wm. Fickus, T. W. Courtenay, and James Fickus, St. Dunstan's Buildings, St. Dunstan's Hill, E.C.

J. H. Goodavie and Joseph Goodavie, Chemical Manufacturers, Rastrick Common, Brighouse, York; so far as regards J. H. Goodavie.

H. W. O. Tibbits and T. E. Sugden, Dental Surgeons, Darlington, also carrying on business at Richmond and Northallerton, both in Yorkshire; so far as regards T. E. Sugden.

James Brand and H. G. Bowes, Veterinary Surgeons, Leeds. Debts will be received and paid by H. G. Bowes.

John Gabb and M. Johnston, Physicians and Surgeons, Bewdley. Debts will be received and paid by Dr. Johnstone at Wribben Hall, Bewdley.

Receiving Orders in Bankruptcy.

(From the London Gazette.)

Beresford N. Earle, Physician, 92, Cheesehill Street, Winchester.
Gilbert N. Fitcher, Photographer, 28, North Street, Chichester.

OBITUARY.

VINCENT.—On October 20, Philip Vincent, Chemist and Druggist, Fulham. Aged 49. Mr. Vincent was an Associate of the Pharmaceutical Society.

WILSON.—On October 20, Alexander Greaves Wilson, Chemist and Druggist, Oldham. Aged 55. Mr. Wilson had been a Member of the Pharmaceutical Society since 1892.

DYER.—On October 21, Clarice Emily, daughter of Walter Dyer, Chemist and Druggist, 36, Fore Street, Devonport.

Advertisements.

(Received too late for Classification).

CAPABLE man wanted for interviewing doctors and dentists, and for calling upon chemists; must be young, gentlemanly, smart, energetic, and pushing. Salary about £150. Fullest particulars in confidence to B. S., "Pharm. Journal" Office, 5, Serle St., London, W.C.

ENGAGEMENT wanted as **MANAGER**. Qualified. First-class experience. Practical knowledge mineral-water manufacturing. References. Married. **GALT**, 132, Guildford St., Chertsey, Surrey.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

Miscellaneous.

Six Pieces Perfume Ribbon, each 36 yards long (216 yards), assorted colours post free, 5s.—Edward Peck, East Dereham, Norfolk.

Magic Lanterns, second-hand; triples and binials: oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

For Sale.—'Pharmaceutical Journals' from January 30 to July 31, 1897. What offers? Address—A. Pollard, 82, Cambridge Gardens, London, W.

Lancaster's No. 6 Astronomical Telescope, with best object lens, 4 in. clear aperture, 60 in. focus, panoramic eye-piece, magnifying power from 60 to 120, two eye-pieces 85 and 200. Mounted on garden stand, best achromatic finder, and strong steady rod. Not been used. What offer? Cost £25.—Bradshaw, Tickhill, Yorkshire.

Oil of Lemon (superfine).—Advertiser being overstocked will sell cheap; 10 lbs. Copper, 22s. 6d. on rail; sample pound, 3s., delivered free anywhere, cash with order.—Chemist, 34, Avondale Road, Chorley.

For Sale.—Show Jar for window, as Maw's Fig. 1, plain gold cover, total height about 32 inches, with Fig. 2 stand £3, cost over £6.—Hodgson, Chemist, Waterloo, Liverpool.

WANTED.

Old Electric Lamps and Scrap Platinum for prompt cash.—P. Rowsell, 9, Derwent Grove, East Dulwich, London, S.E.

Latest edition Green's 'Botany'; state price.—James, 257, Hotwell Road, Bristol.

Preston's 'Heat,' latest edition.—T. H. Flemming, 156, Newgate Street, Newcastle-on-Tyne.

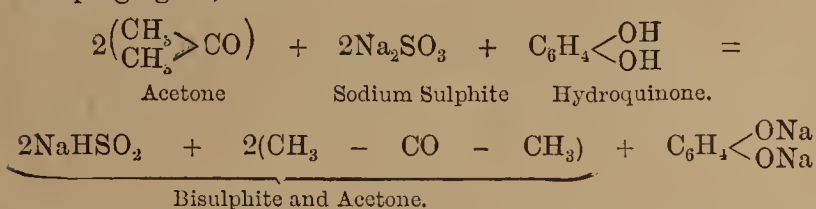
Marked Copies of the following Newspapers, etc., have been received during the week:—Huddersfield Daily Examiner, Newsagents' Chronicle.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Balkwill, Bennett, Blackwell, Blythe, Bostock, Brierley, Browne, Brunt, Burns, Chiger, Churchill, Clarke, Cowley, Davies, Dent, Emary, Ferrall, Fieber, Fitch, Frith, Horner, Houghton, Hyslop, Ince, Ireson, Jones, King, Kinton, Lee, Latham, Lloyd, Lothian, Lunan, Marsden, Maskew, Mitchell, Mumbray, Nicholls, Pass, Passerson, Peniston, Ransom, Raynor, Reynolds, Smith, Spence, Spitta, Sutton, Taylor, Tippetts, Wallace, Wand, Wigginton, Will, Williams, Zeiss.

PRACTICAL PHOTOGRAPHIC NOTES.

FOR THE LAST FORTNIGHT OR SO there have been in the daily papers innumerable announcements with regard to colour photography, or photography in natural colours, the particular process which has been puffed is that discovered (?) by Dr. Selle, of Berlin. We are informed that a large company will shortly be floated, or at least attempts will be made to float a large company to work this process, and in order that readers may have due warning on the subject, it is introduced here. Dr. Selle's process is the old three colour process suggested by Clerk Maxwell in 1861 and Collen in 1865, and elaborated by Ducos du Hauron and Cros in 1869, and perfected by Ives in his well-known "Krömskōp." Dr. Selle holds a patent for the superimposition of three-coloured films for lantern and transparency work. This was specifically suggested by Du Hauron in 1872, and elaborated and perfected by Ives about 1889. But apparently the company is not going to rely upon this, but upon three-colour printing by block and collotype. Considering that such work has been produced in England, Germany, Austria, and America since 1890, and that many of the wrappers of the monthly magazines are printed by this process now, we think that care should be exercised before investing money in such a concern. *Timeo Danaos et dona ferentes.*

ACETONE, IN CONJUNCTION WITH PYRO, is coming to the front just now as a developer, and we note that one or two firms are placing such a developer upon the market. The action of acetone in the developer is practically the same as the ordinary alkalis, that is, it forms a bisulphite compound in the presence of a sulphite and phenol compound. Supposing we take, for instance, hydroquinone, we have the liberation of a nascent caustic alkali in just sufficient quantity to saturate the phenol group of the developing agent, thus—



The advantages of the pyro-acetone developer are that it does not stain the film nor fingers, and does not cause frilling, and may at the same time be used for both over and under exposure. The actual developer is as follows:—

Pyrogallol	40 g.
Sodium Sulphite	200 g.
Distilled Water	1000 C.c.

To develop a whole plate 25 C.c. of this solution should be diluted with 75 C.c. of water, and to this should be added gradually not more than 10 C.c. of acetone.

ANOTHER DEVELOPER, for the suggestion of which we are also indebted to MM. Lumière and Seyewetz, of Lyons, is the following, which is very valuable for copying of line subjects, such as black and white drawings, engravings, etc. For ordinary landscape work it is almost too clean in its action, giving negatives so full of contrast that one cannot obtain good prints from them. The chemical action that goes on here is practically the same as with acetone:—

Hydroquinone	1.5 g.
Sodium Sulphite	1.5 g.
Formaldehyde (commercial 40 per cent. sol.)	2 C.c.
Distilled water	100 C.c.

COLOURED MATT VARNISH is at the present time one of those little adjuncts to practical work which is rather in demand. The usual formula with ether and benzole is by no means so satisfactory as the following:—

Ether	1600 C.c.
Sandarac	100 g.

Dissolve by agitation, filter, and add—

Toluol	375 C.c.
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To stain this about 10 g. of powdered asphalt may be added, or else about the same quantity of aurantia or chrysoidine, according to the depth of colour required.

FRENCH NEWS.

IN VIEW OF THE FREQUENT OCCURRENCE of infanticide, practised by some Frenchwomen with respect to their illegitimate offspring, a Frenchman, Monsieur Lautier by name, has conceived a novel means of punishing those criminals, and forwards a petition to the Chamber of Deputies, the gist of which is as follows: In nine cases out of ten, he thinks, the crime of infanticide would never be resorted to if the young mother, desirous of hiding her shame, had but an opportunity of clandestinely disposing of her offspring in a state institution for abandoned children. Instead of condemning these unfortunates to *travaux forcés* (hard labour), he suggests that they be condemned to *enfants forcés*, and despatched to one of the colonies, and there compelled to produce one, two, or three children whether she likes it or not, thus assisting in the work of colonisation. This suggestion appears to have been taken to heart, inasmuch as the petition has been forwarded to the Minister of the Interior. It reminds one of General Gallieni's scheme for the taxation of all bachelors in Madagascar, or of such of the male population as fail to account for the addition of three little colonials to the population. France is evidently determined by all means, moral or immoral, to force fruit to grow upon all fig rees, promising or unpromising, that cumber the ground of her colonies.

X RAYS AND THE PURITY OF COMBUSTIBLES.—The diamond and wood being permeable to the X rays, whereas silica and the silicates are not, M. H. Couriot presumes that mineral combustibles would allow the rays in question to pass through, and that the silicious matter which forms the ash upon combustion would resist the passage of the rays at the points where they may be grouped, forming an obstacle more or less impermeable in proportion to their abundance. In the experiments he has made with anthracite, lignite, coke, etc., he has always observed in all its details the intimate structure of the mineral portion of the combustible; the smallest fragment of shale, invisible to the naked eye, is revealed upon the screen as a black spot or hazy band. In the cone, for instance, one may observe, appearing in the form of black spots upon the screen, the particles of ferrous sulphide derived from the pyrites. Instead of a chemical analysis of coal being made to ascertain the proportion of coal ash it may yield, it is only necessary, by virtue of the great permeability of coal, to adopt this radioscopic method, which instantly furnishes the mineral skeleton of the block under examination, to form an appreciable idea of its purity and commercial value.

ODOURLESS PARAFFIN.—Despite the introduction of gas and electricity as illuminating media, the paraffin lamp is used to-day perhaps as much as ever. Still, it has its drawbacks, and not the least of them is the insupportable odour alike to the refined as to the common oil. Curiously enough, it is claimed that this drawback may be overcome, and the quality of the light enhanced by placing three or four small pieces of naphthalin in the oil reservoir of an ordinary sized lamp, renewing the supply as required. The odour is said to disappear and the flame to become brighter. If this be correct, the addition of naphthalin thus has a double advantage: (1) Considerable increase of illuminating power; (2) suppression of the objectionable odour.

PROFESSORS OF PHARMACY.—The Minister of Public Instruction and Fine Arts has issued a notice to the effect that a Concours will be opened at Paris in April, 1899, for the nine vacancies of Professor of the Superior School of Pharmacy, and appends a list of the subjects of thèses which the candidates may choose from:—
Physics: 1. Spectroscopy and spectrometry. 2. Luminous radiations. 3. Liquefaction of gases. Chemistry: 1. New methods for the production of metals. 2. Endothermic and exothermic compounds. 3. Terrestrial atmosphere. 4. Constant physics utilised for the determination of molecular weights. 5. Silicon and its artificial combinations. 6. Ptomaines and leucomaines (chemistry and toxicology). 7. Hydrazine and its derivatives. 8. Polysaccharides. 9. Hydro-aromatic compounds. 10. An outline of the progress recently accomplished in the knowledge of the constitution of the vegetable alkaloids. 11. Pyrrol and its derivatives. 12. Oxymmonia--oximes and is trous compounds.

ENGLISH NEWS.

WESTERN CHEMISTS' ASSOCIATION (OF LONDON).—At a Committee meeting held on Wednesday, October 26, the following gentlemen were elected officers for the ensuing year, viz.:—President: J. F. Harrington, 45, High Street, Kensington. Vice-President: A. G. Worsley, 135, Ladbroke Grove, W. Hon. Treasurer: J. H. Mathews, 68, Queen's Gardens, W. Hon. Secs.: Herbert Cracknell, 17, Craven Road, W.; W. J. I. Philp, 34, High Street, Notting Hill, W.

MR. J. VINCE, chemist and druggist, local secretary for Lancaster, has taken into partnership Mr. J. F. Barker, a former pupil, and the business will henceforth be carried on under the name and style of "Vince and Barker."

MR. J. OLDHAM BRAITHWAITE has completely revised and brought up to date the new edition of 'The Pharmaceutical Formulary,' a synopsis of the British, French, German, and United States Pharmacopœias, and of the chief unofficial formularies, being the twelfth edition of Beasley's 'Pocket Formulary.' The work has just emerged from the press, and it will be noticed that it is in accordance with the new Pharmacopœia. The publishers are Messrs. J. and A. Churchill.

POISONING CASES.—An inquest was held at Dover on Monday, October 24, relating to the death of Sarah Heard, wife of a boatman. The evidence was to the effect that the woman had been ill for several days, and on the previous Sunday had accidentally swallowed a quantity of carbolic acid from a bottle which had been placed near to another bottle containing port wine. The acid had been obtained from the Corporation offices for purposes of disinfection. A verdict of "Accidental death" was returned, and the Coroner remarked that this was the second case in which death, to his knowledge, had resulted from carbolic acid distributed by the Corporation. In the other case it was supplied in a wine bottle. In his opinion the poison seemed to be distributed in too lavish a manner.—A verdict that death was due to an accidental overdose of laudanum has been returned in the case of Henry Johnson (45), weaver, of Lane, Holmfirth. It appeared from the evidence that he had been "down in the nerves" for several months and had not been able to sleep well, and on Thursday, October 27, took a dose of laudanum, which proved fatal.

FOOTBALL.—A match was played at Wormholt Farm, Shepherd's Bush, W., on Saturday, October 29, between the teams of the Metropolitan College of Pharmacy and South London School of Pharmacy, resulting in a win for the "Metropolitans" by four goals to none.

THE CARELESS SALE OF POISONS.—Dr. Danford Thomas held an inquest at the Hampstead Dispensary on October 29, with reference to the death of Minnie Baldrey, aged 22, a ward servant at the North Western Fever Hospital, Haverstock Hill. It appeared that the girl drank a quantity of nitric acid set apart for cleaning a sink, and died in spite of the efforts made by the hospital authorities. A sister said the deceased had been very unhappy for some time. She tried to poison herself a year ago, and a fortnight since endeavoured to strangle herself in bed. She then promised the witness that she would not again attempt to commit suicide. A nurse in the hospital said she believed Baldrey was in very low spirits because she had been told at an eye hospital that she would be blind within two years.—The Coroner said that it was always easy to get poison, especially carbolic acid. The other day some was ordered for his house, and it was sent by the oilman in a vinegar bottle covered with vinegar labels. One of his servants used it to fill the vinegar cruet, and it was served at table, where it was only detected by the smell.—The jury returned a verdict of suicide while of unsound mind.

CHEMISTS' ASSISTANTS' ASSOCIATION.—The first Cinderella of the season was held on Thursday, October 27, at the Dorset Hall, Portman Rooms, Baker Street, W. A rather poor attendance was registered, probably owing to the early date at which the series was inaugurated, nevertheless, a very enjoyable evening was spent by those who were present. The duties of M.C. were, as usual, efficiently discharged by Messrs. C. W. Martin and A. J. Solomon.

MESSRS. JOINSON, MATHEY AND Co., Hatton Garden, London, announce, in a recent issue of their catalogue, that "in furtherance of scientific research, professors and recognised scientific investigators will with pleasure be supplied with metals of the platinum group, in moderate quantities, and for periods to be arranged, free of charge, on condition that the precious metals are ultimately returned (in any form), and that the results of the investigations are furnished.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.—A social evening in connection with this Association was held at the County Restaurant on Tuesday, November 1, when a pleasant evening was spent with music and song. Miss Mackay and Mrs. Mitchell sang with taste and feeling. Mr. Russell obliged with a couple of songs, which he sang quite up to his usual standard. Messrs. Hanson, Silson, and Mitchell also rendered songs, and Mrs. Moulson gave pianoforte solos. Mr. Moulson discoursed sweet music upon the banjo. Mr. Pickard proposed a vote of thanks to the visitors who had so kindly aided with songs and solos, and Mr. Mackay seconded. The meeting then terminated.

MR. W. ESSERY, M.P.S., was the successful Conservative candidate for Frankfort Ward, Plymouth County Council election, on Tuesday, November 1.

ADMINISTERING DRUGS TO HORSES.—At Spalding Petty Sessions on Tuesday, November 1, a farm servant named Joseph Plowright was summoned by Ernest William Farrow, farmer, of Spalding, his employer, for administering poisonous drugs to horses. The defendant was horsekeeper to the complainant, and it transpired that he had administered blue vitriol to the horses, four in number, also saltpetre and resin. A claim was made of £10 for damage to the horses, and it was stated that probably they would have been killed but for the matter being discovered in time. As it was it was feared that one of them might be permanently injured. It was stated by the complainant that the £10 claimed would not represent his loss, and he also commented upon the facility with which farm servants could obtain these drugs.—The Court regarded the case as a very serious one, dissolved the contract of service, and ordered the payment of £10 damages, and the costs.

MR. JOHN LAURIE, chemist and druggist, Blackpool, has been elected as one of the Conservative Councillors for the Foxhall Ward of that borough.

THE SOCIETY OF APOTHECARIES.—A conversazione in connection with the London and Middlesex Archaeological Society took place last week, by the kind permission of the Society of Apothecaries, at Apothecaries' Hall, Water Lane, under the presidency of Mr. E. W. Brabrook, C.B., F.S.A. (the Treasurer). The principal item in the evening's programme was the reading of a paper by Mr. Charles Welch, the Hon. Secretary of the Middlesex Archaeological Society, on the history and antiquities of the Society of Apothecaries. Mr. Welch described at some length the ancient ordinances of the company, and the strict manner in which the members formerly enforced them in order to maintain the purity of the drugs sold. Reference was also made to some of the quaint ceremonies performed by the old apothecaries at their hall, and to the examinations which were formerly conducted by them. At the conclusion of the paper, Mr. Welch was accorded a very hearty vote of thanks. The members then adjourned to the Court-room, where many antiquities recently found in London were set out for their inspection.

PROFESSOR WEISS ON DARWIN'S BOTANICAL WORK.—At the Manchester Museum, on Saturday, Professor Weiss delivered the concluding lecture on Darwin's botanical work. He dealt with Darwin's three books on the fertilisation of flowers. In 'The Origin of Species' Darwin had given only general reasons for his belief that it is apparently a universal law of nature that organic beings require an occasional cross with another individual. Having been blamed for propounding this doctrine without giving ample evidence, Darwin set to work to remove this objection by the publication of his book on 'The Fertilisation of Orchids,' in which he gave an account of the wonderful contrivances found in these plants to effect cross-fertilisation of the ovules of one plant with pollen brought by insects from another of the same species. After the publication of this book, Darwin set himself to the task of

examining the difference between the offspring produced by the cross-fertilisation respectively. His extensive and laborious experiments in raising and measuring the seedlings, resulting from two methods of fertilisation, proved conclusively the superiority of the offspring of cross-fertilised plants. After eleven years experimenting, he was sufficiently convinced of this truth to publish in 1876 a work on cross and self-fertilisation in plants, followed in the next year by another on 'The Forms of Flowers.' The first portion of the latter deals with the curious phenomenon of the appearance in certain species of plants of two kinds of flowers of slightly different structure, each one adapted to fertilisation by pollen from a flower of the other kind. Such dimorphism occurs in the primrose, lungwort, flax, etc. In the latter part of the book the distinguished author deals with the curious cleistogamic flowers, such as those of violets. This plant produces, besides the open purple flower, inconspicuous closed flowers, which are not visited by insects, but are regularly self-fertilised. In concluding the lecture, Professor Weiss pointed out that this work of Darwin on the fertilisation of flowers had an important bearing on his theory of the origin of species, for the universality of cross-fertilisation insured a much larger number of variations in the offspring, and therefore a larger number of favourable variations from which the fittest to survive were selected by the competitive struggle for existence.

MR. ALBERT H. HADDON, of Amersham, writes in reference to a circular now being issued by Mr. Thomas Beecham to every chemist and druggist in business, and asks the following question: "Admitting that Mr. Beecham has mainly built up his enormous trade by the assertion that his pills are 'worth a guinea a box,' does he think it would be robbing the public to insist on the minimum price being 1s.? Surely, if Mr. Beecham can present the British public with 20s. in the guinea, he might allow the chemist 2½d. for distribution?"

MESSRS. F. SCHUTZE AND Co. inform us that a most disastrous fire broke out on their premises at 36A, Aldersgate Street, on Saturday, October 22, and has compelled the firm to obtain other premises at 89, Southwark Street, S.E. The firm has at the present moment a large variety of new goods, and as the stock will be completed within the next few days, orders will be executed as usual. Messrs. Schutze and Co. thank their friends for the many kind expressions of sympathy they have received, which it is impossible to acknowledge severally.

THE SCHOOL OF MEMORY TRAINING, founded by the late Professor Alphonse Loiset at 37, New Oxford Street and 200, Regent Street, London, is now being conducted at 70, Berners Street, Oxford Street, W., by the same staff of professors and assistants who were for many years with Professor Loiset. The system and course of procedure followed are on the same principles as formerly, and a special effort is being made to bring the pupils and teachers in close union, in order that the idiosyncrasies of each pupil may be discovered and special help and individual attention given in every instance.

MR. R. A. ROBINSON, chemist and druggist, has been returned as a Councillor for the West Ward of the borough of Tunbridge Wells.

MR. BENJAMIN JOHN, chemist and druggist, of the firm of Messrs. Davies and John, 15, Old Bond Street, Bath, has been elected as one of the representatives of St. Michael's Ward.

THE SALE OF LAUDANUM.—Mr. D. Whittingham, district coroner for East Kirkby, at an inquest touching the death of Emanuel Leivers (56), who committed suicide on Wednesday, October 26, by laudanum poisoning, stated on behalf of the jurors that whilst the chemist who supplied the drug had no doubt acted in accordance with the law as it stands, they were of opinion that the facilities for obtaining laudanum should be better safeguarded than they are at present.

Receiving Orders in Bankruptcy.

(From the London Gazette.)

John Joseph Laws, Chemist and Druggist, 14, Greyhound Lane, Streatham Common, S.W.

Charles Cook, Grocer and Dealer in Drugs, 93, Manor Lane, Shipley, Yorks.

WELSH NEWS.

SWANSEA AND DISTRICT CHEMISTS' AND DRUGGISTS' ASSOCIATION.—The annual meeting of this Association took place at the Cameron Arms Hotel, on Thursday, October 27, when there were present Messrs. J. Hughes (President), J. Dryden (Vice-President), J. Davies (Hon. Sec.), Ll. Thomas (Morrison), J. G. Isaac (Neath), E. Thomas (Castle Street), J. Davies (High Street), and N. M. Grose. Mr. Lloyd (Vice-President) wrote expressing inability to attend, owing to illness, and letters of apology for non-attendance were also read from Mr. Davies and Mr. Yorath. After the usual preliminary formalities, the election of officers was proceeded with, Mr. Hughes being re-elected President, Mr. Dryden Vice-President, and Mr. J. Davies Hon. Sec. The report of the Association and the balance sheet were in every respect reassuring, there being a substantial balance on the right side, and the Association unanimously decided to send one guinea to the Swansea Hospital and the same to the Benevolent Fund of the Pharmaceutical Society.—A discussion was held on two questions on the agenda, the first matter having reference to the official report of the Federation of Local Pharmaceutical Associations' meeting, held at Belfast, at which important resolutions were discussed and approved of, which are now submitted to local associations for discussion and amendment. The second matter was an important communication received from the P.A.T.A., in which valuable suggestions were made for consideration. Both subjects were dealt with very carefully. On the Federation report, however, no definite result was arrived at, and there was no resolution submitted to the meeting. Under these circumstances, therefore, the consideration of both matters was adjourned.

THE ANNUAL DINNER OF THE SWANSEA ASSOCIATION was held on Thursday, October 27, at the close of the annual meeting. Mr. Hughes (the President) presided, and was supported by all the gentlemen who had been present at the annual meeting, together with Messrs. C. S. Marsden, J. S. Mitchell, J. D. Williams, etc. An excellent repast was followed by an exhaustive toast list. The loyal toasts being duly honoured, Mr. David Thomas proposed "Success to the Medical Profession." He pointed out that the Swansea chemists were anxious to co-operate with the members of the medical faculty, and he sincerely trusted that the relationship which now existed between the professions would strengthen in cordiality still more. He coupled with the toast the name of Dr. Edgar Evans. Dr. Evans responded, and acknowledged on the part of the medical profession the thoroughly generous way in which the toast had been given and received. He eulogised the local chemists' association, and said that he considered that as a matter of fact it exercised greater power than even the medical organisation in the town. "The Success of the Swansea and District Chemists' and Druggist' Association" was proposed by Mr. C. S. Martin, and the names of Mr. N. M. Grose and Mr. J. G. Isaacs were coupled with it, after which "The Chairman's Health" was given by Dr. Edgar Evans. This was very enthusiastically received, and the President very felicitously replied. The local Association, he pointed out, had contributed largely to the hospital and to the Pharmaceutical Society's Benevolent Fund. "The Vice-President" (Mr. Dryden) was proposed by Mr. Hughes, and Mr. Dryden having replied, "The Visitors" was given by Mr. J. Davies, the Secretary of the Association. Messrs. Mitchell, Marsden, and Dr. Evans having acknowledged the toast, a very happy reunion was brought to a close.

IRISH NEWS.

THE GUARDIANS OF THE BELMULLET UNION are in a curious dilemma in connection with their dispensary medical officer's vacancy. They advertised for a doctor, and received two replies, each from a female practitioner. They will not appoint a lady doctor, and the salary offered is too small to attract any male candidates.

THE DUBLIN FIELD AND BOTANIC CLUB commenced its fourteenth winter session by a general meeting held in the Royal Irish Academy House. An interesting demonstration of lantern slides was given, and Dr. R. J. McWeeney, of bacteriological fame, lectured on "Fungi," and during the intervals between the lantern exhibits the audience inspected the scientific exhibits, of which there was a large and varied collection.

THE CORK HARBOUR COMMISSIONERS have framed new bye-laws regulating the importing and exporting of carbide of calcium into and out of the port of Cork, and want the Board of Trade to confirm them.

THE POOR LAW GUARDIANS at Skibbereen Union think that their dispensary doctor, who also acts as compounder of medicines, is too old for the double work, and propose to superannuate him, but are willing that he should continue to serve as their chemist. The Local Government Board object to this on the ground that if Dr. Hadden, the individual referred to, is beyond his labour as a doctor he is equally incapacitated as a drug mixer, and decline to pension him in part. Dr. Hadden's view of the case is in course of asking.

THE GOVERNORS OF THE MAYO ASYLUM have accepted the tender of Mr. W. P. Ryan, the Medical Hall, Castlebar, for the supply of medicines and drugs to that institution.

AT DUBLIN, on the 28th ult., Mr. J. Tyrie Turner, M.P.S.I., Vice-President of the Irish Pharmacists' Association, was the recipient of a handsome presentation at his residence, 52, Upper Sackville Street. Mr. Turner is extremely popular with his pharmaceutical colleagues.

THERE WOULD SEEM to be an unusual demand in Dublin for qualified assistants. Possessors of the Society's hall mark of qualification, e.g., "L.P.S.I.," are practically able to make their own terms. One well-known city house recently advertised in the daily newspapers for a senior compounder, and only received one reply, although the salary offered was somewhat above the average and the hours of duty not excessive.

THE TENDER OF MESSRS. HARRINGTON AND SONS, LTD., pharmaceutical chemists, Cork, to supply medicines and medical appliances to the Kinsale Union, has been accepted by the guardians of that institution.

NEW ACADEMICIANS.—The annual general meeting of the Royal Academy of Medicine was held last week at Dublin, when the following were amongst those elected office bearers for the ensuing year:—Sir George F. Duffey, Government Examiner to the Pharmaceutical Society of Ireland, and A. N. Montgomery, L.A.H., to act as members of the Medical Section Council; and as Council to the Section of State Medicine: Sir Charles Cameron, city chemist, and Ninian Falkener, M.D., formerly of Hamilton, Long and Co.'s State Pharmacy, Dublin, and late of the Pharmaceutical Society. The appointments are popular ones.

NOT IN THE PROGRAMME.—At a conversazione held at the Royal University, Dublin, one of the chemical combustions which occurred during the scientific experiments was neither welcome nor in the programme. It was startling at first sight to all, but as most of the audience took it as part of the demonstration a possible panic was averted; a big blaze on the floor of the central hall was the unlooked-for event. The bottom of one of the lamps resting on the ground gave way, with the result that the light and petroleum, mingling together, covered the floor for a considerable space with liquid fire. Several gentlemen who rushed forward to quell the flames had their academic gowns scorched, but happily this was the extent of the damage, and after a short time the lecture was continued.

THREE GUINEAS PER COPY.—In connection with a letter sent by the Athy guardians to the Local Government Board, on the subject of the compounding of medicine, the Local Government Board has replied that a copy of the new British Pharmacopœia may be procured. The guardians now fear that if one doctor gets a copy of the work the other doctors will also want one, and as they believe the book costs about three guineas per copy this will, they think, prove a heavy item of expenditure.

THE "DUBLIN GAZETTE," the official organ of the Government, contains a Privy Council order approving of the appointment of Mr. A. Forbes Watson, B.Sc., of 33, Westmoreland Street, as examiner to conduct the pharmaceutical and general chemistry division of the Licence examination of the Society under the Pharmacy Act, vice Mr. A. L. Doran, M.P.S.I., Bray, resigned.

A LOCAL GOVERNMENT BOARD INQUIRY is proceeding at Macroom, respecting charges made by the dispensary medical officer, Dr. Barrett, against the master and *vice versa*. The evidence shows that both officials have been at variance for some time, and that the matter has been reported at various times to the Local Government Board. The prescribing and supplying of drugs and medicines form an important feature in the inquiry, but the details are too lengthy for report. The result of the inquiry has not yet been made known.

CARBOLICIDE.—At Smithborough, Co. Monaghan, a woman poisoned herself with carbolic acid. The jury attributed the fatality to temporary insanity. One report said that the deceased had been "delirious and depressed," and that she had taken the poison in mistake for a medicine alongside.

IT IS VERY DIFFICULT to decide on some occasions whether a doctor shall offer his services. He has as much right to the privileges of the Habeas Corpus Act as one of the million. The precariousness of payment in many instances acts as a deterrent in volunteering medical aid. The case which occurred some time ago in an Irish village, and which is, unhappily, too true, is new light out of an old window. The medical man, when he had dressed and bandaged a cut head, required the owner thereof to furnish the amount of the fee, but he, not having any money, professed his inability to comply with this very reasonable request. Whereupon the doctor removed the bandage.

WITH THE END OF THE CURRENT YEAR will cease the present system of contracting for the supply of drugs and medicines to the Poor Law Boards of Ireland. On and from the 1st of next January, the professional patriot's occupation will be gone, and no longer will arise the wail of the down-trodden "Patlander," as after the old year has been rung out will be ushered in the new era of local government on laws similar to those obtaining in England. So far as the drug and chemical trade is concerned the change will prove very beneficial indeed, as it will no longer be possible to "Jerrymander" as heretofore the contracts for medical supplies to our workhouses. A fair field and no favour will henceforth rule, and although this may not suit the book of those included in the nomenclature above described, and the influence of the "friend at court," will no longer be valuable, a better condition of affairs than at present exists will arise in the future and work out in the long run to the credit and capital of the guardians and contractors concerned. Of late the *modus operandi* of guardians and certain traders anxious to do a good turn for one another has become little short of a public scandal, and the effect has been to drive off many enterprising contractors who would otherwise have competed for the contracts. A striking example of the contract system was recently given in the Journal, and this is only one of a very large number of similar cases in which the guardians have in many cases openly flouted the Local Government Board and put in their own nominees, or else made it so unpleasant for the objectionable contractor to remain in the field that he generally retired with a good grace to make room for his more favoured successor. In future all drug and medicine contracts will be decided on their merits alone, and none but the most suitable in every respect will, it is expected, be entered into.

THE BELFAST NATURALISTS' FIELD CLUB held its final excursion of the session to the demesne of Holymount, Downpatrick. The marshes which fringe the estate were made to unlock their treasures to botanists and conchologists. There was the marsh-violet (*Hottonia palustris*), the small knot-weed (*Polygonum minus*), and the *Apium inundatum*, the best marsh wort in the vicinity. The woods were white with the guelder-rose (*Verburnum opulus*), and the hedges were sabled with blackberries, but as ill-luck would have it the coleopterists could not discover a sufficiency of beetles. A number of ladies accompanied the excursion, and in justification of their enthusiasm and interest furnished over twelve score botanical and other specimens. At Ballynoe was observed one of the most perfect archaeological stone circles in the county, it appears to have had three concentric rings of stone. The Dun of Screen, the Royal Rath, the Old Cathedral, and the High Cross of Downpatrick lately restored were viewed with veneration as the vestiges of a vanished age.

SCOTTISH NEWS.

THE GOVAN COMBINATION PARISH COUNCIL has decided to order the medicines required for its out-door department from the New Apothecaries' Company, Glasgow, and the same Board has ordered from Messrs. Armour and Co., London, one Winchester of glycerol of pepsin and one gross of two-ounce pots of extract of beef. The work of the dispensary of the Govan Combination Parish Council has been seriously hampered for some time past through the illness of Mr. John Lockhart, the dispenser. At last week's meeting of the Board the matter was considered, and a motion was made that Mr. Lockhart should provide a qualified assistant during his illness. Latterly, however, this motion was withdrawn, and it was agreed to appoint a qualified female dispenser at a salary of £60 per annum, and to allow Mr. Lockhart £60 a year.

PRESENTATION AT GLASGOW.—On Friday, October 28, the employés of Mr. John McMillan, 17, Great Western Road, Glasgow, and a few friends, met in the Bank Restaurant, Queen Street, and presented Mr. James B. Watson with a number of books, including the British Pharmacopœia, Remington's 'Pharmacy,' 'Pharmaceutical Formulas,' 'Extra Pharmacopœia,' etc., on the occasion of his leaving the firm to open a pharmacy at Springboig, Shettleston, a rising suburb. Mr. Watson has been over six years with Mr. McMillan, and was most of the time his senior assistant. Mr. Ballingall, in a few well-chosen remarks, made the presentation, to which Mr. Watson suitably replied. Songs and recitations followed, and a very pleasant evening was spent.

MR. ALEXANDER ALLAN, chemist and druggist, Inverness, intimates that he has disposed of his business at 4, Church Street, to Mr. Thomas Mackenzie, pharmaceutical chemist, late Principal of the Glasgow and West of Scotland School of Pharmacy. Mr. Mackenzie, who formerly served five years with Mr. Allan, and has since been with Messrs. Squire and Sons, Oxford Street, London, will carry on the business under the style of Allan and Mackenzie.

Publications Received.

AN ELEMENTARY TEXT-BOOK OF BOTANY, by SIDNEY H. VINES, M.A., D.Sc., F.R.S. Pp. xv. + 611, with 397 illustrations. Price 9s. London: Swan, Sonnenschein and Co., Ltd. 1898. From the Publishers.

FIRST STAGE INORGANIC CHEMISTRY (PRACTICAL), by FREDERICK BEDDOW, D.Sc., Ph.D. Pp. viii. + 163. Price 1s. London: W. B. Clive, University Correspondence College Press. 1898. From the Publishers.

PRESCRIPTION READING: a Text-book for Pharmaceutical Students, by WILLIAM WATSON WILL. Price 12s. 6d. net. London: The Metropolitan College of Pharmacy. 1898. From the Author.

A MIDDLE ALGEBRA. Based on the Algebra of Radhakrishnan, by WILLIAM BRIGGS, M.A. F.C.S., F.R.A.S., and G. H. BRYAN, Sc.D., F.R.S. Pp. vi. + 354. Price 3s. 6d. London: W. B. Clive, University Correspondence College Press, W.C. 1898. From the Publishers.

ON THE STUDY OF THE HAND FOR INDICATIONS OF LOCAL AND GENERAL DISEASE, by EDWARD BLAKE, M.D. Pp. 53. Price 2s. 6d. London: Henry J. Glaisher, 57, Wigmore Street, Cavendish Square, W. 1898. From the Publisher.

CHEMISTRY FOR SCHOOLS. An Introduction to the Practical Study of Chemistry. By G. HAUGHTON GILL. Tenth edition, revised and enlarged by D. HAMILTON JACKSON, B.Sc., Ph.D. (Heid.). Pp. xvi. + 368, with 100 illustrations. Price 4s. 6d. London: Edward Stanford, 20 and 27, Cockspur Street, Charing Cross, S.W. 1898. From the Publisher.

Newcastle Chemical Report.

NOVEMBER 2, 1898.

This market continues to have a quiet tone, which is not unusual at this season of the year now that Baltic shipments of heavy goods are daily lessening. Prices, however, are unchanged and quoted as follow:—Bleaching Powder, according to market, £5 10s. to £6. Soda Crystals, basis, £2 5s. Caustic Soda, 70 per cent. basis, £7 to £7 5s. Soda Ash, 52 per cent., £4 5s. Alkali, 52 per cent., £5. Sulphur, £4 15s. to £5 per ton.

MARKET REPORT.

London Report.

NOVEMBER 3, 1898.

Trade has been somewhat quiet during the past week, the tension in foreign political affairs having probably hardly tended to encourage business. It is to be hoped, however, now that the apprehensions that it might possibly after all come to a war between England and France have been considerably allayed, that we may see more activity in the drug and chemical markets. Quicksilver was advanced 5s. per bottle to-day, which may very likely mean a rise in the price of Mercurials, as a set-off to the reduction in makers' prices of same, as announced on 1st inst. Oil of Cloves 2d. per lb. lower. Acid Citric and Tartaric and Cream of Tartar quiet. Opium quiet and unchanged, except for soft shipping descriptions, which are rather dearer. Morphia and Codeia quiet and unchanged. Sulphate of Ammonia dearer. Bromides and Iodides unchanged. Chlorate of Potash firm. Cod-liver Oil dull. Glycerin steady. Quinine is firm. Cocaine steady. Sulphonal and Phenacetin unchanged. Acetanilide weak. The following are actual prices of articles of chief interest:—

ACETANILIDE—Is very quiet at 11d. to 1s. 1d. per lb., according to quantity.

ACID BORACIC.—A moderate business doing at 24s. per cwt. for crystals and 26s. per cwt. for powder.

ACID CARBOLIC—Quiet but steady at 6½d. to 6¾d. per lb. accord to make for 35-36°C. *ice crystal* in large bulk packing, other qualities and packing being quoted in proportion. *Crude* unchanged at 1s. 11d. per gallon for the 60° F., and 2s. 3d. per gallon for the 75° F. Liquid, 95 per cent. of pale straw colour 1s. 2d. per gallon in large casks.

ACID CITRIC—Remains quiet at 1s. 2d. to 1s. 2¼d. per lb. for *Crystals*.

ACID OXALIC.—Steady at 3¼d. to 3½d. per lb. for *Crystals*, and 3½d. to 3¾d. per lb. for *Powder*.

ACID TARTARIC.—*English* on the spot is quoted 12¼d. to 1s. 1d. per lb. for *Crystals*, *Foreign* being quiet at 12¼d. to 12½d. per lb.

AMBERGRIS—Is becoming scarcer, and fine grey is quoted 100s. to 110s per oz.

ALUM—Steady at £5 7s. 6d. per ton for loose lump, and £6 per ton for ground in bags.

AMMONIA COMPOUNDS.—*Sulphate* is dearer at £9 12s. 6d. per ton for grey prompt, 24 per cent., London; Hull and Leith, same price. *Carbonate* firm at 3d. to 4d. per lb., according to quantity and package. *Bromide* unchanged at 2s. 1d. per lb. *Iodides* dull at 13s. 7d. per lb. *Muriate*: Chemically pure small crystals, 30s. to 32s. per cwt.; free from metals, white, 25s. 6d. to 26s. 6d. per cwt. *Oxalate*, 5¼d. to 5½d. per lb. *Sulpho-cyanide* quiet at 1s. to 1s. 1d. per lb. *Sal ammoniac* unchanged at 35s. per cwt. for sublimed firsts; seconds, 33s. per cwt.; crushed for batteries, 37s. and 35s. per cwt. respectively.

ARSENIC.—Firm at 18s. per cwt. for best white powder, and 34s. per cwt. for fine white lump.

ATROPIA.—Makers are firm at 15s. 6d. per oz. for the *sulphate P.B.*, and 17s. 10d. per oz. for the *pure*.

BALSAM CANADA.—Whilst demand is slow holders are firm at 1s. 2d. per lb. for good thick in tins.

BALSAM COPAIBA—Seems to be rather easier, good *Maranhã* can be had at 2s. 1d. to 2s. 2d. per lb., the same being asked for good thin *Para* for distilling.

BALSAM PERU—Is very quiet at 8s. 9d. to 9s. per lb.

BALSAM TOLU.—Demand is slow, quotations 1s. 6d. to 1s. 8d. per lb.

BLEACHING POWDER—Quiet but firm at £6 10s. to £7 per ton.

BORAX—Steady at 14s. 3d. to 14s. 9d. per cwt. for *lump*, and 14s. 6d. to 15s. per cwt. for *powder*.

BROMIDES and BROMINE—Are without change.

CAFFEINE—Is steady at 14s. 4d. per lb. for the *pure*, and 11s. 2d. per lb. for the *citrate P.B.*

Monthly Statement of Drugs, etc., Warehoused in London.—November 1, 1898.

Articles.	Oct., 1898.		Stocks, Oct. 31.		Articles.	Oct., 1898.		Stocks, Oct. 31.		
	Arrivals.	Deliveries.	1898.	1897.		Arrivals.	Deliveries.	1898.	1897.	
Aloes (all kinds).....	packages	172	197	6,627	4,821	Gum, Mastic	packages	—	8	3
Balsams	"	262	76	546	413	Myrrh	"	20	41	553
Cinchona Bark	"	1,843	2,659	20,734	19,630	Olibanum	"	—	645	3,085
Quinine Sulphate	ounces	78,480	91,040	1,719,632	1,476,944	Tragacanth	"	249	667	1,192
Beeswax	packages	647	461	2,742	3,077	Ipecacuanha	"	62	83	147
Camphor	"	330	253	9,258	11,475	Jalap	"	—	5	324
Cardamoms	"	291	415	1,395	494	Nux Vomica	"	116	41	361
Cochineal	"	107	153	2,559	1,996	Oils, Castor	"	195	140	509
Calumba Root	"	—	416	491	59	Olive	"	260	273	829
Cubebs	"	—	54	1,869	472	Aniseed	"	132	18	252
Dragon's Blood	"	13	15	21	94	Cassia	"	—	1	78
Galls (all kinds)	"	21	971	4,523	4,590	Rhubarb	"	623	110	1,547
Gum, Ammoniacum	"	15	—	74	32	Saltpetre	tons	229	1,014	1,894
Arabic, all kinds	"	2,124	2,558	9,850	13,414	Sarsaparilla	packages	95	128	331
Asafetida	"	195	54	448	438	Senna	"	1,113	836	1,635
Benjamin	"	61	315	2,566	2,911	Shellac	"	1,197	6,102	48,853
Galbanum	"	—	—	15	10	Terra Japonica, Gambier	tons	314	394	748
Gamboge	"	55	18	358	296	Cutch ..	"	90	69	1,126
Guaiacum	"	4	4	85	82	Turmeric	"	9	52	305
Kino	"	—	4	37	19					490

The stocks of camphor, oils of aniseed and cassia are incomplete, some warehouses not making returns.

CALUMBA ROOT.—The deliveries have been very heavy during the past month, and prices are decidedly firmer. From 18s. to 22s. per cwt. is asked for ordinary sorts.

CAMPHOR.—The market for *crude* is very firm, but the extreme prices asked by importers prohibit business. An early advance in *refined* is expected.

CASCARA SAGRADA.—25s. per cwt. is now asked for new bark, whilst for old, which is becoming scarce, 27s. to 28s. per cwt. is the price.

CLOVES.—Privately *Zanzibar* quiet, there are sellers, October-December delivery at 3½d., and January-March at 3¾d. At auction 100 cases *Penang* were offered; 52 cases ordinary dark unpicked, sold, without reserve, at 4½d. to 4¼d.; 10 cases good picked at 9½d. to 10¼d., and 2 cases fine bright at 1s.; 1 box *Grenada* also sold at 3¼d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*, commercial 1s. 3d., pure 1s. 9d. to 2s. per gallon. *Benzole*, 50 per cent., 10d., 90 per cent., 9d. per gallon. *Crude naphtha*: 30 per cent. at 120° C., 4d. per gallon. *Solvent naphtha*: 95 per cent., at 160° C., 1s. 7d.; 90 per cent., at 160° C., 1s. 3d.; 90 per cent., at 190° C., 1s. 4d. per gallon.

COCA LEAVES.—There are several inquiries on the market for *Truxillo* but nothing is to be had under 8d. per lb.

COCAINE.—Market is quiet but steady at 9s. 9d. per oz. for the *Hydrochlorate* in 25-oz. tins and in 100 oz. lots for the best brands, makes less in favour being quoted at rather less money.

CODEIA.—Quiet but steady at 12s. 6d. per oz. for the *pure*, the *salts* being 1s. per oz. less.

COD LIVER OIL.—Without change, with, however, but little doing in the article. Quotations are 80s. to 85s. per barrel, *f.o.b.*, according to brand, for good new non-congealing Norwegian oil, in tin-lined barrels of 25 gallons.

CREAM OF TARTAR.—There is not much doing this week and prices are unaltered, first white *crystals* on the spot 72s. to 77s. per cwt., and for *powder* 74s. to 82s. per cwt. according to strength.

DILL SEEDS.—Good *English* are quoted at 45s. per cwt.

ERGOT.—Continues very firm, although not much business has been done since our last report. Quotations are: 1s. 3d. per lb. for *weavily Spanish*, and 1s. per lb. for *Russian* in same condition.

ESERINE (PHYSOSTIGMINE).—Makers' prices remain unchanged at 3s. per gramme for the *pure*, and 2s. per gramme for the *Sulphate* and *Salicylate*.

GINGER.—*Cochin* is firmer. Of 342 bags rough kinds offered, 192 bags sold, chiefly fair bright washed at 23s. to 23s. 6d., one lot cuttings at 14s. Of 78 cases cut kinds, 26 cases ordinary B cut sold at 58s. *Jamaica* in good demand and firm. 115 barrels sold: Common dark Rhatoon, 63s. to 65s.; good common to low middling, 68s. to 74s.; middling plump, 78s.; 4 half-barrels fine also sold at 96s.

GLYCERIN.—Steady at 52s. 6d. to 55s. per cwt. for *English*, and 55s. to 65s. per cwt., according to brand, for *German* white double distilled, chemically pure, 1260° quality, in tins and cases.

GUM TRAGACANTH.—There has been an active demand for most

qualities and extreme prices have been paid. The selection now is very restricted, and as there is very little coming forward, prices will probably be maintained. *Firsts*, £14 10s. per cwt.; *Seconds*, £12 10s.; *Thirds*, £11 15s.; *Fourths* £10 5s., and other qualities down to 40s. per cwt.

IODIDES and IODINE.—Unchanged from last week.

IPECACUANHA.—Is very firm at 10s. 2d. per lb. for *Rio*, and 7s. 6d. per lb. for *Carthagena*. Stocks have been somewhat reduced on the past month.

JAPAN WAX.—Remains quiet at 33s. per cwt. on the spot.

LITHIA.—Is firm, makers still quoting the *carbonate* at 10s. 8d. per lb. in 2 cwt. lots. Price of the *citrate* is also unchanged.

MANNA.—Is dearer. For new seasons *Flake* 3s. per lb. is now the price, *small* 1s. 5d. per lb., and *sorts* 1s. per lb.

MENTHOL.—Remains steady at 7s. to 7s. 3d. per lb. for bulk packing.

MERCURIALS.—The reduction in prices which was advised last week as having been decided upon by makers for November 1, has been duly announced. To-day's advance in price of quicksilver may, however, cause same to be modified again shortly. To-day's prices for 5 to 10 cwt. lots are: *Corrosive sublimate*, 2s. 2d. per lb.; *Calomel*, 2s. 6d. per lb.; *Red Oxide cryst.* or *levigated*, 2s. 10d. per lb.

MORPHIA.—Quiet and unchanged at 5s. (not 4s., as by a slip of the pen erroneously stated last week) for the *Hydrochlorate Powder*.

MUSK.—Is quiet, but no really fine Tonquin pods Pilo I, thin blue skins, are to be had under 70s. to 72s. 6d. per oz.

NITRATE OF SODA.—Is quiet at £7 12s. 6d. to £7 15s. per ton for the commercial and £8 to £8 2s. 6d. for the refined.

OILS (ESSENTIAL).—*Clove* is cheaper at 3s. 1d. per lb. for *English*. *Star Aniseed* is slow of sale at 6s. 6d. per lb. on the spot. *Peppermint*: American H.G.H. without demand, nominal value on the spot 5s. 6d. per lb.; Wayne County easier at 3s. 8d. per lb. for choice, and 3s. 3d. to 3s. 6d. per lb. for lower grades; Japan is also quiet at 3s. 4½d. per lb. for dementholised and 5s. per lb. for 40 per cent. *Cassia* dull of sale and business restricted to arrival sales; 65 to 70 per cent., October to November steamer, at 4s. 3d. per lb., *c.i.f.* *Lemongrass* quiet at 3¾d. per oz.

OILS (FIXED) AND SPIRITS.—*Linseed*: rather easier but without actual change in values. Spot pipes, £17 15s., barrels £18 2s. 6d. *Rape*: ordinary brown on the spot dearer at £22 10s., refined so far unchanged at £23 15s. *Cotton*: lower at £13 10s. for London crude spot. Refined, £15 to £16, according to make. *Olive*: green oils, £29 to £32 per ton; table oils, 4s. 3d. to 6s. per gallon, according to quality. *Coconut*: dearer at £25 for Ceylon on the spot, near at hand £23 10s. *c.i.f.*; *Cochin*, spot, nominally £28. *Palm*: Lagos, on the spot, £22 10s. *Turpentine* has been dearer during the week, but with more pressure to sell closes at last week's price, 26s. 9d. per cwt. for American on the spot. *Petroleum Oil* steady at 5½d. per gallon for Russian and 6½d. per gallon for American; water white 7¼d. per gallon. *Petroleum Spirit* very firm at 7¼d. per gallon for American; deodorised, 8d. per gallon.

OPIUM—Quiet. *Persian* unchanged in price at 11s. 3d. to 11s. 6d. for fair, and 11s. 9d. to 12s. for finest; *soft shipping* good to fine, 13s. to 14s.; seconds, 10s. 9d. to 11s. 9d.; *druggist*, good to fine Smyrna, 11s. 3d. to 11s. 9d.; seconds and manufacturing, 10s. 6d. to 11s. Very little doing, no change, and only small sales from hand to mouth of *druggists'* kinds, but a good business has been done in *soft shipping*, which shows a slight advance on late rates.

PHENACETIN—Quiet and without change at 3s. 9d. to 4s. 3d. per lb. for *crystal* or *powder* in quantity, and for bulk packing. Bayer's phenacetin is still quoted 5s. 6d. per lb.

PHENAZONE—Is without change in value. Same may also be said of *Antipyrine Knorr*.

POTASH COMPOUNDS.—*Chlorate* is firm at 4d. per lb. for crystals, and 4½d. per lb. for powder. *Bicarbonate* unchanged at 30s. to 35s. per cwt., for crystals or powder, according to brand. *Bromide* firm at 1s. 9½d. per lb. *Iodide* dull at 10s. 3d. per lb. *Prussiate* firm at 6¼d. to 7d. per lb. for the yellow, and 1s. 2d. per lb. for the red. *Cyanide*: Orders for this article are eagerly competed for if for good quantities; ordinary lots 1s. to 1s. 1d. per lb., for the 98 to 100 per cent. white cake. *Bichromate* steady at 3½d. to 3¾d. per lb. *Permanganate* continues dull at 50s. for small, and 55s. per cwt. for large crystals. *Oxalate* firm at 5d. per lb. for the neutral.

POTASH PERMANGANATE—Is quiet, there being still sellers at somewhat below 50s. per cwt. for the small crystals in ton lots, the large crystals being quoted 5s. per cwt. more money.

QUICKSILVER.—Importer to-day advanced his price 5s. per bottle to £7 10s. There are, however, sellers from second hand at 1s. per bottle less money.

QUININE.—Best *German* brands continue very quiet, and but little business is doing. Price is 10d. to 10½d. per oz. for large bulk and 1000-oz. lots.

SALICINE.—A fair business doing at 10s. 6d. per lb. in quantity.

SALTPETRE.—*English* refined 20s. to 21s. per cwt., according to package.

SARSAPARILLA.—The stocks of *Honduras* are small, but there are still sellers at 1s. 6d. per lb.; advices from New York report small stocks there also.

SCAMMONY.—*Virgin*: Fine firsts have been sold at 30s. per lb.

SHELLAC.—At the auctions on Tuesday only moderate supplies were catalogued. The demand for *Second Orange* was fairly good, and sales were now and again made at an advance of 1s. per cwt. A total of 884 cases were offered and 577 cases sold. *Second Orange*: of 562 cases 474 sold, strong pale curly at 76s., dull palish at 73s., fair to good bright strong at 67s. to 69s., fair bright reddish at 64s. 6d. to 65s., bronze red at 64s., ordinary reddish 63s. to 64s., flimsy dull at 63s., flat liver at 58s., more or less cakey, good bright red at 64s. to 65s., bronze red at 63s. to 64s., curly red at 62s. to 63s., red hard block at 59s.; Rangoon, claret blocky at 54s. *Garnet*: Of 147 cases 47 sold, partly without reserve, blocky G at 53s., Rangoon blocky at 55s., low blocky at 47s. to 48s. *Button*: Of 175 cases 56 sold, partly without reserve, genuine stamped blocky at 84s., ordinary to fair BL 1 at 72s. to 75s., glassy BL 2 at 66s. to 69s., common dark blocky at 43s., very low 26s. Since the auctions some small business has been done at prices which show some advance on those established there.

SODA COMPOUNDS.—*Ash* is firm at £5 to £5 10s. per ton, according to strength. *Crystals* steady at 57s. per ton, ex-ship terms. *Bicarbonate*: £7 5s. per ton for the 97 per cent., and 18s. 6d. per cwt. for the chemically pure, fully bicarbonated quality. *Bromide* unchanged at 2s. per lb. *Hyposulphite* steady at 6s. to 8s. per cwt., according to brand. *Iodides* unchanged at 11s. 7d. per lb. *Bichromate*: 2¾d. to 3d. per lb. *Nitrate*: £7 15s. per ton for the ordinary, and £8 2s. 6d. per ton for the refined. *Acetate* unchanged at 35s. 6d. per cwt. for the chemically pure, and 13s. 6d. per cwt. for the ordinary refined.

SOY—Remains quiet with small sales on the spot a 1s. 4½d. per gallon.

SPICES (VARIOUS).—*Black Pepper* flat; 100 bags Lampong sold at 4½d., 256 bags Singapore at 4½d. to 5d., and 272 bags Telli-cherry at 4½d. *White Pepper* quiet; 135 bags Penang sold, chiefly without reserve, at 7¼d.; 150 bags Siam bought in at 8d.; of 440 bags Singapore only 40 bags sold, fair 7½d., one lot fine bold 9½d. *Chillies*: 217 bales Zanzibar bought in at 40s., 20 cases good Japan sold at 45s. *Capsicums*: 2 bales Natal sold at 65s. to 70s., also 173 bags small red West Coast African at 29s. to 29s. 6d. *Cinnamon*: 56 bags broken Ceylon sold at 8½d., 80 bags coarse broken bark sold at 5½d., with one lot 4½d. *Mace* quiet; Penang mostly

bought in; pickings 1s. 3d. to 1s. 5d., good bold bright 2s. 4d. to 2s. 5d.; 32 packages West India sold at 1s. 4d. to 1s. 7d., two lots good 1s. 8d. to 1s. 10d. *Pimento* firm, but 255 bags were mostly bought in at 4½d. to 5d.

SUGAR OF LEAD.—*Foreign* is very firm at 27s. 6d. per cwt. on the spot. *English*, 31s. per cwt.

SULPHATE OF COPPER—Is firm at £17 10s. to £18 15s. per ton, according to brand.

SULPHONAL—Is still obtainable from the two principal makers at 7s. 3d. per lb. for both *cryst.* and *powder* in bulk packing.

SULPHUR—Firm. *Roll*: *English*, 7s. 6d. to 8s. per cwt.; foreign, 6s. 6d. per cwt. *Flowers*: *English*, 11s. per cwt.; foreign, 7s. per cwt.

STAR ANISEEDS—Are held on the spot for 125s. per cwt.

Liverpool Market Report.

NOVEMBER 2, 1898.

ARSENIC—Is dearer; powder, £17 per ton; lump, £32 per ton.

BEESEX.—24 packages of Gambia were sold privately, but at fully late rates.

CANARYSEED—Is selling better as regards Turkish, of which 25 bags sold at 29s. per 464 lbs. Some 75 bags of Spanish sold at 32s. per 464 lbs.

CARNAUBA WAX.—2 tons sold at 50s. per cwt. for yellow, and 33s. 6d. to 37s. 6d. for grey.

CHILLIES.—Sierra Leone fruit have changed hands at 37s. 6d. per cwt.

GINGER.—50 bags Sierra Leone found buyers at 19s. 6d. per cwt.

HONEY.—100 barrels Chilian sold at 22s. 6d. per cwt. for Pile 2, 25s. for Pile 1, and 25s. 6d. to 30s. for Pile X.

LINSEED—Continues firm and is still rising; Calcutta is 39s. 3d. per 416 lbs., and North American 39s. per 424 lbs.

OILS (FIXED) AND SPIRITS.—*Castor* is in continuous fair demand. Calcutta sells at 3½d. per lb., French at 2½d. to 3d. per lb. (some 20 tons having been disposed of at the former rate), Madras 2½d. to 2¾d. *Olive* is in somewhat limited demand, Spanish oil being quoted at £29 10s. to £30 per tun. *Linseed* of Liverpool make is steady at 18s. 6d. to 19s. per cwt. *Cottonseed* is 15s. 6d. to 15s. 9d. per cwt. *Spirits of Turpentine* is at the higher price of 28s. per cwt. It has been up to 28s. 3d. but now is firm at 28s.

POTASH SALTS—Unchanged.

SODIUM SALTS.—Borax is extremely firm at £14 to £14 10s. per ton, and higher rates are looked for. Other salts unchanged.

Manchester Chemical Report.

NOVEMBER 2, 1898.

Heavy chemicals are dull, and even in the best informed circles the course of prices in the future is surrounded with doubt. Therefore, people are only buying from "hand to mouth." Prices for prompt are somewhat lower than last week, 77 per cent. White Caustic Soda ranging from £7 12s. 6d. to £7 17s. 6d., and 70 per cent. £6 17s. 6d. to £7 2s. 6d. Ammonia Alkali 58 per cent. is quoted £4 per ton, bags, on rails, and £3 15s. to £3 17s. 6d., next year's delivery. Sulphate of Ammonia is steadier locally, and is £9 3s. 9d. to £9 5s. on rails, Lancashire. Creosote continues firm. Benzols are firmer, and vary from 8d. to 8½d. for 50's, 90's. Sulphate of Copper is about 5s. higher than last week, and for spring delivery £18 10s. to £18 15s. is quoted, best brands, Manchester. Indeed, all metallic salts are improving in price owing to the growing scarcity of copper and tin. White Powdered Arsenic is somewhat lower, £16 15s. to £17. Acetate of Soda is weaker at £12 to £12 10s. per ton spot. Potash Compounds are firm, and there is a strong inquiry for Naphthalene. A fair export business is passing in Lancashire made Green Copperas, but the local demand is dull. Yellow Prussiate is well maintained, and local makers are firm at 6¼d. to 7d. per lb. Aniline Oil and Salt show a downward tendency. The "Phosphor" arrived at this port on Saturday with a full cargo of over one million gallons of Petroleum, and some idea of the extent of the trade here may be gathered from the fact that quite recently the "Elbruz," the "Suram," the "Kasbeck," the "Robert Dickinson," the "Apscheron," and the "Petriana" have discharged their cargoes at the Mode Wheel Tanks, and a workmen's village is being built in Trafford Park to accommodate those engaged in the trade.

Announcements.

Monday, November 7.

SOCIETY OF CHEMICAL INDUSTRY, Burlington House, Piccadilly, W., at 8 p.m.—First meeting of the session. Communications by Messrs. Watson Smith, A. W. Crossley, and H. R. Le Sueur, Oscar Guttman, G. Harris Morris, Harold Harris.

CHEMISTS' BALL COMMITTEE, 16, Bloomsbury Square, W.C., at 2.30 p.m.—General meeting to make preliminary arrangements for the ensuing ball.

DEWSBURY AND DISTRICT CHEMISTS' ASSOCIATION, Town Hall, Dewsbury, at 8 p.m.—Mr. W. S. Glyn-Jones, Secretary of the P.A.T.A., is to reply to the points raised at a recent meeting of the Association by Mr. Beecham's representative.

Tuesday, November 8.

PHARMACEUTICAL SOCIETY, 17, Bloomsbury Square, W.C., at 8 p.m.—Professor William Ramsay will deliver a lecture on "The New Gases of the Atmosphere," illustrated by experiments.

ROYAL PHOTOGRAPHIC SOCIETY, 5A, Pall Mall East, W., at 8 p.m.—General business meeting, followed by the first Traill-Taylor Memorial lecture.

ROYAL COLONIAL INSTITUTE, Whitehall Rooms, Hôtel Métropole, S.W.—A paper on "Western Australia in 1898," with lantern illustrations, will be read by the Hon. E. H. Wittenoom, Agent-General for the Colony.

Wednesday, November 9.

MANCHESTER PHARMACEUTICAL ASSOCIATION, Chemical Club, Victoria Hotel, at 7.30 p.m.—The "Standardization Processes of the B.P." will be dealt with by Mr. J. H. Hoseason, the "Pharmacy of the B.P." by Mr. J. Grier, and the "Vegetable Materia Medica of the B.P." by Mr. W. Kirkby.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, Exchange Rooms, Birmingham.—A paper on "Health and Occupation" will be read by Mr. J. F. Liversedge.

NEWCASTLE-ON-TYNE AND DISTRICT CHEMISTS' ASSOCIATION, Hôtel Métropole, West Clayton Street.—A "Practical Demonstration in Radiography" will be given by Mr. T. Maltby Clague.

Thursday, November 10.

CHEMISTS' ASSISTANTS' ASSOCIATION, 73, Newman Street, W., at 9 p.m.—"The Biology of Yeast" will be the subject of a paper by Professor J. Reynolds Green.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION, 94, West Regent Street, Glasgow, at 9 p.m.—Mr. T. Dunlop will open a "Discussion on the Pharmacopœia."

LIVERPOOL CHEMISTS' ASSOCIATION, Royal Institution, at 7 p.m.—Fifth general meeting. Papers by Messrs. R. C. Cowley, J. T. Catford, J. Guttridge (Curator, Liverpool Botanic Gardens), and W. Parry. A number of growing plants of special interest to pharmacists will be exhibited by Mr. Guttridge.

Friday, November 11.

CAMBRIDGE PHARMACEUTICAL ASSOCIATION, at 9.15 p.m.—Annual meeting, to be held at "Dale's."

CHEMICAL SOCIETY, Hôtel Métropole, London, S.W.—Banquet to Past Presidents.

Advertisements.

(Received too late for Classification).

APPRENTICE.—A Major man has a vacancy for an APPRENTICE. Out-door. Address, E. D. F., 50, Bishopsgate St. Within, E.C.

ENGAGEMENT wanted. Qualified. 24. Tall. Eight years' experience. SAL, "Pharm. Journal" Office, 5, Serle St., W.C.

AS branch MANAGER or ASSISTANT. 39. Over 20 years' experience Extractor. Married. Excellent references. IRIDIS "Pharm. Journal" Office, 5, Serle St., W.C.

Birth.

WOKES.—On October 22, at Grassendale, near Liverpool, the wife of T. S. Wokes, pharmaceutical chemist, of a daughter, Doris,

Marriages.

EVELEIGH-GWILLIAM.—On October 25, at St. Paul's Church, Bedminster, Bristol, by the Rev. Charles Griffiths, B. C. Eveleigh, of 2, Cotham Vale End, Bristol, to Elizabeth, eldest daughter of C. Gwilliam, of Coronation Road, Bristol.

BAGNALL—HARDY.—On November 3, at Stalybridge, by the Rev. T. M. Oldfield, M.A., Percy Bagnall, chemist and druggist, to Eva, eldest daughter of Mr. R. Hardy, Stalybridge.

MALLABAND—SHAPTER.—At Christchurch, Ealing, W., on October 31, W. H. Mallaband, pharmaceutical chemist, of Reading, to May, daughter of Mr. W. Shapter, of Rooklands, Newton Abbot, Devon.

Obituary.

DAVIES.—On October 16, Ellis Jones Davies, Chemist and Druggist, late of Seymour Street, London, N.W. Aged 30.

LUND.—On October 24, Thomas Lund, Chemist and Druggist, York. Aged 63. Mr. Lund had been a member of the Pharmaceutical Society since 1892.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, & two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Six Pieces Perfume Ribbon, each 36 yards long (216 yards), assorted colours, post free, 5s.—Edward Peck, East Dereham, Norfolk.

Magic Lanterns, second-hand; triples and binoculars: oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Oil of Lemon (superfine).—Advertiser being overstocked will sell cheap; 10 lbs. Copper, 22s. 6d. on rail; sample pound, 3s., delivered free anywhere, cash with order.—Chemist, 34, Avondale Road, Chorley.

For Sale.—Show Jar for window, as Maw's Fig. 1, plain gold cover, total height about 32 inches, with Fig. 2 stand £3, cost over £6.—Hodgson, Chemist, Waterloo, Liverpool.

What Offers?—1 oz. Zymine Fairchild, 1 oz. Orthoform, 1 oz. Lysidine, ½ lb. Bromidia, 1 oz. Piperazin, 2/6 Izal, 1 oz. Celloidin, 1 lb. Formalin, 500 Thyroid Tablets B.W.—C. R., 156, Green Lanes, N.

Books.

For Sale.—Balfour's 'Manual of Botany,' 5th edition, published at 16s.; Newth's 'Inorganic Chemistry,' both new; also Green's 'Manual of Botany,' vol. i. What offers?—Apply, Manager, 11, Briggate, Brighouse, Yorks.

WANTED.

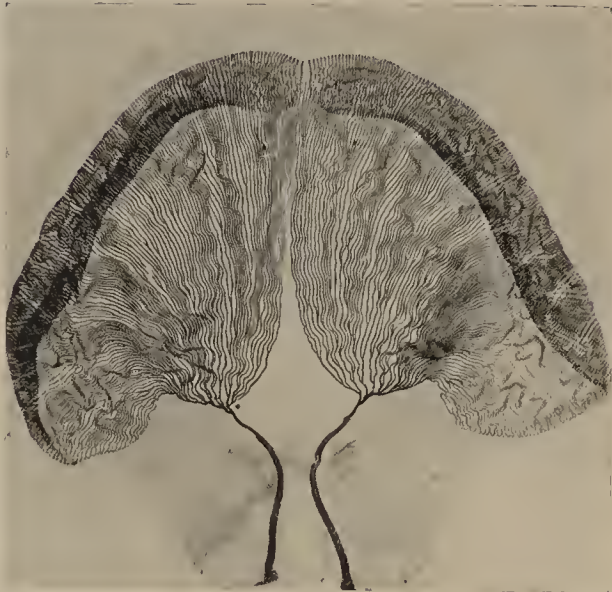
Old Electric Lamps and Scrap Platinum for prompt cash.—P. Rowsell, 9, Derwent Grove, East Dulwich, London, S.E.

Wanted.—A second-hand ½-gallon Tincture Press; send price, description, and condition to—Horace Ridley, Chemist, Princes Risborough, Bucks.

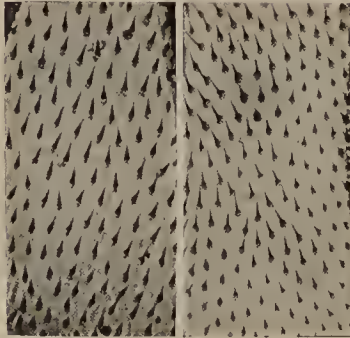
Pharmaceutical Journals, Jan. 16, 1897; May 22, 1897; Sept. 25, 1897; Oct. 2, 1897; Dec. 25, 1897. Full price will be paid for clean and complete copies by the Secretary, Pharmaceutical Society, 16, Bloomsbury Square, London, W.C.

Marked Copies of the following Newspapers, etc., have been received during the week:—*Bath Herald, Blackpool Herald, and Fylde Advertiser*

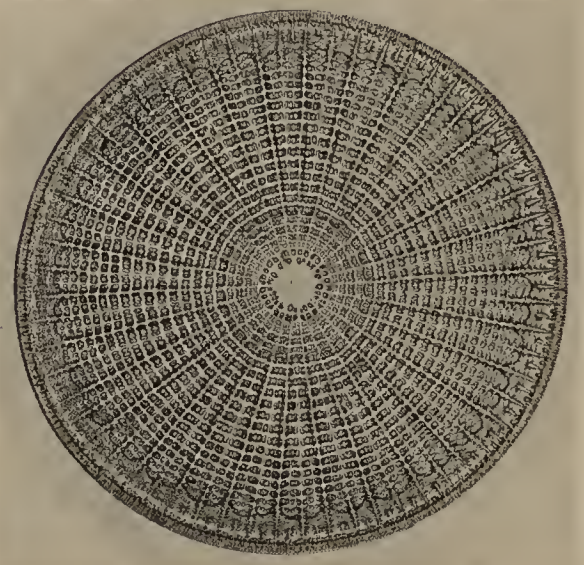
COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Alcock, Allan, Armstrong, Barker, Barnes, Beck, Bell, Bennison, Branch, Brodie, Brunt, Campkin, Churchill, Cox, Cracknell, Crosby, Curtis, Dell, Doward, Eldred, Farquhar, Feaver, Garnett, Gibson, Green, Hawthorn, Hill, Jackson, Jesson, Jones, Kimpton, Lewis, Lillard, Lloyd, Mackie, Mason, Matthews, Merson, Mitchell, Morley, Mumbray, O'Halloran, Pollitt, Poppelreuter, Roberts, Savage, Shillinglaw, Smith, Spitta, Swanson, Swinton, Umney, Vince, Watson, Wardleworth, White.



1. TONGUE OF CRICKET $\times 20$. Photo-achro, 1 inch. WRAY.



2. PIECE OF DIATOM. Showing effect of *too great* closing of iris—compare with Fig. 5.
3. WHITE LINE EFFECT around Hairs on Proboscis by using *too small* a cone of light $\times 400$.
4. *CONE THE CORRECT DIAMETER*. Hairs shown sharp and crisp, no diffraction effects $\times 400$.



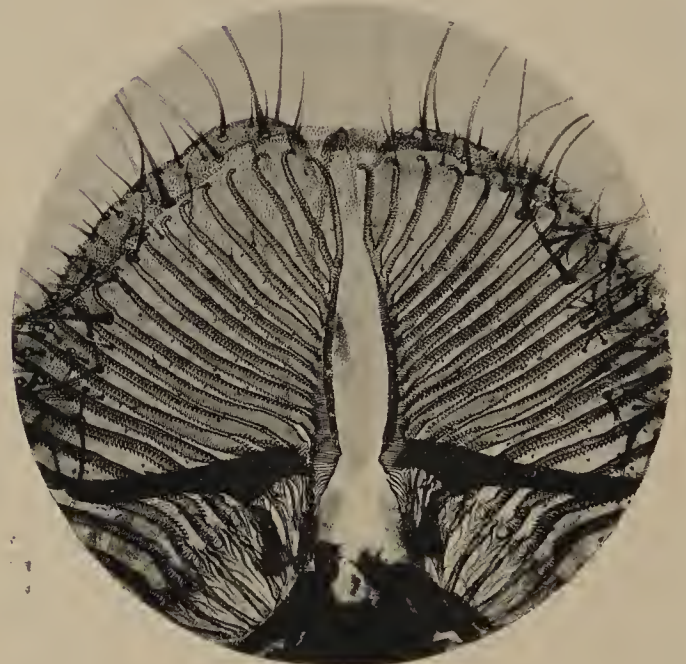
5. ARACHNOIDISCUS EHRENBERGHII $\times 220$



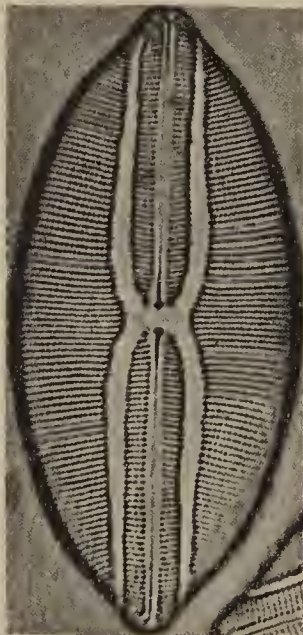
6. LEG OF BEE. Showing Corbicula $\times 55$



7. HAIR OF PENCIL TAIL $\times 400$.



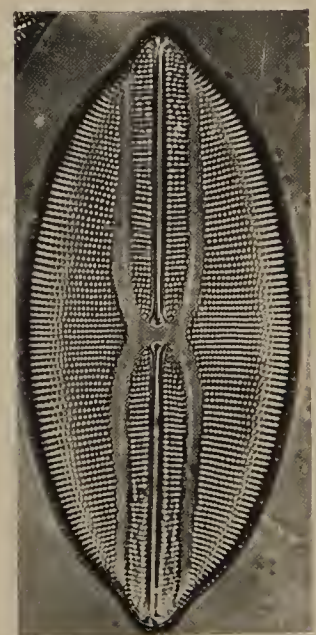
8. PROBOSCIS OF BLOW-FLY $\times 40$.



10. NAVICULA LYRA $\times 600$. Small N.A. (.65) employed; dots not distinct.



9. FOOT OF MINUTE GARDEN SPIDER $\times 400$.



11. NAVICULA LYRA $\times 600$. High N.A. (1.40) Dots distinctly visible although *same magnification* as Fig. 10.

PHARMACY IN AUSTRALASIA.

PHARMACEUTICAL INTEREST IN VICTORIA is at present centred in the Bill introduced by the Government to amend the Poisons Act, 1890, or, more particularly, the fourteenth section of that Act, the apparently ambiguous construction of which led to so disappointing and unlooked-for a decision in the recent Pink Pills case. So far as it goes, the Bill is admitted to express very clearly the intention of the Legislature as to the application of the proviso "that all such sales be entered in a book, etc.," which, it will be remembered, was held by the Full Court to apply only to sales by wholesale dealers. But it falls very far short indeed of the Bill as it would have appeared had the Government the courage to have adopted in full the suggested amendments of the Pharmacy Board, according to which, apart from proposed alterations in other sections (3 and 5), patent and proprietary medicines, poisoned seed, etc., packets of poisonous mixtures, and fly poison papers would have been totally omitted from the list of exemptions! As it is, the inclusion in the Bill of the provision for the sale of poisoned seed and packets of poisonous mixtures by unqualified persons is regarded by the Council of the Pharmaceutical Society "as a very serious interference with existing safeguards, the indiscriminate sale of the many dangerous poisons for the destruction of vermin by irresponsible persons being likely to lead to fatal results"; and it was resolved at their monthly meeting on September 16 that a meeting of the chemists of the colony be called for Wednesday, September 28, to consider the necessity of steps being taken to obtain an amendment of the clause in accordance with the suggestions already made by the Pharmacy Board to the Government. As the *Australasian Journal of Pharmacy* expresses it, it is to be hoped that the hands of the Board will be so strengthened by that meeting that the Government may, with a reasonable prospect of success, be moved to provide the improved legislation which is so desirable. As reference will, no doubt, be made in the Journal to the various clauses of the Bill in subsequent notes, it may be of advantage to readers to have the text of the two principal sections before them. Accordingly, it is given below. The sub-clause of Clause 2, Section 4, commencing "No person, etc.," is, properly speaking, not in the Bill as originally introduced, but is a proposed amendment, evidently in deference to the representations of the Pharmacy Board by the Chief Secretary, one of the sponsors of the measure:—

13. The *Poisons Act*, 1890, shall not apply to the sale of any poison—

- (a) when made up or compounded as a medicine by a legally qualified medical practitioner or by a registered pharmaceutical chemist according to the prescription of a legally qualified medical practitioner; or
- (b) in the form of homeopathic medicine, unless in the crude state, mother tincture, or of a greater strength than the third decimal potency.

14. (1) The *Poisons Act*, 1890, shall not apply to the sale of—

- (a) patent or proprietary medicines;
- (b) photographic materials for the purpose of photography; or
- (c) medicines dispensed by registered veterinary surgeons for animals under their treatment; or
- (d) poisoned seed for the destruction of vermin (within the meaning of the *Vermin Destruction Act*, 1890); or
- (e) packets of poisonous mixtures for the destruction of vermin other than vermin mentioned in paragraph (d); or
- (f) fly poison papers; or
- (g) poisons by wholesale dealers in the ordinary course of wholesale dealing where an order in writing signed by the purchaser has been given for the supply of the same.

(2) Every sale of any materials or articles mentioned in this section and which consist of or contain any poison shall at the time of sale and before delivery be entered by the person who sells the same or by any employé assistant or apprentice of such person in a book, together with the date of sale the quantity and nature of materials or articles sold and the name and place of abode of the purchaser; and no such materials or articles consisting of or containing any poison shall be sold or delivered unless the bottle or other vessel wrapper or cover box or case immediately containing such materials or articles bears the word "Poison" printed conspicuously thereon, together with the name and address of the seller thereof.

No person shall sell any materials or articles specified in paragraphs (d) and (e) of sub-section (1) of this section if they consist of or contain any poison specified in the First Part of the Second Schedule to the *Poisons Act*, 1890, to any person who is under eighteen years of age or who is unknown to the vendor, unless the sale be made in the presence of some witness who is known to the vendor and to whom the purchaser is known, and unless such witness signs his name together with his place of abode to the required entry before the delivery of the materials or articles to the purchaser.

(3) If in contravention of this section any person sells or delivers any such materials or articles consisting of or containing any poison he shall on conviction therefor be liable to a penalty not exceeding Twenty pounds.

(4) Any person on whose behalf a sale is made shall be deemed to be the person who sells, and every employé assistant or apprentice of such person shall be liable to the like penalties as the person on whose behalf he makes any sale.

(5) In any prosecution for a contravention of this section it shall be sufficient

to prove that materials or articles commonly sold under the same name or description as the particular material or article the subject of the prosecution consist of or contain poison, and the burden of proof that such particular material or article does not contain poison shall lie on the defendant.

AS THE RESULT OF REPRESENTATIONS made to the Government by the Pharmacy Board and the Victorian British Medical Association, a Bill was introduced into the Legislative Council of Victoria on September 1, and passed its second and third reading on September 14, fixing January 1, 1899, as the date on which the new Pharmacopœia should come into recognised operation throughout the colony, notice of which is to be given in the *Government Gazette* immediately after the passing of the Act, and also during the month of January next. Provision is made in the Bill that whenever at any time any alteration is made by and under the direction of the General Council of Medical Education and Registration of the United Kingdom, it shall be lawful for the Governor in Council by notice published in the *Government Gazette* to declare that on and after a date specified in such notice the British Pharmacopœia as so altered shall have force in Victoria, and shall be substituted for the Pharmacopœia theretofore in force in the colony, thus obviating the necessity of any application to the Legislature on the subject in future. Of the few members interested in the measure, the Hon. F. S. Grimwade (Messrs. Felton, Grimwade and Co.) elicited an assurance from the Government representative, Sir Henry Cuthbert, that the sanction accorded was not simply permissive, but mandatory; and when Mr. Grimwade put the question, What would be done to a medical man if, for instance, he made up his prescription under the Pharmacopœia of 1890, without stating that he was doing so? Sir Henry assured him that the medical man would have to take the consequences, and might probably have to answer for it before the coroner. So that, so far as Victoria is concerned, finality is arrived at on this somewhat ticklish question.

A DECISION OF CONSIDERABLE INTEREST to vendors of drugs has recently been given by the Victorian Full Court in the case of a man named John Woodford Hyland, found guilty at the Criminal Sittings of the Supreme Court in July of having supplied to an officer of the police (who had set himself the task of "trapping" his man) certain noxious things, to wit, pills, containing drugs described, well knowing that the same were intended to be unlawfully used and employed with intent to bring about a certain result on a woman unknown. The points presented for the consideration of the Full Court were: (1) Must there be an existing woman? (2) Must there be intent to procure the result as alleged? Counsel for the Crown, in support of his position that it was not necessary there should be an existing woman, read from a judgment of the late Chief Justice Higinbotham, in what is known as the Drake case, in which it was held that the offence was complete if there were belief in the mind of the person supplying the drug that it was intended to unlawfully use it. The offence was the unlawful supplying of the drug, in the belief that it was intended to unlawfully use it, and it was not material whether there was an existing woman or not, upon whom it was intended to use the drugs. As regards the contention for the defence that a "noxious" thing must be capable of producing the result intended, it was submitted by the Crown that it was only necessary that it should be shown that the drugs were injurious. Against this it was argued by the counsel for the defence that, notwithstanding the decision of the court to the contrary in the case of the Queen v. Drake, it was necessary to prove the existence of the woman for whose use the drug was supplied, and it was also necessary to show that there was an intent either on the part of the person who supplied it or the person who received it, that it should be used for an illegal purpose. In this case there was no existent woman, and there was no intent shown. When their Honours delivered their judgments, it was found that three—Mr. Justice Williams, Mr. Justice A. Beckett, and Mr. Justice Hood—were in favour of affirming the conviction, and three—Chief Justice Madden, Mr. Justice Holroyd, and Mr. Justice Hodges—in favour of quashing it. The Chief Justice then announced that the Court being thus equally divided the judgment would, in accordance with the Act, follow his decision, and the conviction would accordingly be quashed. Apparently from the remarks made by Mr. Justice Williams this decision not only upsets the Victorian judgment in the Queen v. Drake, but is also opposed to that in the English case of the Queen v. Hillman. In the latter judgment, according to His Honour, there was no reference to an existing woman, while the intention of any person other than the prisoner was held to be immaterial.

ENGLISH NEWS.

COLONIAL ISSUE.—The *Pharmaceutical Journal* of the 26th inst. will be sent to every wholesale and retail chemist throughout the British Colonies and India in addition to the ordinary subscribers. This is the most comprehensive colonial distribution of any drug journal during the year. Advertisements should be sent without delay to the Publishers, 5, Serle Street, Lincoln's Inn, W.C.

DR. A. P. LUFF, whose book on "Gout" has just been published by Messrs. Cassell and Co., has retired from his medico-legal practice, and is now limiting himself to consulting medical practice in connection with gout and rheumatism.

POISONING BY STRYCHNINE.—On Thursday, November 3, Mr. A. Braxton Hicks resumed his inquest at Kingston, with reference to the death of Arthur Burrowes Sleigh, 39, a retired military officer, who died at 8, Oriel Gardens, New Road, Kingston, on October 3. Dr. J. E. S. Barnett, of Kingston, who was called in to see the deceased, stated that he displayed marked symptoms of lockjaw, the spasms being very violent, accompanied by threatened asphyxia. Witness attended him until he died. In his opinion death was due to asphyxia, through a spasm of the respiratory muscles, resulting from the taking of a poison of the nature of strychnine. Dr. F. Womack, lecturer on pathology at St. Bartholomew's Hospital, said he analysed the contents of the stomach, and found about one-sixth of a grain of strychnine. The smallest ascertained fatal dose of that drug was half a grain in an adult. The jury returned a verdict "that the deceased died from the effects of strychnine poisoning, but how it came to be administered there was not sufficient evidence to show."

SILVER WEDDING.—On Monday, October 31, the silver wedding of Mr. and Mrs. C. Goddard-Clarke, of the firm of Messrs. Potter and Clarke, wholesale chemists, of Artillery Lane, E.C., was celebrated by a dinner at the Surrey Masonic Hall, Brixton. There was a large assemblage of guests, while the list of presents included many valuable articles. On the Thursday evening following, November 3, at the Surrey Masonic Hall, the employes of the firm held a social gathering to celebrate the event, Mr. R. C. Wren presiding. Letters of apology for absence were read from the senior partner, Mr. Potter, and Messrs. Bickerton, W. Thomas, and Turner (country travellers) each containing words of congratulation to Mr. and Mrs. Clarke. The chief item in the programme was the presentation to Mr. and Messrs. Clarke of a handsome onyx (Italian cameo) marble clock supplied by Messrs. Benetfink, of Cheapside. The clock, which was a very handsome one, was adorned with a gold plate, upon which was inscribed the following words:—"Presented to Mr. and Mrs. Goddard Clarke on the occasion of their silver wedding, by the employes of Messrs. Potter and Clarke, as a token of their respect and goodwill, 1873-1898." The presentation was made by Mr. Skuse, who concluded a very appropriate speech by a reference to Mr. Goddard Clarke's successful public career, and remarked that they would not be satisfied until Mr. Clarke had added "M.P." to his name. Mr. Clarke, in suitable terms, thanked them for their handsome present, and said he had been quite overwhelmed with the congratulations of his friends and the many expressions of the goodwill and feeling exhibited by the employes of the firm. Mrs. Clarke also in a happy little speech briefly returned thanks, remarking that it was sweet to see that others loved and esteemed those whom one loved best of all. A capital entertainment was given by members of the company, and a most enjoyable evening was spent.

LIEUT.-COLONEL AND SHERIFF CLIFFORD PROBYN has been appointed to the commission of Lieutenancy of the City of London on the nomination of the Lord Mayor, November 5.

FOOTBALL.—The match between the Pharmaceutical Football Club and Polytechnic F. Team, played last Saturday at Wormholt Farm, resulted in a win for the Square team of 5 goals to nil. P.F.C. team: goal, K. J. Padwick; backs, P. B. Gray, W. Garsed; half-backs, J. Evans, L. Tibbitt, T. J. Stokoe; forwards, T. J. Wild, H. S. Durbin, M. Lloyd, W. Collennette, and W. J. Wilkinson.—The return match of the Metropolitan College of Pharmacy F.C. and "Muter's" F.C. was played at Wormholt Farm, Shepherd's Bush, on Saturday, November 5, the game resulting in a win for the "Metropolitans" by 6 goals to 1.

ROYAL SOCIETY COUNCIL.—The following is a list of those who have been recommended by the President and Council of the Royal Society for election into the Council for the year 1899 at the anniversary meeting on November 30:—President, Lord Lister; Treasurer, Mr. Alfred Bray Kempe; Secretaries, Professor Michael Foster and Professor Arthur William Rücker; Foreign Secretary, Sir Edward Frankland; other members of the Council, Professor Thomas George Bonney, Captain Ettrick William Creak, R.N., Professor Daniel John Cunningham, Professor James Dewar, Professor William Dobinson Halliburton, Professor William Abbott Herdman, Mr. Victor A. H. Horsley, Dr. Joseph Larmor, Professor Nevil Story Maskelyne, Sir Andrew Noble, Professor Edward Bagnall Poulton, Dr. William James Russell, Professor Arthur Schuster, Mr. Dukinfield Henry Scott, Dr. George Johnstone, and Professor Joseph John Thomson.

ROYAL INSTITUTION.—A general monthly meeting of the members of the Royal Institution was held on November 7, Sir James Crichton-Browne, Treasurer and Vice-President, presiding. The special thanks of the members were returned to Mr. J. B. Carrington for his donation of £25, and to Mr. Charles Scott Dickson, Q.C., Solicitor-General for Scotland, for his donation of £100 to the fund for the promotion of experimental research at low temperatures.

SHEFFIELD MICROSCOPICAL SOCIETY.—In his inaugural address to this Society on November 4, Dr. Porter dealt principally with the application of the microscope to medicine, and particularly to bacteriology. He said one of the great advantages of these local societies was that it brought together on common ground those who were interested in microscopical work of every kind—biological, chemical, botanical, mineralogical, or medical. It facilitated the special work of each, and at the same time made those who were engaged in one branch of study acquainted with what others were doing, the use of the microscope being the point of contact. He spoke of the infinite possibilities of the application of the microscope to that infinite science—bacteriology. They were learning to look to the microscope as one hope of averting in the future many of the pestilential scourges of the present day. It was becoming more and more necessary that there should be established in every populous centre a properly equipped State laboratory, under the care of bacteriologists. The importance to the public of the encouragement of medical science was unfortunately only very inadequately recognised in this country. England was a happy hunting ground of faddists of all kinds, and our political system encouraged rather than checked the mischief these people were capable of causing when organised. As a painful instance of this truth he cited the new Vaccination Act.

MESSRS. C. J. HEWLETT AND SON, have now published the third edition of 'Notes on the New British Pharmacopœia, 1898,' compiled by Mr. E. J. Millard. No less than 11,050 copies of these "Notes" have been distributed, copies having been supplied by special request to the students of the materia medica class at Glasgow University, Melbourne University, and other institutions.

DEATH OF A CHILD FROM OPIUM POISONING.—An inquest was held at Winkleigh on November 1, respecting the death of Mary Cordelia Hall, an infant. The father of the child said on October 28 the child was suffering from flatulence, and he gave it three drops of "Bateman's Pectoral Drops," mixed with water and sugar. In the evening the child had a difficulty in breathing. The next morning, as they could not wake it, she was put in a warm bath, and as that had no effect Dr. Norman was fetched. The child died about noon. He had been in the habit of administering the drops to his elder children, with beneficial results. Dr. Norman said the child was in a comatose state and its face was pallid, the symptoms of opium poisoning. The child had been strong and healthy from birth, and was well nourished. He had no doubt death was due to opium poisoning. He sent the bottle of "drops" to Dr. Slade King, who reported opium present in a well-defined quantity. Witness considered it was wrong to give such a preparation to a young child. The jury returned a verdict of "Death from opium poisoning," the opium being inadvertently administered.

COMING OF AGE PRESENTATION.—An interesting ceremony took place on Saturday last, at the establishment of Mr. James Townsend and Son, chemists' printers, in Granby Street, Exeter, the occasion

being a presentation to Mr. Herbert Townsend, son of the senior partner, on his attaining his majority. The presentation took the form of a non-magnetic gold lever watch and a beautifully illuminated address, which bore the following inscription:—"Presented, together with a non-magnetic gold lever watch, to Mr. Herbert Townsend, on the occasion of his coming of age, November 4, 1898, as a token of respect and esteem and best wishes for his future happiness and prosperity of the firm by the undermentioned employes." Then followed the names of 220 subscribers. The counting house staff at Messrs. James Townsend and Son have also presented Mr. Herbert Townsend with a water-colour "View of the Lyd, Dartmoor," by A. J. Couche.

AN UNQUALIFIED SELLER OF LAUDANUM.—At the Heanor Petty Sessions on Monday, November 7, an elderly woman was charged with attempting to commit suicide by taking laudanum on the previous Saturday. In the course of the evidence Mary Ann Slack, who has a shop in Mount Street, Heanor, stated that the defendant came in the shop on the Saturday morning for a pennyworth of laudanum, and she let her have some from her own supply. The name of Mary Ann Slack does not appear in the Register of Chemists and Druggists.

THE PHARMACEUTICAL MAYORS elected this week include the following: Mr. Leonard Parker Chapman, Barrow-in-Furness; Alderman James Floyd, Bury St. Edmunds; Mr. John Coles Coles, Chippenham; Alderman J. Horsley (re-elected), Hartlepool; Mr. John Kinsey Jones (re-elected), Llanidloes; Mr. Frederick Mason, Rotherham; Mr. John Alfred Steward, Worcester.

THE SCIENTIFIC PRESS, LTD., announce that they will shortly publish a new work, by C. J. S. Thompson, author of 'The Mystery and Romance of Alchemy and Pharmacy,' etc., entitled 'Poison Romance and Poison Mysteries.' The book deals with ancient poison lore and the most interesting and notable poison mysteries of mediæval and modern times.

MR. S. R. ANNESS, pharmaceutical chemist, 26, Westgate Street, Ipswich, has disposed of his business to Messrs. Pain and Bayles, of Cornhill, Ipswich. Alderman Anness, who carried on the business for forty-four years, is retiring, and it is understood that Messrs. Pain and Bayles will transfer all the proprietary articles, etc. to their existing establishment.

MANCHESTER PHARMACEUTICAL ASSOCIATION.—The second meeting of the session was held in the rooms of the Chemical Club, Victoria Hotel, on Wednesday evening, when papers were read on the "Standardisation Processes of the B.P.," by Mr. J. H. Hoseason, and "The Pharmacy of the B.P.," by Mr. J. Grier. Mr. G. S. Woolley presided, and there was a good attendance. Messrs. W. Gibbons, E. W. Battle, John Roberts, A. Ogden and T. Burch were elected members of the Association.

LEICESTER CHEMISTS' SOCIAL UNION.—A hot supper was served at the Clarendon Rooms, Granby Street, on Thursday, November 3, at 9 o'clock. Amongst others, the following gentlemen were present:—Mr. T. Howard Lloyd (Chairman), Mr. E. H. Butler (Vice-Chairman), Messrs. Clear, Cleaver, Hampton, Thirlby, Burford, F.C.S., Lewis Ough, F.C.S., Murray, Neale, Tippetts, White, Goodess, Edwards, Elmitt, E. H. Butler, jun., etc., etc. Apologies were received from Messrs. Hurd, W. B. Clark, Elliott, etc. Twenty-five in all sat down to supper, and after a happy speech by the chairman, and valuable suggestions for the coming session from Messrs. Burford and Thirlby, the company adjourned for a most enjoyable concert. The following gentlemen rendered excellent services:—Mr. Gough, pianist; Mr. Audley, who caused immense merriment with his humorous songs; Mr. Thirlby and Mr. E. Goodess, who gave recitations; Mr. Tibbetts, a mandoline solo; songs being given by Messrs. Gough, F. W. Goodess, E. H. Butler, Beale, Cynlais Davies, D.P.A.R.M., S. Cleaver. A hearty vote of thanks was passed to the chairman for presiding.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY.—An audience numbering upwards of eighty assembled at the Kardomah Café, Church Street, Liverpool, on Thursday evening, November 3, to take part in the first social reunion of the above Society for the present session. The Chairman, Mr. R. C. Cowley, assisted by the Treasurer, Mr. Cooke, and the Secretary, Mr. P. C. Jenner, provided a programme of considerable length and excellence, the various

instrumental and vocal items of which were rendered in first-class style by the following members of the Society and their friends: Messrs. Bennington, Bonsell, Bones, Cooke, Hall, Harrod, Hughes, Nicholson, Oxford, Shacklady, Shute, Sutton, Stevenson, Stone, Tinsley, and Dr. Watson. In a vote of thanks to the performers at the close of the "Smoker," Mr. T. H. Wardleworth felicitated Messrs. Jenner and Cooke upon the result of their efforts, and characterised the whole evening's entertainment as an unqualified success and one which would tend to the increase of their Society's roll of membership, and consequently to extend the limits of its usefulness.

SUNDERLAND CHEMISTS' ASSOCIATION.—At a Council meeting of the above Association, the members discussed the new defence scheme as issued by the P.A.T.A., and it was decided to call a special meeting of the Association, to which the chemists in the surrounding district should be invited, so that the Association could report to the promoters of the scheme the decisions of the district and what support they might expect. The date fixed for the meeting is Wednesday, November 23, at 5.30 p.m., in the Grand Hotel, Bridge Street, Sunderland.

FOR SOME TWELVE MONTHS or so there have been rumours in the air as to the flotation of a new company, which should combine the European and American Kodak businesses, the capital being indifferently stated as from two to three millions sterling. Now at last the cat is out of the bag, or the preliminary prospectus of Kodak, Limited. The capital is to be £1,600,000, of which 350,000 £1 six per cent. preference shares at par and 300,000 £1 ordinary shares at 25s. are offered to the public. Considering that the profits for the past half-year are over £103,000, and show an increase of about 27½ per cent. over those in 1897, these shares might be worth touching for those with a little money to spare.

IRISH NEWS.

THE RELATIONS between Boards of Guardians in Ireland and their dispensary officers are daily becoming more strained, and it is not improbable that matters will be brought to a crisis before many weeks. Insufficient salary and excessive hours of duty are the chief elements of dissatisfaction, while cases of autocratic "bumblodm" and tyranny by arrogant P.L.G's. are by no means isolated. The question "Is a strike possible?" has already been asked through the public press.

A NEW SOCIETY, called the Dental Students' Association of Ireland, has just started in Dublin. Its objects are the advancement of dental science amongst students. At the first meeting, held a few evenings ago, an interesting paper on the six-year molar was read by Mr. G. W. Story.

CORK AND THE BRITISH ASSOCIATION.—The members of the medical profession in Cork have assured the British Association a warm welcome should the Association meet in the "southern capital" in the year 1900, and that welcome is cordially seconded by the drug and chemical representatives in Munster. The co-operation of medicine and her handmaiden—pharmacy—would be essential to the success of the visit, and the distinguished body to whom the invitation has been extended can look forward to a stay the success of which is pre-assured. It is not at all improbable that the British Association for the Advancement of Science will accept the unanimous and cordial invitation, and hold its session two years hence in "Cork's own town."

PHARMACEUTICAL SOCIETY OF IRELAND.—The first evening meeting of the session was held at 67, Lower Mount Street, Dublin, on Monday, November 7, the President, Mr. R. J. Downes, in the chair.—A brief address was delivered by Mr. Downes, in which he dealt with the scientific training of educated youth, and concluded his address by expressing a hope that the evening meetings may be the means of preventing the Society working in a low level or travelling in a rut, but that "it may be one of the great intellectual centres of the world."—The election of a new committee was then proceeded with, and the following were chosen for the ensuing session:—Miss Ada Wyatt and Messrs. W. V. Johnston, J. Michie, J. Tyrie Turner, J. Smith, and H. O'Connor. The last-named gentleman was unanimously re-elected honorary secretary. Reporters were appointed as follows:—Section of

pharmacy, Mr. W. V. Johnston; section of chemistry, Mr. Henry Hunt; section of materia medica, Mr. J. Smith. It was stated that it was not improbable the idea of having a library in connection with the evening meetings would be well received by the School Committee. As yet, however, a decision had not been given in the matter. The honorary secretary was directed to write to the Registrar to remind the Council of the matter.

DR. EVERETT, Professor of Natural Philosophy in Queen's College, Belfast, is retiring from a position which he has filled with unexampled ability and honour for thirty years. He is the author of the translation of Deschanel's work on 'Physics,' which has become a standard text-book in Great Britain. The Professor in his farewell remarks referred to the absence of rooms suitable for carrying on the necessary experiments in practical physics.

MR. BENJAMIN MOORE, M.A., First-class Honourman in Science R.U.I., who was lately coadjutor of Professor Schafer, London, has been appointed to the chair of physiology in Yale University, U.S.A. Professor Moore is a Belfast man, and was formerly a student under Mr. Robt. Barklie, F.C.S., and also in Queen's College. He studied for some years at Leipzig. He has genius of a high order, but possesses in an eminent degree its better part, "capacity for taking pains." He has conducted original research in the province of physiology, the results of which were included in the 'British Dictionary of Physiology,' under the sub-heading "The Chemistry of Digestion."

THE RECENT PROCEEDINGS AT DUBLIN of the Health Congress have had an interesting souvenir in the conferring of the diploma of the Apothecaries' Hall on the following gentlemen: Mr. William Robert Smith, Professor of Hygiene, Professor King's College, London, D.Sc., etc.; Dr. Mathew Hay, Professor of Medical Jurisprudence, Aberdeen; and Alexander Crum Brown, Professor of Chemistry, Edinburgh. At the function were present Dr. Raverty (in the chair), Sir Charles Cameron, W. J. Furlong, John Evans, H. Auchinleck, J. A. Johns, J. Knott, C. R. C. Tichborne, C. M. O'Brien, T. D. Rice, A. H. Jacob, T. D. Finucane, J. Shaw, S. M. Thompson, B. Montgomery, etc. Dr. Tichborne made a neat speech on the occasion, and spoke highly of the ability of the distinguished recipients of the grace. Sir Charles Cameron also spoke, and the diplomas were presented amid applause.

THERE ARE A NUMBER OF PERSONS who deem the restrictions upon the sale of poisons to be too stringent. As a rule they do not consider the subject from the standpoint of public safety, but from the inclinations of various sections of their constituencies. Any pharmacist could do a roaring trade in poisons. It is his duty, however, to exercise his intelligence. There are chemists who refuse to sell strychnine or prussic acid in any case. A would-be suicide told how he could get nothing stronger than laudanum, and how exasperated he was when he woke up stiff and benumbed. This was not the lot of Mr. Graham, of Londonderry, who during a bout of heavy drinking purchased some strychnine in a chemist's, which he promptly swallowed, and died after a few hours' agony.

SCOTTISH NEWS.

EDINBURGH DISTRICT CHEMISTS' GOLF CLUB.—The tie to decide the holder of the Gibson Handicap Medal for the year was played off at the Braids last week, and resulted in favour of Mr. W. C. Baker, with the score of 94 less 12=82. This finished the competition for the season.

PRESENTATION AT GLASGOW.—On October 28, at 57, East Howard Street, Glasgow, the employés of Cockburn and Co., presented their laboratory chemist, Mr. Bonnar, A.P.S., with a gold Albert and appendage on the occasion of his leaving to take over on his own account the branch shop at 630, Rutherglen Road, Glasgow, formerly carried on by Mr. Jas. Grant.

THE DISPENSER IN CONNECTION with the City Parish Board of Glasgow has evidently a busy time. During the past month he made up 7358 prescriptions, an average of about 250 a day. This did not, however, altogether meet the requirements of the poor of the parish, as in addition the following prescriptions were made up outside:—Glasgow Apothecaries' Company, 25; J. and R. Rodman, 71; D. P. Walker, 163; and Anderson and Ireland, 21.

FRENCH NEWS.

DEATH OF AN OLD-ESTABLISHED ENGLISH CHEMIST IN PARIS.—It is with the deepest regret that we announce the death of Mr. H. Swann, pharmacien, 12, Rue Castiglione, Paris, which occurred on Tuesday, November 8, at 6.30 p.m. He was one of the oldest established English chemists in France, having established the business in Rue Castiglione in 1850. Prior to that time he was assistant with Messrs. Roberts and Company, then in the Place Vendôme (now Rue de la Paix). His death was by no means sudden, he having been seized a little over twelve months ago with a paralytic stroke. Since then he has been confined to his bed. At times he has been quite conscious, and his end was happily peaceful.

INCREASED DUTIES ON ALCOHOL.—The new tariff of octroi duties on wines and spirits, which came into operation in Paris on the 22nd ult., will either seriously affect the consumption of these luxuries or make a large addition to the revenue. According to information gleaned from a reliable source, the taxation of spirits, which has hitherto amounted to 266f. 5c. per 100 litres, is now 351f. 25c., of which 165f. goes to the city of Paris and 186f. 25c. to the State. This means a tax of 3f. 50c. per litre on pure alcohol as compared with 2f. 66c. under the former tariff, and the charge will most certainly cause a considerable rise in the price of a "drink."

BETAINE IN MARSHMALLOW ROOT.—M. Orloff, having subjected the root of marshmallow to a series of careful analyses, has declared the presence of another principle, which, after purification, he declares to be betaine.

STUDENT'S ESCAPE.—A young pharmaceutical student of one of the Parisian colleges disappeared a few days ago from his parental roof on the Boulevard Malesherbes with one of the housemaids, at the same time lining his pocket with the snug sum of 3000 francs from the family coffers. On Monday afternoon the youth's uncle espied him in the Rue de l'École de Médecine in a cab in company with the lady who had won his youthful affections. On seeing his uncle, the youth urged the jehu to whip up his sleepy steed. The uncle, however, took another cab and followed his fugitive nephew to the Boulevard Arago, where the horse in the latter's cab fell down. Seeing that he was destined to be captured, the lad jumped out and brutally attacked his uncle. He was finally dragged off by some passers-by, and, in company with his lady-love, was handed over to the police.

ANNUAL BANQUET.—The annual banquet of the Société de Prévoyance will be held on Monday, December 5. All members are earnestly invited to assist. The Committee promise, according to their customary habit, to do their utmost to make the event a happy and successful one, the recollection of which they will retain as a pleasant souvenir.

Trade Notes.

IN THE 'DEUTSCHE MEDIZINALE ZEITUNG' appears an important decree by the Imperial Austrian Minister of the Interior with regard to the use of formalin by all the sanitary authorities of the Empire. The order instructs all sanitary officers and inspectors to freely make use of either liquid formalin or of the gas as diffused by means of the "Alformant" lamps as the most efficient and at the same time harmless disinfectant for rooms and wearing apparel. It is noteworthy that this decree follows immediately after the critical test which this new method of disinfection has stood in the recent plague scare at Vienna. It appears that this new disinfectant, which has been under discussion by our own sanitary authorities, is a new departure in the abatement of infectious disease.

MESSRS. BURROUGHS, WELLCOME AND Co., owing to the continued development of their business, have had to make considerable extensions of the offices and warehouses at Snow Hill Buildings. Consequently the six-storied buildings, Nos. 42 and 43, Snow Hill, having a frontage of more than 50 feet, have been recently acquired, and are now undergoing the necessary alterations to adapt them to the requirements of the firm.

MARKET REPORT.

The quotations here are given in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

London Report.

NOVEMBER 10, 1898.

Business has assumed a somewhat more cheerful tone in the drug and chemical markets during the past week. Chief incidents have been an advance in price of Mercurials, the continued firmness with expected further advance in price of Quinine, and the large advance in price of Sulphonol. Camphor is also up, with a further advance confidently foretold. Mercurials were also advanced in price by the makers. Acid Citric is quiet. Acid Tartaric weak and rather lower, Cream of Tartar, on the other hand, being slightly dearer. Quicksilver is steady. Opium and Morphia quiet. Codeia steady. Cocaine firm, with an advance in price expected. Acetanilide quiet. Phenacetin unchanged. Sulphate of Copper very firm, in sympathy with the metal. Sulphate of Ammonia dearer. Iodides and Iodine, Bromides and Bromine without change. The following are particulars of prices actually ruling:—

ACETANILIDE—Quiet at 11d. to 1s. 1d. per lb.

ACID BORACIC.—Firm at 24s. per cwt. for *crystals* and 26s. per cwt. for *powder*.

ACID CARBOLIC—Is in good demand at the unchanged value for the *refined*. *Crude* is quoted 2s. per gallon for the 60° F., and 2s. 4d. per gallon. For the 75° F. *liquid* 95 per cent. of pale straw colour, 1s. 1d. to 1s. 3d. per gallon.

ACID CITRIC.—Quiet at 1s. 2d. to 1s. 2½d. per lb. for *crystals*.

ACID OXALIC.—Unchanged at 3¼d. to 3½d. per lb. for *crystals* and 3½d. to 3¾d. per lb. for *powder*.

ACID TARTARIC—Slow of sale and rather easier at 12½d. to 12¾d. per lb. for *English crystals*, and 12d. to 12¼d. for *foreign*.

ALUM—Is firm at £5 7s. 6d. per ton for loose lump, and £6 per ton for ground in bags.

AMMONIA COMPOUNDS.—*Sulphate* is again dearer but closes quiet at £10 for grey prompt, 24 per cent., London; same prices being quoted for Hull and Leith. *Carbonate* is very firm at 3d. to 4d. per lb., according to quantity and package. *Bromide* firm at 2s. 1d. per lb. *Iodide* very quiet at 13s. 7d. per lb. *Muriate*: Chemically pure small crystals, 30s. to 32s. per cwt.; free from metals, white, 25s. 6d. to 26s. 6d. per cwt. *Oxalate*, 5¼d. to 5½d. per lb. *Sulpho-cyanide* is steady at 1s. to 1s. 1d. per lb., according to quantity. *Sal ammoniac* firm at 35s. per cwt. for firsts sublimed; seconds, 33s. per cwt.; crushed for batteries, 37s. and 35s. per cwt. respectively.

ARSENIC—Is steady at 18s. per cwt. for powder, and 34s. per cwt. for lump.

BLEACHING POWDER—Steady at £6 10s. to £7 per ton.

BORAX.—Firm at 14s. 3d. to 14s. 9d. per cwt. for lump, and 14s. 6d. to 15s. per cwt. for powder.

BROMIDES AND BROMINE—Steady at unchanged prices from last week.

CAMPHOR.—The market for *crude* continues very firm, and refiners have advanced their prices for bells and tablets 1d. per lb. A further advance is anticipated.

CASCARA SAGRADA.—The market continues strong at 25s. per cwt. for new, and 28s. per cwt. for old bark. It now seems pretty certain that we shall see much higher prices before the next season's bark is gathered.

CINCHONA BARK.—At the London auctions on Tuesday very small supplies were offered, the total of all descriptions amounting to only 931 packages. A very good demand prevailed and the bulk sold at a further slight advance on the last Amsterdam sales.

Ceylon: 122 bales and 3 cases sold, according to analysis, Succirubra, bold quill at 3½d., fair to good natural quilly chips at 3½d. to 3¾d., fair chips at 2¾d., fair renewed ditto at 2½d., good Hybrid stem chips at 4¼d. *East Indian*: 32 bales offered and 7 bales sold, Officialis renewed chips, good at 3½d., shavings at 3¾d. *South American*: 587 bales Bolivian cultivated Calisaya quills offered and about 500 bales sold, fair to good rich at 5d. to 6¼d., 4 bales soft Columbian offered and sold at 2½d. *African*: Of 183 bales 167 sold, fair to good silvery quill at 4½d. to 5d., thin dull quill, part broken, at 2¾d. The following dates have been fixed for the London auctions in 1899: Jan. 24, Feb. 28, March 28, April 25, May 24, June 20, July 18, Aug. 15, Sept. 12, Oct. 10, Nov. 14, and Dec. 19.

CLOVES.—Privately. *Zanzibar* quiet but firm; October to December delivery, 4d.; January to March, 3½d.; March to May, 3¾d. No auction sales of spices this week.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*, commercial, 1s. 3d. pure, 2s. per gallon. *Benzole*, 50 per cent. 10d., 90 per cent. 9d. per gallon. *Crude Naphtha*, 30 per cent. at 120° C., 4d. per gallon. *Solvent Naphtha*, 95 per cent. at 160° C. 1s. 6d. per gallon.

COCAINE—Is nominally without change at 9s. 9d. per oz. for the best brands in 25-oz. tins, and for 100-oz. lots. An advance in value of the article is, however, expected in quarters which are generally well informed as to future movements of such articles.

CODEIA—Steady at 12s. 6d. per oz.

COD-LIVER OIL—Remains very quiet at nominally unchanged values, say 80s. to 85s. per barrel for best new non-congealing *Norwegian* oil.

CREAM OF TARTAR—Is firm at rather dearer rates, 73s. to 78s. per cwt. being now the prices for first white *crystals*, according to strength, and 75s. to 83s. per cwt. for *powder*.

ERGOT OF RYE—Remains firm. The article is evidently scarce, and full prices would have to be paid for really good sound quality, both *Spanish*, *Russian*, and *Continental*.

GLYCERIN—Is very firm at prices quoted last week, say 52s. 6d. to 55s. per cwt. for *English*, and 55s. to 65s. per cwt. for *German* best white double distilled chemically pure 1260° quality in tins and cases.

GOLDEN SEAL ROOT.—The dealers in New York have been waiting for prices to give way, instead of which the country holders have not only been able to hold their own but to exact higher prices. 2s. 3d. per lb., *c.i.f.*, is now the nearest quotation.

GUARANA.—After being so long neglected this article at last seems to have taken a turn, and price has improved to 1s. 6d. per lb.

IODIDES AND IODINE—Quiet and without change.

MERCURIALS.—As anticipated in our last, these have been advanced, prices being now as follows:—Calomel, 2s. 8d. per lb.; hyd. ammon., 3s. 1d. per lb.; hyd. oxid. rub., 3s. per lb.; hyd. perchlor., 2s. 4d. per lb.; hyd. persulph., 2s. 1d. per lb.; hyd. sulph. nig. 2s. per lb.

MORPHIA—Is quiet at 5s. per lb. for the powdered salts.

OILS (ESSENTIAL).—*Peppermint*. Japanese is stronger, and this reacts on American, which, whilst without change, is steadier; HGH on the spot, 5s. 6d. per lb.; Wayne County, 3s. 8d. to 3s. 9d. per lb. on the spot. *Star Aniseed* is very freely offered, but buyers are few; 6s. 3d. per lb. is nearest value on the spot for quantity. *Cassia* is steady at 4s. 6d. to 5s. 6d. per lb., according to analysis. *Citronelle*, 1s. 1½d. to 1s. 2d. per lb. *Lemongrass* quiet at 3¼d. per oz.

OILS (FIXED AND SPIRITS).—*Linseed* is lower at £17 5s. for spot pipes London; barrels £17 15s. *Rape* is offered more freely and prices have receded to £21 15s. for ordinary brown on the spot and £23 5s. for refined on the spot. *Cotton* again lower at £13 for London crude on the spot; refined spot £15 to £16, according to make. *Olive*: Spanish, £29; Levant and Mogador, £29 to £32 per ton. Table oils are quiet at 4s. 3d. to 6s. per gallon. *Coconut* steady at £25 for Ceylon, Cochin nominally £28 5s. £29 on the spot. *Palm*: Lagos on the spot £22 10s. *Turpentine* quiet but steady at 26s. 9d. per cwt. for American on the spot. *Petroleum oil* is quiet at 5½d. per gallon for Russian and 6¼d. per gallon for American both on the spot. *Petroleum spirit* steady at 7¾d. per gallon. Deodorised 8d. per gallon.

OPIUM—Is quiet at unchanged values, and with but little doing. The Smyrna market is rather weaker in consequence of the rains which fell last month having had a favourable influence on the prospects of the later autumn sowings.

PHENAZONE and ANTIPYRINE—Are quiet and without change.

PHENACETINE.—Is steady at 3s. 9d. to 4s. 3d. per lb., according to quantity.

POTASH COMPOUNDS.—*Chlorate* is firm at 4d. per lb. for crystals, and 4½d. per lb. for powder. *Bicarbonate* steady at 30s. to 35s. per cwt., according to make. *Bromide* firm at 1s. 9½d. per lb. *Iodide* quiet at 10s. 3d. per lb. *Prussiate*: Yellow is quiet at 6¾d. to 7d. per lb. for English; red, 1s. 2d. per lb. *Cyanide* quiet at 1s. to 1s. 1d. per lb. for the 98 to 100 per cent. white cake. *Permanganate* slightly firmer, without quotable change; small crystals, 50s. per cwt.; large crystals, 55s. per cwt. *Bichromate* firm at 3¾d. to 3¼d. per lb. *Oxalate*: Neutral firm at 5d. per lb.

QUICKSILVER.—Whilst first hands are firm at £7 10s., holders of second-hand parcels are rather easier at £7 8s. 6d. per bottle.

QUININE.—A decided improvement has taken place in the value of this article. It is said some 50,000 ozs. have been done since the date of our last report at 10d. per oz., but at the moment none of the makers are offering, and second-hand offerings are scarce. It might be possible to get a little at 10½d., but it would be very little. In America the domestic makers have advanced the price to 24 cents, or 1s. per oz. Market remains very firm, little being obtainable from below 11d. per oz., if even at that

SALTPETRE.—English refined in casks 20s. per cwt., kegs 21s. per cwt.

SENEGA ROOT.—A fair business has been done on the spot at 1s. 2½d. per lb., whilst the quotation from New York comes at 1s. 1¼d. per lb., which is equal to about 1s. 3d. per lb. London terms.

SHELLAC—Continues very slow of sale, although prices remain steady. *TN orange* is quoted at 65s. per cwt. basis fair.

SODA COMPOUNDS.—*Ash* is steady at £5 5s. to £5 10s. per ton, according to strength. *Crystals* firm at 57s. 6d. per ton, ex-ship. *Bicarbonate* is in good demand at £7 5s. per ton for the 97 per cent., 18s. 6d. per cwt. for the fully bicarbonated quality. *Bromide* quiet at 2s. per lb. *Iodide* slow of sale at 11s. 7d. per lb. *Hyposulphite* quiet at 6s. to 8s. per cwt., according to brand. *Bichromate* firm at 2¾d. to 3d. per lb.

SPERMACEI.—*American* is very firm at 1s. 2½d. per lb., and it is thought higher prices must rule.

STAR ANISEEDS—Are dearer, 130s. per cwt. having been paid privately.

SUGAR OF LEAD—Firm at the reduced price of 26s. 6d. per cwt. for *foreign*.

SULPHATE OF COPPER—Very firm at £17 10s. to £18 10s. per ton, according to brand. A large business has been done.

SULPHONAL.—The long foretold advance in this article has at last taken place, the two makers having advanced their prices to 17s. per lb. (as against 7s. 3d. per lb., to which the article had been reduced by mutual excessive competition). Holders who secured a stock betimes will therefore have done well. Some little sharp practice has taken place in the market in the direction of catching the unwary, who had not received a hint of the impending advance. The "bitten" are naturally somewhat sore on the subject, while the "biter" will hardly have done himself much good in the long run by his sharp practice.

SULPHUR—Is firm. *English*: Roll 7s. 6d. to 8s. per cwt.; flowers 11s. per cwt. *Foreign*: Roll 6s. 6d. per cwt.; flowers 7s. per cwt.

THYMOL—Is firm at 7s. 6d. to 8s. per lb.

To-days' Drug Auctions passed off somewhat quietly. The demand for Ipecacuanha was slow, and prices showed a decline. One of the chief features was the high price paid for a small parcel of fine Dragon's Blood. The following are the particulars as far as it has been possible to give same up to time of going to press:—

ACONITE ROOT.—10 bags *Japan* were bought in at 27s. 6d. per cwt.

ALOES.—*Cape* were in rather better supply and prices were somewhat lower at 25s. per cwt. for good hard bright down to 18s. 6d. per cwt. for drossy. 15 kegs good *Socrotine* were held for 75s. 2 cases good *Zanzibar* in monkey skins for 95s., 6 cases good hardish ditto in tins selling cheaply at 65s. per cwt.

AMBERGRIS.—1 tin of fair quality and flavour and fairly developed sold at 75s. per oz.; 1 tin of inferior quality being held for 45s. per oz.

ANNATTO SEEDS.—14 bags fair bright were bought in at 4d. per lb.

ASAFETIDA.—Of a new lot of 117 cases about 70 cases sold at lower rates; good grey pinky block, part loose almondy, realising 45s. to 51s. per cwt.; low dark heavy block, 24s. to 25s. per cwt.

BALSAM COPAIBA.—29 tins all bought in at 1s. 4d. per lb., a bid of 1s. 3d. not being entertained.

BALSAM PERU.—4 cases were taken out at 8s. 3d. per lb.

BALSAM TOLU.—8 cases were sold at 1s. 8d. per lb.

BUCHU LEAVES.—27 bales part sold at 5d. to 5½d. per lb. for good green rounds. 2 bales yellowish green were bought in at 5½d. per lb. (only 4¼d. being offered), yellowish selling at 4½d. per lb.

CALUMBA ROOT.—49 bags, small dark to good, bright sorts, parts slightly wormy, sold at 19s. to 20s. 6d.; dark and sea damaged, at 16s. 6d. to 17s. 6d.; 7 bags, fair washed, were taken out at 45s. per cwt.

CAMPHOR.—69 tubs *crude Japan* were held for 105s. per cwt.

CARDAMOMS—Were on the whole slow of sale. Those that passed the hammer showed a firm market, prices being unchanged from last sale.

CASCARA SAGRADA.—100 bags of fair quality were held for 25s. per cwt.

CINCHONA BARK.—57 packages *Crown* and *Grey Bark*, part sold at 4½d. to 8½d. per lb.; 1 case *Red Bark* bought in at 5s. per lb.; 9 bales *Yellow* at 8d. per lb.; 15 cases *Cinchona Bark* held for 9d. per lb.

COD-LIVER OIL.—100 barrels non-freezing *Norwegian*, offered without reserve, sold at 63s. to 64s. 6d. per barrel. Quality appeared to be fair, but the colour slightly yellowish.

COLOCYNTH.—5 cases somewhat inferior and brownish *Turkey* were held for 11d. per lb.

CONCENTRATED LIME JUICE.—3 hogsheads *Dominican* were taken out without mention of price.

CROTON SEED.—6 cases, of rather dull appearance, were taken out at 80s. per cwt.

CUMMIN SEED.—2 bags *Malta* sold cheaply without reserve at 20s. per cwt., really good quality being held for 28s. per cwt.

CUS CUS ROOT.—13 bales, good cleaned, taken out at 55s. per cwt.

CUTTLEFISH BONE.—20 mats good pale fairly bold but part broken sold cheaply at 2½d. per lb.

DAMIANA LEAVES.—5 bales rather yellow in colour were held for 7½d. per lb.

DILL SEED.—22 bags rather darkish in colour were held for 11s. per cwt.

DRAGONS' BLOOD.—6 cases dark slabs, very damp and dull in colour, sold at £5 10s. per cwt., dull reeds being bought in at £10 10s., dull slabs at £9; 5 cases double goat brand, really fine block part false packed, sold at £18 the case; 1 case rampant horse brand bought in at £12, only £9 10s. per cwt. being bid.

ERGOT OF RYE.—Very weevily *Spanish* was taken out at the high price of 2s. per lb. A parcel of fair *Spanish*, sold privately lately at 1s. 7d. per lb., was offered in public sale, and a portion resold at 2s. per lb.

GALLS.—27 bags *Turkey* were bought in at 52s. 6d. per cwt.

GAMBOGE.—Low to mixed to partly fair pickings sold at £5 15s. to £6, good soft ditto being bought in at £8 7s. 6d. and good pipe at £9 per cwt.

GENTIAN ROOT.—30 bales good dry sound root were held for 18s. per cwt.

GUARANA.—1 case was held for 1s. 6d. per lb., which shows a somewhat improved value of this article.

GUM AMMONIACUM.—4 cases held at 35s. for fair blocky, dark ditto selling subject to owner's approval at 15s. per cwt. 8 cases clean seed, part blocky, were bought at 35s., dark ditto at 25s. per cwt.

GUM ARABIC.—26 bales *Aden* gum were bought in at 50s.; 4 cases fair grain at £6 12s. 6d. per cwt.

GUM BENJAMIN.—Medium to fair *Sumatra* was sold at £6 to £6 2s. 6d. per cwt., lower ditto at £4 10s. to £5 5s., good at £7 2s. 6d.

GUM GALBANUM.—3 bags of fair quality were bought in at 10d. per lb.

GUM GUAIACUM.—5 barrels good glassy block sold at 1s. 6d. per lb. 22 barrels low drossy only realised 1d. to 1¼d. per lb.

GUM KINO.—Two tins genuine were taken out at 12s. per lb.; 2 cases *African* were held for 3s.

GUM MASTIC.—Good pale was bought in at 2s., yellow at 1s. 9d. per lb.

GUM MYRRH.—7 casks native picked were held for £5. 1 cask good pickings for 40s. per cwt.

GUM TRAGACANTH.—7 cakes had been part sold previously at price which did not transpire, balance being bought in at £13 10s. per cwt. for good firsts.

HONEY.—6 barrels medium, *Jamaica*, sold at 21s. per cwt.; 20 kegs *Irish*, which were catalogued, were not offered.

IGNATIUS BEANS.—5 bags good held for 3d. per lb., a bid of 2d. per lb. being refused.

IPECACUANHA.—The demand was slow, and only a few bales *Rio* sold at about steady prices, 9s. 9d. to 9s. 10d. per lb. for fair thin. For *Carthagen* there was no bidding, but holders declined to sell below 7s. 6d. per lb.

JALAP.—40 bales fairly heavy tubers were bought in. Price required was apparently 6½d. per lb.

KAMALA.—4 cases good bright were taken out at 9d. per lb.

KOLA NUTS.—4 packages dull West Indian sold at 4d. per lb.

LIQUORICE JUICE.—50 cases *Italian* were bought in at 60s. per cwt.

MENTHOL.—8 cases good Japan crystals, *Kobayashi* brand were bought in, 7s. per lb. being the price required.

NUX VOMICA.—100 bags small dull sold very cheaply at 3s. 6d. per cwt.

OILS (ESSENTIAL).—13 cases Japan *Peppermint*, guaranteed to contain about 40 per cent. of crystallisable menthol, were taken out at 4s. 9d. per lb., dementholised ditto being bought in at 3s. 7½d. per lb. 10 cases *Cajeputa*, of good quality, held for 3s. 6d. per bottle. 2 cases *Cinnamon Oil*, of good quality, taken out at 1s. 9d. per oz. 3 cases *Cinnamon Leaf Oil* at 5d. per oz. 2 packages West Indian *Bay Oil* sold at 6s. 3d. per lb. 7 cases *Cassia Oil*, containing 84 per cent. of cinnamic aldehyde, sold at 4s. 8d. per lb. 13 cases *Oil Citronella* bought in at 1s. 1½d. per lb., and 3 drums ditto at 12½d. 10 cases *Star Aniseed Oil* sold cheaply at 6s. per lb., a *do* fine of 2d. per lb. on last sales. case *Eucalyptus Globulus* was held for 1s. 9d. per lb.; 11 cases commercial ditto for 11½d. to 1s. 3d. per lb. 2 cases *Bergamot* for 9s. 3d. per lb. 3 cases *Lemon* for 3s. per lb.

OIL OF CAMPHOR.—10 cases white *Japan* were bought in at 20s. per cwt.

OPIUM.—4 cases rough *Turkey* were bought in at 9s. 6d. per lb. 8 tins, each 20 lbs. nett, powdered opium (powdered by Stafford, Allen & Co., and testing according to Mr. R. A. Cripps' analysis, 11.45 per cent. morphia) were taken out at 12s. per lb.

ORANGE PEEL.—Fair, new, thin cut, was held for 7½d. per lb., old ditto for 6d. per lb.

OTTO OF ROSES.—13 vases, offered without reserve, sold at 8s. to 9s. 6d. per oz. (*Turkish*).

QUILLAYA BARK.—10 bales of fair quality were held for 24s. per cwt.

RHATANIA ROOT.—12 bales were held for 6½d. per lb.

RHUBARB.—10 cases rough horny high dried were bought at 7d. per lb.

ROSE OIL.—5 pots *Japan* were bought in at 4d. per oz., 1 lot of settlings selling at 1d. per oz.

SARSAPARILLA.—5 bales red and grey *native* were held for 10d. to 1s. 2d. per lb., according to quality. 18 bales *Lima* bought in at 1s. 1d. to 1s. 4d., the damaged selling at 10d. per lb.

SCAMMONY.—13 cases were all bought in at 18s. to 30s. per lb. according to quality.

SENEKA ROOT.—5 bales of good quality were held for 1s. 2½d. per lb.

SENNA.—*Tinnevelly* was in small supply, only about 110 bales being offered from first hands. Prices were firm to rather dearer. Small leaf, 2d. to 2½d. per lb., medium bold up to 3½d. per lb. Pods 1½d. per lb. In next sale about 400 bales will be offered. *Alexandrian* 100 packages offered, but not a single one sold. quality not being what is at present wanted.

SQUILLS.—28 bags of good quality were held for 3d. per lb.

STROPHANTHUS SEEDS.—7 bags fair *Kombé* were taken out at 3s. per lb.

TONQUIN BEANS.—15 packages good frosted *Paras* sold at 2s. per lb., chiefly black foxy and mixed, were taken out at 9d. per lb.

VANILLA.—In all 545 tins were offered, but this large quantity was strongly competed for at an advance of 2s. per lb. Fine *Seychelles*, 7 to 7½ inch, realised 27s. 6d. per lb.; 6½ inch, 24s. 6d. per lb.; 5½ to 6 inch, 22s. per lb.

WAX.—28 cases *Benguela* were bought in at £6 7s. 6d.; 7 cases *Zanzibar* at £6 5s.; 3 casks fair *Jamaica* sold at £6 12s. 6d.; 25 bales fair *Italian* taken out at £5 10s.

Liverpool Market Report.

NOVEMBER 9, 1898.

AMMONIUM SALTS.—*Carbonate*: 3d. per lb. *Sal ammoniac*: 33s. to 35s. per cwt. *Sulphate*: £10 per ton.

ARSENIC.—Lump, £32 per ton. Powder, £17.

BEESWAX.—About 5 tons of *Sierra Leone* sold privately.

BLEACHING POWDER.—£5 5s. to £5 15s. per ton.

COPPERAS.—37s. to 39s. per ton.

COPPER SULPHATE.—Continues firm on the spot at £17 10s. to £17 12s. 6d., for forward delivery £18 5s. per ton.

FENUGREC.—140 bags of bulked *Syrian* were cleared from the quay at 8s. per cwt.

GINGER.—*Java* has sold at 8s. 9d. to 9s. per cwt., and *Sierra Leone* at 19s. 6d.

HONEY.—24 barrels *Valencia* changed hands at 20s. 6d., ex store.

KOLA NUTS.—16 bags dried fetched 1½d. per lb.

LINSEED.—Is idle, without any disposition for business; *Calcutta* and *North American* for forward delivery are both quoted at 39s. per 416 lbs. *Turkish* has been sold in small amount at 42s.

OILS (FIXED) AND SPIRITS.—*Castor* is selling steadily at 3¼d. per lb. for *Calcutta*, 2¼d. to 2½d. per lb. for *Madras*, and 2½d. to 3d. for *French 1st pressure*, of which latter about 15 tons have changed hands at the former rate. *Olive* is slow of sale, but steady at recent quotations. *Linseed* has receded slightly, and is quoted here at 18s. 3d. to 19s. per cwt. for *Liverpool pressed oil*. *Cottonseed* unchanged at 15s. 6d. to 15s. 9d. *Spirits of Turpentine* has dropped to 27s. 6d. per cwt., where it remains firm.

POTASH SALTS.—*Bicarbonate*: 30s. per cwt. *Bichromate*: 3½d. per lb. *Chlorate*: 3¾d. to 4d. per lb. *Cream of Tartar* is steady and in somewhat short supply at 75s. per cwt.; 6 bags of *Patras* were sold privately from store. *Pearlashes* are nominal at 34s. to 35s. per cwt. *Potashes* are quiet at 23s. per cwt. *Prussiate*: 6¾d. per lb. *Saltpetre* is scarce at 21s. 6d. per cwt.; *Kurrachee* 5 per cent. has been sold from the quay here at 16s. per cwt., and 16s. 6d. is now asked.

SODA SALTS.—*Bicarbonate*: £6 13s. per ton. *Borax* is very firm and a good deal of business has been done at £14 to £14 10s. per ton. *Caustic*: 76 to 77 per cent., £7 12s. 6d. to £7 15s. per ton; 70 per cent., £7 per ton. *Crystals*: £3 per ton. *Nitrate* is in moderate demand at 7s. 7½d. to 7s. 9d. per cwt.

Manchester Chemical Report.

NOVEMBER 8, 1898.

So far as the export trade is concerned, the outlook for heavy chemicals is not bright. Taking the Board of Trade returns, a sort of commercial chronometer of fair standard as things go, we find the decrease in Alkalies, etc., of a continuous character. The imports of chemicals, etc., show only a trifling decrease in comparison with the same month last year, exactly 5 per cent., and the exports of chemicals and chemical and medicinal preparations are nearly the same, showing this to be fairly steady. The decrease in the exports of Alkali is 22.5 per cent., and in Bleaching materials 18.3, but there is some encouragement in the fact that the bulk of the decrease is due to the continued decline in exports to the United States. In this respect the decrease of exports to the States is marked, being only 52,757 cwt. of Alkali for this month, as against 137,953 cwt. the same month last year, and Bleaching materials 60,869 cwt., as against 75,618 cwt. There is, however, a very satisfactory feature in that home consumption is increasing. There is no diminution in prices of heavy Alkalies. In miscellaneous chemicals, on the other hand, there is a fair improvement. A great feature is the advance in Sulphate of Copper, which is now quoted £19 per ton, for prompt delivery, best brands, *Manchester*. *Brown Acetate of Lime* is a point higher at £5 7s. 6d., to £5 10s. per ton., *Welsh and American, Manchester*. *Aniline Oil and Salt* are down to 4d. and 4½d. respectively, a low figure indeed. *Tar products* are about the same.

Newcastle Chemical Report.

Shipping orders for heavy goods are slackening down for the near *Baltic* ports. Home shipments for *Channel* ports, however, are better, mostly for *Soda Crystals*. Prices are:—*Bleaching Powder*, £5 10s. to £6. *Soda Crystals*, 45s., according to market. *Alkali*, 50 per cent. £5 5s. *Soda Ash*, 70 per cent., £7 5s. *Sulphur*, £5 per ton.

Announcements.

Monday, November 14.

PHARMACEUTICAL SOCIETY OF IRELAND, 67, Lower Mount Street, Dublin.—Lecture on "Plants and Insects," illustrated by lime-light, by F. W. Moore, of the Royal Botanic Gardens.

Tuesday, November 15.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION, County Restaurant, Bradford.—Dr. C. E. Waddington will lecture on "Nerves," with lantern illustrations.

ROYAL PHOTOGRAPHIC SOCIETY, 12, Hanover Square, London, W., at 8 p.m.—Papers will be read "On Rapid Dry Plates for Process Work, Combined Screen and Colour Negatives for Three-Colour Printing," by A. A. K. Tallent, and "On the Melting and Setting Points of Gelatin Solutions and Their Modification," by R. Child Bayley.

Wednesday, November 16.

ROYAL MICROSCOPICAL SOCIETY, 20, Hanover Square, London, W., at 7.30 p.m.—Exhibition of Thum's slides of diatoms mounted in high refractive media.

WESTERN CHEMISTS' ASSOCIATION (OF LONDON), Café Royal, 68, Regent Street, W., at 7 p.m. Eighth annual dinner. Mr. J. H. Mathews, the retiring President, in the chair.

Thursday, November 17.

CHEMICAL SOCIETY, Burlington House, Piccadilly, London, W., at 8 p.m. Several papers will be read by Messrs. E. Divers and T. Haga.

CHEMISTS' ASSISTANTS' ASSOCIATION, 73, Newman Street, London, W. Discussion on "Advertising in Pharmacy," opened by W. Anderson.

LINNEAN SOCIETY OF LONDON, Burlington House, Piccadilly, W., at 8 p.m. Evening meeting, when papers will be read "On some Spiders from Chili and Peru," by F. O. Pickard, Cambridge; and "The Botanical Results of a Journey into the Interior of Western Australia," by Spences Moore.

MIDLAND PHARMACEUTICAL ASSOCIATION, Mason University College, Birmingham, at 8.30 p.m.—Mr. John Barclay, will open a "Discussion on the 1898 B.P." by reading a paper on the "New Standards."

THE NORTH-EAST LANCASHIRE CHEMISTS' ASSOCIATION, White Bull Hotel, Blackburn, at 8 p.m.—Annual meeting.

NORTH STAFFORDSHIRE AND DISTRICT CHEMISTS' ASSOCIATION, Copeland Arms Hotel, Stoke, at 6.30 p.m.—A general meeting will be held, when a paper on "Emulsions" will be read by Mr. W. B. Allison. The Secretary will also move an important resolution urging chemists to join the Pharmaceutical Society.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY, Bird's Restaurant Co., Ltd., Surrey Street, Sheffield, at 7.30 p.m.—A smoking concert will be held. Admission by ticket only: Members and friends, 1s. each; assistant and apprentices free.

Friday, November 18.

IRISH PHARMACISTS' ASSISTANTS' ASSOCIATION, 67, Lower Mount Street, Dublin.—Impromptu discussions.

Obituary.

CORNER.—On November 7, Thomas B. Corner, Chemist and Druggist, Whitby. Aged 52.

HODDY.—On November 2, Benjamin Hoddy, Chemist and Druggist, Halstead, Essex. Aged 75.

SANDERSON.—On November 2, Henry Sanderson, Chemist and Druggist, Birmingham. Aged 59.

MORRIS.—On November 3, Sarjeant Witton Morris, Chemist and Druggist, late of Edmonton, Middlesex. Aged 63.

HORSLEY.—On November 6, Thomas Wood Horsley, Pharmaceutical Chemist, Notting Hill, London, W. Aged 56. Mr. Horsley had been a pharmaceutical chemist member of the Society since 1871, and was divisional secretary for N. Kensington. He was particularly active in the recent parliamentary campaign which resulted in the passing of the Pharmacy Acts Amendment Act, 1898, and the overthrow of the Privy Council's Poisons Bill. Mr. Horsley was a type of the loyal and zealous worker which pharmacy can ill afford to lose.

Advertisement.

(Received too late for Classification.)

WANTED an ASSISTANT (unqualified), or LOCUM. REED, St. James's Hotel, Harrogate.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Six Pieces Perfume Ribbon, each 36 yards long (216 yards), assorted colours, post free, 5s.—Edward Peck, East Dereham, Norfolk.

For Sale.—Show Jar for window, as Maw's Fig. 1, plain gold cover, total height about 32 inches, with Fig. 2 stand £3, cost over £6.—Hodgson, Chemist, Waterloo, Liverpool.

Valuable Herbarium for Sale, containing 217 British plants, each mounted on cartridge paper, 15 inches by 11, collected this year, accurately named; price £2 2s.—T. T. Cocking, Ashgate Road, Sheffield.

Magic Lanterns, second-hand; triples and binials: oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Four—6- or 8-gallon pear-shape carboys, cut stoppers, mahogany stands; dispensing balance as Maw's, Fig. 10; counter scales as Fig. 2, without drawer. What offers?—Smith, Chemist, Weston-Super-Mare.

For Sale.—Twenty-two volumes 'Pharmaceutical Transactions,' volumes 1 to 22, 1842 to 1862; well bound, good condition. What offers?—Cripps, Chemist, Berkhamsted.

Leath-Ross show-case and medicines; window-fittings, glass shelves, specie-jars; Holloway's coca-wine; Holloway's Liebig's wine. Particulars, Williams, Chemist, Bournemouth.

What Offers?—Two 2-gall. show-carboys, height, 24 in.; two glass show-jars, with handsome gilt glass covers, height, 22 in.; American tincture-press. All worth buying.—T., 31, Taplow Street, City Road, N.

Show Jar, 21 in., as Maw, fig. 1, gilt metal cover and 2 in. imitation ebony stand, 30s. Mahogany window show stand, mirrored similar Maw's, fig. 9, 50s. Three 6 gall. pear-shape carboys, cut stoppers, and 2 in. stands, 12s. 6d. each. Packing free.—Shipman, Chemist, Hastings.

For Sale.—Field Camera, 3-plate; rapid rectilinear lens; extra dark slide; tripod and satchel. What offers? Apply, G. T., 6, McDowall Road, Camberwell, S.E.

WANTED.

Old Electric Lamps and Scrap Platinum for prompt cash.—P. Rowsell, 9, Derwent Grove, East Dulwich, London, S.E.

New Books for Minor; exchange guitar to 30s.—Barker, Pharmacy, Melksham.

Best Cash Offers, 100-oz. original tin Howards' quinine.—Endle, Chemist, Boscombe.

Wanted.—Maisch's 'Materia Medica'; Ince's 'Grammar'; and Green's 'Botany' vol. 2; latest editions, state price or will exchange for Martindale, 8th ed., and other books.—W. B., 416, Bury New Road, Manchester.

Camera, 1/2 plate, second-hand, with quarter-plate carrier, good condition.—State maker's name and lowest price to—R. O. Hayes, Chemist, Hayward's Heath.

Partnerships Dissolved.

(From the London Gazette)

John S. McArthur and A. James, Consulting Chemists, 56, New Broad Street, E.C., and 45, Renfield Street, Glasgow.

C. K. C. Herapath and G. T. Myles, Surgeons, Physicians, 3, Portland Square, Bristol.

C. Lammiman and G. V. Worthington, Physicians and Surgeons, Tunbridge Wells.

Marked Copies of the following Newspapers, etc., have been received during the week:—Cork Daily Herald, Brixtonian.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Barlow, Barues, Barr, Bayley, Bell, Bessant, Blackmore, Branch, Brunt, Burroughs, Butterworth, Churchill, Daubeny, Dent, Dowzard, Fitch, Gifford, Gilder, Gill, Goodess, Guthrie, Hadden, Harper, Hart, Hebb, Henderson, Hewitt, Hewlett, Hogg, Horsfield, Hunt, Jones, Kirkpatrick, Livening, Lloyd, Mason, Michie, Moore, Morley, Mumbray, Nunn, Palmer, Pater, Railton, Reid, Reynolds, Roberts, Rowell, Smith, Sutton, Thompson, Wingfield.

NORTH-EAST LANCASHIRE CHEMISTS' ASSOCIATION.

At the annual meeting of the North-East Lancashire Chemists' Association, held at the White Bull Hotel, Blackburn, on Thursday night, Councillor CRITCHLEY in the chair, Mr. R. LORD GIFFORD, Hon. Secretary, read the following

Report of the Committee.

Our last annual meeting, held, like this one, late in the year, was characterised by evidence of a growing feeling that we must make our work more systematic, and the incoming committee were ordered to meet at least once a month for six months, and twice in the summer months. It was also held to be desirable to invite a prominent person in pharmacy to our annual dinner in order to bring about a more effective reunion of the trade. These were the features of the meeting last year. A parting of the ways, as it were, seems to have resulted, probably given direction to by what has happened since in pharmaceutical politics. We think here it is due to our esteemed friend Mr. Whitehead, who has done so much for us, to say that in bringing Mr. Edward Evans, jun., J.P., from Liverpool, and in bringing together a combination of forty-five to meet him, he started a work from which handsome results must come to the profession he has so much at heart. We are glad to notice that our brethren in Morcambe have elected him their local secretary, and we hope they will utilise the excellent acquisition to their ranks. We also recommend the good folks of Lancaster to acquire his services. This has been an eventful year, and the visit of some of the Committee to the splendid banquet the Manchester Pharmaceutical Association gave to the Lord Mayor (Mr. Alderman Gibson) may have had something to do with the stirring up of our fighting ardour. It may be presumptuous, but it is a fact that we remarked, on listening to Mr. Hills at Manchester, what a grand thing it would be for pharmacy if we could get our calmly judicial and learned President of the Pharmaceutical Society into line with the rank and file! If this splendid product of pharmacy could hold out his hand and grip the multitude of his humble brethren, what a difference it would make; if he could be brought to feel with, to speak and act for us, what a hopeful outlook for pharmacy would be opened. We have had considerable communication during the past year with the President, Mr. Rymer Young, and Dr. Symes, and we judge there can be no question but that these gentlemen have the interests of the rank and file deeply at heart. At the same time they are unable to convince the every-day chemist of this, and up to now they have been quite incapable of adding to the Pharmaceutical Society the very people they most wish to get. We hope before this meeting closes to make it clear how the great mass of chemists may be brought into line and form a Pharmaceutical Society with a momentum which nothing can withstand.

THE PHARMACY ACTS AMENDMENT BILL.

On February 20 a special meeting was held to discuss this Bill. The feeling was, it must be recorded, that the Bill was trivial, but it was felt that the only reasonable expectation of benefit to ourselves lay in unanimity, and we were assured by so sound an authority as Mr. G. S. Woolley, of Manchester, that this Bill could not interfere with any future legislation. It had been felt, by the way, that this small Bill would be considered an act of legislation by the Legislature, and thus stand in the way of future efforts. We had come to think we needed not pettifogging legislation, but serious effort to grapple with the overwhelming difficulties which beset us.

ELECTION OF COUNCIL.

In this spirit we worked until April 26, when we were called together to consider the Council elections, and it was resolved

That this Association as a body thinks that the retiring members of the Pharmaceutical Council should define their position, and show that in future they intend to pursue a more progressive policy.

The response to this confirmed us in what we knew, that the members of Council generally were actuated by an earnest desire for the welfare of the profession. A few naively asked us to define a more progressive policy; others explained and proved to their own satisfaction that the Council was always, and always would be, the model of progressiveness. On June 28 a special meeting was held on the Poisonous Substances Bill, introduced into the House of

Lords by the Duke of Devonshire. An admirable address on the subject was given by Mr. TAYLOR, of Bolton, who in a very lucid manner exposed the fallacies and the injustice of the measure. Resolutions were passed and sent to the Members of Parliament, petitions ordered to be prepared, and the district roused on the matter. The meeting was most enthusiastic, and was the high-water mark of our local association's effort. This Bill and the Pharmacy Act Amendment Bill serve as object-lessons to pharmacists if they will take the trouble to read between the lines. It is very likely that if the opposition could have acted with the same quiet discretion that our leaders displayed the little Bill would never have passed at all; but the moment the attention of Parliament was arrested by the noise of opposition, the sympathy of the House was assured to the Bill and its passage made simple.

PUBLICITY—GOOD OR BAD?

We think the history of these two Bills also serves as an illustration of the value of publicity. The majority of the chemists in this country live by trade almost pure and simple. There are no properly defined duties according to law. Yet when the Legislature imposed upon the chemist certain qualifications for the exercise of his profession, it must have been that, in the public interest it was thought necessary those qualifications should exist. Well, for twenty years we have sought with becoming humility for trivial extensions of our rights and privileges, but not until our action had aroused the loud-voiced protestations of the parasites of the profession did the true nature of our grievances dawn upon the legislative mind. Even now the popular conception of the chemist's qualifications is that it is a certificate to his dishonest tendencies.

A NEW PHARMACY BILL WANTED.

We are constantly charged with dealing too much in generalisations, and we are asked to deal with specific questions. Well, all we can say is that our critics have been dealing with definite points for the last twenty years, with the result that the topics for discussion have increased twenty-fold, and to-day we have in this country something like five hundred large establishments legally practising illegitimate pharmacy, and thousands of persons exercising the functions of the pharmacist illegally. We conclude, then, that this discussion of particular points is fallacious, and in its place we urge our much-abused generalisations. Our first is, the Pharmacy Act of 1868 has totally failed in bringing about the manifest intention of the Act; our second, that we want a new and adequate Pharmacy Act, one in harmony with the spirit of the age, defining and giving reasonable functions to the person willing to fulfil its demands and undergo its conditions. Our third is, there is room for a profession of pharmacy, and that this profession should consist in the handling and distribution of all powerful herbs, drugs, and chemicals. We say that the publication in the papers of large advertisements which are nothing but falsehoods made to appear to the ordinary mind as truths, and that positively harmful quack remedies are valued by the million pounds sterling are facts which are a disgrace to the professions charged with the protection of the public. Now let us get an appreciation of what we aim at, and then we will promptly discuss particulars. But first we ask, where do we stand? You must settle the principles before you come to details. We have editorial, in this week's *Pharmaceutical Journal* and *Chemist and Druggist* both of which, to our minds, express sentiments which at previous time would have been combatted by each editor. Still we think they might further improve. We are asked, "What is desirable and feasible?" We think the Council should tell us that. We think it is the duty of leaders to lead, and of rank and file to discuss the pronouncements of the leaders. But we have absolutely no pronouncements of policy to lay before you from our leaders. "The Council of the Pharmaceutical Society cannot be expected to draft any measure." But we do ask the Council to draft a measure. Not only so, but we say it is the bounden duty of the Council to do so, and we think to talk of opposition from inside is merely to indulge in meaningless phraseology, as is also the statement that "due regard must be paid to what is practical under existing circumstances." How can we know what is practical? We can only surmise and have convictions. Our perspicuous friend, the editor of the *Chemist and Druggist*, hovers round a variety of subjects, showing the power of association, etc., but we think he should distinguish better the

position of the Council in relation to the body politic. We must see clearly that the Council can have no trade function, and, therefore, would not receive a hearing from any other than a professional standpoint. It does seem strange that it should be necessary to say that we do not expect any feeding-bottle treatment from the Pharmaceutical Council. We expect to attend to our trade ourselves, and we say that it is the business of the Pharmaceutical Council to attend to the profession of pharmacy solely, and its duty is to widen and perfect the profession by every means in its power.

MEDICAL JOTTINGS.

DR. WILLIAM MURRELL, F.R.C.P., has been appointed Physician to the Westminster Hospital in succession to Dr. H. B. Donkin, who has resigned in consequence of having been appointed a Commissioner of Prisons for England and Wales. Dr. Murrell is the author of several well-known works on pharmacology, therapeutics, bronchitis, etc.; one of his most popular books is the little pocket volume 'What to Do in Cases of Poisoning,' which has run into eight editions.

A MEDICAL CONTEMPORARY, when replying recently to a query of a correspondent, suggested that a difficulty which had been experienced might be solved by applying to the Royal Pharmaceutical Society. Has our contemporary the gift of prophecy?

DR. ALLAN C. SYM, of Edinburgh, writes to the *British Medical Journal* to point out that *Primula obconica* is not the only primula which sets up irritation, but that *Primula sibbaldii* certainly does so also; he has been informed by gardeners that there are other varieties of primula which are noxious, but that *Primula obconica* is the most virulent. He adds that in his experience nothing relieves the intense irritation of the skin so much as frequent bathing with a weak solution of creolin.

THE RESIGNATION BY MR. TREVES of his post as Surgeon to the London Hospital is attributed to a difference of opinion between the governing body and himself respecting the grant hitherto made in aid of physiological research at the laboratory attached to the medical school. Mr. Treves' sympathy had been enlisted in favour of withdrawing this grant, on account of the alleged practice of vivisection, and he induced the committee to adopt his view, but on appeal the governing body rescinded this decision and confirmed the grant.

PROFESSOR VIRCHOW has again been returned by one of the electoral districts of Berlin as deputy to the Prussian Parliament. The great pathologist, who is a Radical in politics, received 1358 votes against 782 polled by his Conservative opponent, and nearly 200 more votes than he polled at the 1893 election.

THE FIRST NUMBER of the *Medical and Surgical Review of Reviews* appeared last month. It is a monthly magazine on the plan of Mr. Stead's well known publication, but dealing, as its name implies, exclusively with medical and kindred subjects, and somewhat on the same lines as the late Mr. Ernest Hart's *London Medical Record*, long since defunct.

AN ITALIAN MEDICAL JOURNAL records the successful treatment of a case of tetanus by hypodermic injections of carbolic acid, as suggested by Professor Baccelli. Not the slightest symptom of poisoning was produced, though the injections were continued for three weeks, the administrator being a member of the patient's family. In fifty days the patient, a farmer, twenty-one years old, was quite well.

AT THE LAST MEETING OF THE CLINICAL SOCIETY, Mr. Watson Cheyne, the well-known surgeon, showed a case in which freshly removed rabbit bone had been used to replace large portions of nasal bone which had been lost by the patient eight years before in consequence of an accidental injury. Last January Mr. Cheyne

performed the operation. He first raised a flap of skin from the right side of the nose, going down to and freely exposing the periosteum. He then removed the femur from the rabbit, split it into several pieces, and laid these on the exposed periosteum, replacing the flap so as to cover them in. The wound healed without suppuration, and the result was excellent.

UNDER THE HEADING OF "HOSPITAL ASIDES," the *Medical Press* is publishing a series of amusing sketches portraying the matron, secretary, and other hospital officials. Last week's number contains a fancy delineation of "Mr. Wigglesworth the Dispenser," who has been a faithful servant at the hospital for fifty years. He is hale, hearty, and fresh, though the oldest officer in the place, and if he has earned a name as one given to grumbling and unnecessary complaining, yet his influence renders the other officers' tasks lighter. The few cheeky probationers and the self-superior nurses that there are receive a snub now and then at his hands that does them inestimable good. Sometimes he will send a message to a young resident medical officer to the effect that his prescription is quite undecipherable. As the purport of the message happens to be a positive fact, it follows that the sender of it scores. It may be that he will be at the hospital for a long time yet, for he does his work as well as it can be done, and there is an impression in some quarters that rather than retire and ask for a pension he will work on and on and add to such savings as he has, until the sum is large enough to meet all his likely needs.

DR. WILLIAM ORD, physician to St. Thomas's Hospital, was the Bradshaw Lecturer this year. The subject of this lecture, which was delivered last week before the Royal College of Physicians, was "Myxœdema and Allied Disorders." Under the head of treatment, Dr. Ord stated that until the introduction by Dr. Murray of the practice of making hypodermic injection of a glycerin extract of the thyroid gland, no remedies could be spoken of as effective. Afterwards Dr. Hector Mackenzie found that the internal administration of the gland or its preparations brought about as marked an improvement and progress to cure as had been effected by the hypodermic injection, and the internal administration of the thyroid gland in one way or another is the method of treatment now usually adopted. It would appear that the administration of the thyroid gland itself when it can be carefully and regularly maintained in the most appropriate form of treatment. The gland may be finely minced and administered raw with sugar or salt or may be lightly cooked. The size of the gland, mainly obtained from sheep, varies a good deal, and such variation is to some extent a justification of the administration of an extract obtained from a number of glands so as to get something like an average. In one case still under his occasional notice an affectionate husband has been at the trouble to procure regularly thyroid glands from sheep and to prepare them in a raw state for administration to his wife. The original quantity administered was one gland a week, but as the patient has improved the frequency of administration has been diminished, but it still goes on as it has gone on for some years, and at the present moment the woman presents no signs whatever of the disease. It is possible to give the thyroid gland too frequently. When the knowledge of its efficacy as administered internally first became known, Dr. Ord gave to a patient, who was so ill as hardly to present any chance of maintaining life, one gland a day for four days in succession. At the end of that time she suffered from violent headache, vomiting, and pains in the limbs with a rise of temperature amounting to 6° F. With such a lesson the gland was administered at longer intervals—namely, of from a week to ten days—with ultimately the greatest benefit. But to procure fresh and healthy glands and to prepare them in the proper way involves a great deal of trouble, and their use may be replaced by the administration of Dr. Murray's glycerin extract in doses varying from ten to thirty drops a day, or every second or third day, according to the effects produced and to the patient's power of bearing the influence of what we may call now the drug. Still more convenient and not ineffective are the preparations in the form of tabloids now in common use. Some of these contain the dried and crushed gland, others extracts of it, such as the excellent powders devised by Mr. Edmund White, B.Sc., the therapist of St. Thomas's Hospital. On the whole Dr. Ord prefers the extracts of the whole gland to any kind of principle derived from it by chemical processes. Perhaps the next best form is the dried and powdered gland of the *Pharmacopœia*.

SCOTTISH NEWS.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.—This Association has arranged with the St. Andrew's Ambulance Association for the formation of an ambulance class for its members, and the first meeting took place in the Pharmaceutical Society's house, on Monday, November 14, at 8.45 p.m. The Lecturer, Dr. Edmund Price, in opening the class, said he knew no class of men to whom instruction in first aid to the injured was more likely to be useful than pharmacists. It was to the chemist in most instances that injured persons were first handed over by the police. That they needed some such instruction he had on several occasions been made aware. On one occasion he was consulted by a man whose forehead was swollen to about twice the usual size. He had sustained a cut over the brow, and this had been very neatly hermetically sealed by a chemist with adhesive plaster. On removing the plaster, there was an abundant escape of pus from the wound, which explained the swelling. Had this chemist had ambulance instruction he would have known that the edges of a wound should be brought together with strips of plaster, at right angle to the cut, and with sufficient intervals for the free escape of any effete matters. It was, perhaps, hardly necessary for him to say that this course of lectures would not qualify them for becoming prescribing chemists. He did not think they were likely to fall into that mistake, for such was, he was glad to say, not the tendency of Edinburgh chemists. They had no temptation to do so in Edinburgh, for the reason that there was no such thing as dispensing doctor. That was just as it should be, and he felt sure that so long as the doctors left dispensing to the chemists they would leave the prescribing to the doctors. The lecturer then proceeded to sketch the general anatomy of the human body and demonstrated the various uses of the triangular bandage. The class meets every Monday night at 8.45 and any wishing to join should communicate at once with the Secretary, Mr. Harley, 4, North Bridge.

PROPOSAL TO APPOINT A CORPORATION CHEMIST.—At a meeting of the Glasgow City Council on Monday a proposal was brought forward by a special committee that the City should appoint a chemist under the Sale of Food and Drugs Acts to devote his whole time to the work. After a long discussion the matter was sent back to the committee for further information by a large majority.

DECLINE IN CHEMICAL INDUSTRY.—The decline in the chemical industry in the west of Scotland has resulted in the closing of the Irvine Works of the United Alkali Company. For some months past the works have really been standing idle, and the Eglinton Works, at Irvine, belonging to the same firm, have also been idle, with the exception of the sulphuric acid branch.

ENGLISH NEWS.

A PRESENTATION is to be made to Mr. Richard Bannister, late of the Government Laboratory, Somerset House, on Tuesday next, November 22. The presentation will be made at the Drill Hall, Somerset House, by Dr. Thorpe.

FOREIGN CHEMICAL PATENTS IN THIS COUNTRY.—Chemical processes are frequently protected by patents in Great Britain for several years after the foreign patents have expired. The Manchester Chamber of Commerce has now decided to raise the question in the next session of Parliament. It is thought that a short Bill will be introduced for the simultaneous expiry of home and foreign patents.

THE RELATIONSHIP BETWEEN RAIN AND PLANTS.—Mr. Charles Turner, Director of the Manchester College of Pharmacy, on Saturday evening last delivered an address on the above subject to the members of the Field Naturalists and Archaeologists' Society, at the City Art Gallery, Mosley Street. Sir W. H. Bailey presided, and there was a large attendance. Mr. Turner's address, which was illustrated with limelight views, dealt with the subject from a popular standpoint, illustrative of rain regarded as both "meat and drink" for plants, and the remarkable development which takes place under its influence. Mr. Turner received a cordial vote of thanks at the close of his interesting lecture.

LAUDANUM POISONING.—At an inquest on Friday, November 11, at Hanham, on the body of the infant son of George and Florrie Cook, to whom five drops of laudanum had been administered, the mother stated that the child had been weakly since birth, and she had scarcely had a night's rest since it was born. Dr. Norman had attended it, and advised her to give it a little weak brandy. A friend advised her to give the child a few drops of laudanum, and she gave it five drops. It seemed more peaceful afterwards, but grew worse next day, and died a few hours after the doctor arrived. Dr. J. Norman detailed the post-mortem results, and said he observed no other cause for the child's death but the laudanum. A verdict was returned to the effect that the child died from the effects of some laudanum given it by its mother, who was ignorant of the poisonous effects of the drug.

THE ROYAL SOCIETY'S MEDALS have this year been adjudicated as follows:—Copley Medal, Sir William Huggins, F.R.S.; Royal Medals, Rev. John Kerr, F.R.S., Mr. Walter Gardiner, F.R.S.; Rumford Medal, Professor Oliver Lodge, F.R.S.; Davy Medal, Professor Johannes Wislicenus, For. Mem. R.S.; Darwin Medal, Professor Karl Pearson, F.R.S.

FOOD AND DRUGS ACT PROSECUTION.—James Edward Bush, chemist and druggist, was summoned at the Melksham Petty Sessions, on November 3, for selling 4 ozs. of oil of almonds, which the county analyst certified was adulterated with other oil to the extent of 25 per cent.—The defendant admitted that the oil supplied to the inspector contained 25 per cent. of peach kernel oil, and consequently did not come up to the standard as laid down by the British Pharmacopœia, 1898. In previous editions no standard was laid down, and the oil in question was purchased before the publication of the Pharmacopœia in May last. Mr. Bush acknowledged that a technical offence had been committed, but said there was no intention at all to defraud, and no moral offence.—The magistrates said they were unanimously of opinion that there was no intention to defraud, but it was the defendant's duty to see his goods were in accordance with the requirements, and they were bound to take notice of it.—A fine of £1, including costs, was imposed.

ADULTERATED BORAX.—In his quarterly report the Medical Officer of Health for Birmingham (Dr. Alfred Hill) states that of four samples of borax taken only one was found to be genuine. Two were adulterated with 35 per cent. of sodium carbonate and the fourth with 25 per cent. of the same substance. A fine of 5s. was inflicted in each case.

MR. JOHN PATTISON GIBSON, chemist and druggist, local secretary of the Pharmaceutical Society for Hexham, delivered a lecture at the Church Institute, Newcastle, on Monday, November 14, on "The Northumbrian Sea Coast." Mr. Gibson, who is a well-known photographer, antiquarian, and historian, treated his subject in a manner at once masterly and interesting. A capital series of limelight views illustrated the lecture.

THE OLD-ESTABLISHED BUSINESS of Mr. Alfred Allchin, pharmaceutical chemist, of England Lane, has been registered under the Companies Act, and will now be known as Alfred Allchin, Ltd.

DEATH CAUSED BY LAVENDER FLOWERS.—At Chelsea, on Thursday, November 10, Mr. Drew held an inquest on the body of Violet Gibson, aged seven and a half months, of 6, Eatley Buildings, Manor Street, Chelsea.—On Friday, November 4, the child got hold of a muslin bag of lavender flowers and sucked it. The next day it was seized with sickness and died on Monday. The bag of muslin, it was stated, had been made at least two years.—Dr. Flood, who had made a post-mortem, said the organs were all healthy, except the stomach, which was congested, and the intestines, gangrenous from intersusception following vomiting. He had never known a case of lavender poisoning, but it would cause irritation. The flower, however, might have been decayed. Death was due to the irritation set up by sucking a bag of lavender.—The jury returned a verdict of "Accidental death."

CRICKET CHAMPIONSHIP IN THE DRUG TRADE.—At a preliminary meeting held on Friday, November 11, at the offices of Messrs. Burgoyne, Burbidges and Co., Mr. C. A. Hill presiding, it was resolved to form a league amongst the wholesale druggists and manufacturing chemists to compete for a cricket challenge cup.

It was further resolved that only *bond-fide* present employes and principals of firms be allowed to take part in the championship matches, and that this rule be strictly adhered to. It is not yet known what firms will compete for the cup; the matter is still in progress. The following firms were represented: Messrs. Allen and Hanburys; Burroughs, Wellcome and Co.; Davy, Hill and Co.; Hewlett and Son; Howards and Sons.

MR. A. URWIN, chemist and druggist, of Lanchester, has taken over the chemist's business at 114, Westgate Road, Newcastle-on-Tyne, formerly carried on by Mr. James Davidson.

FOOTBALL.—The following association match was played at Lake Side Farm, Southfields, on Saturday last, between the Metropolitan College of Pharmacy F.C. and Kensington Rangers Reserves, the game finally resulting in a draw, the score being three all.—This match, between Pharmaceutical Football Club v. London Hospital second XI., played at Wormholt Farm on Saturday last, resulted in a draw, the teams scoring two goals each. P.F.C. team: W. J. Wilkinson, W. Owen, M. Lloyd, T. J. Wild, F. E. Buckingham, L. Tibbitt, J. Evans, T. J. Stokoe, P. B. Gray, W. Garsed, K. Padwick.—On Saturday, November 12, at Homerton, a team from the Westminster College of Pharmacy beat the representatives of the South London College of Pharmacy by one goal to *nil*.

THE SACCHARIN PATENTS LITIGATION.—On November 16, the case of the Saccharin Corporation, Limited, v. Chemicals and Drugs Company, Limited, came before the Court of Appeal (the Master of the Rolls and Lords Justices Chitty and Williams), from the refusal of Mr. Justice North, sitting in chambers, to order that the question of infringement should be tried before the rest of the action. Mr. Swinfen Eady, Q.C. (with him Lord Robert Cecil), said this was an application by the defendants that the question whether they had infringed the letters patent, or any of them, might be set down and tried before the question of validity was dealt with. The action was a peculiar one. The plaintiffs sued the defendants for infringing twelve patents for the production of saccharin, which was a derivative product from coal tar. The saccharin was not manufactured by the defendants, but was imported by them from abroad. Plaintiffs had been ordered to deliver particulars of infringement with a view of showing what portions of the specifications they alleged the defendants had infringed, and they had simply stated that defendants had infringed all the patents and every line of each patent. This, of course, raised a tremendous question for the trial. Defendants did not know by what process the saccharin was manufactured, and as they had furnished plaintiffs with the names of the persons from whom they obtained it in Paris, they ought not to be compelled to fight the question of the validity of the patents until the question of infringement had been disposed of.—Mr. Moulton, Q.C., M.P., and Mr. Graham for the plaintiffs, were not called upon.—Their lordships dismissed the appeal with costs, considering that it was for the learned judge who had to try the case to say what was the most expeditious way of disposing of the question between the parties.

AN INQUEST was held at Kingston-on-Thames on Thursday, November 10, concerning the death of John Markey, 33, an engineer's turner, who died in the Tolworth Isolation Hospital from an overdose of opium while suffering from typhoid fever.—Miss Homewood, the matron, said that Dr. Ackerly, the medical officer, prescribed an injection of six ounces of starch and half a drachm of tincture of opium. Next morning the patient showed symptoms of narcotic poisoning, and he died soon afterwards. Witness learned that Nurse Rice had mistaken the doctor's prescription and administered half an ounce of opium instead of half a drachm. Strictly speaking, witness should have measured the opium, but she sometimes trusted to experienced nurses.—Phoebe Rice, the nurse, said she had been taught nursing at schools and in hospitals, but she did not know that half an ounce of opium was dangerous.—The Coroner: Then you ought to have been taught that.—The jury, in recording their verdict, expressed the opinion that greater care should be taken in dispensing poisonous drugs.

THE KEEPING OF DANGEROUS CHEMICALS.—Messrs. Mack, Bryan and Co., Old Haymarket, Liverpool, were summoned at the Liverpool Police Court, on November 15, for having on their premises 11 lbs. of carbide of calcium without a licence, the limit allowed by

law being 5 lbs. The offence was admitted, but ignorance of the law was pleaded. It was stated that since the inspector called the firm had divided the carbide into 4 lb. drums.—Mr. Stubbs (magistrate's clerk) said that was not the law. If the defendants had more than 5 lbs. on the premises without a licence they were liable to a penalty of £20 a day.—Defendants said that they would take out a licence at once. The material was for an acetelyne gas generator, and the firm, as agents, had not yet received their full instructions.—The Bench imposed a penalty of 5s. and costs.

FRENCH NEWS.

MR. SWANN'S DEATH.—Below is a photograph of Mr. H. H. Swann, pharmacien de 1er classe, Paris, whose death we announced in our last issue. The deceased gentleman was born at Peterborough in 1823. He was, for a short period, assistant in an Oxford Street pharmacy, London, but having a desire to extend his knowledge, he came to Paris, where he engaged with the well-known firm of Roberts and Co., at that time in the Place Vendôme. His primary object was to become a doctor, to which end he studied at the School of Medicine in company with many of those who were once the leading lights in the medical world. Later, however, he abandoned his object (due, no doubt, to the influence of his great friend, the illustrious expert Professor Orfila), and devoted all his energies to the pursuit of chemistry and pharmacy, for which he had a remarkable aptitude. He finally took his degree, and in 1850 founded the house in the Rue de Castiglione which bears his name. His ability and kindly manner soon enabled him to form a *clientele*, which increased so rapidly that he was



obliged to enlarge his pharmacy by removing the partition wall and taking in the neighbouring shop. He was always to be found in the front ranks of his profession, was a thoroughly up-to-date pharmacien, and ever ready to assist with his store of scientific knowledge those who stood in need of it. He was connected for thirty-five years with the business of Churchill's Hydrophosphites, of which he was the maker and representative for the Continent. He, moreover, rendered Dr. Churchill incalculable assistance in perfecting his preparations. Amiable, unostentatious, and exceedingly charitable, he was liked and respected by all with whom he came in contact. His death will certainly be regretted by all who had the pleasure of knowing him. He was a member of the British Chamber of Commerce of Paris, and took a deep interest in all

matters pertaining to the welfare of the old country. The deceased gentleman was 75 years of age, and up to the day of his last illness took a very active part in the management of his own affairs. The interment took place on Saturday, November 12, at the cemetery of St. Germain-en-Laye, in the outskirts of Paris. He leaves a widow and one son, Mr. Alfred Swann.

INTERNATIONAL PHARMACEUTICAL CONGRESS, 1900.—The Committee of Organisation in connection with the above has just been formed, and consists of the following gentlemen, to whom the various offices connected therewith have been allotted. M. Planchon, Professor at the School of Pharmacy, Paris, has been appointed President, whilst M. Petit (former President of the General Association of Pharmaciens of France), and M. Dupuy, Professor at the School of Pharmacy, of Toulouse, together discharge the duties of Vice-Presidents. Monsieur Bourquelot, Professor at the School of Pharmacy, Paris, acts as General Secretary, and Messrs. Labelonye and Leroy, pharmaciens, perform the functions of Treasurers.

CONCOURS.—A Concours will be opened on May 3, 1899, at the Superior School of Pharmacy of the University of Nancy, to fill the vacancy for the Chair of Pharmacy and Materia Medica in connection with the Preparatory School of Medicine and Pharmacy, of Besançon.

WHY PHARMACIENS CANNOT REAP the incalculable benefits accruing from the observance of the seventh day as a day of rest from the trials and worries of the preceding six has long been an unsolved problem in France. Candidly, there is no more necessity for all pharmacies to keep open all day Sunday on this side the Channel than there is for it on your side. To Bordeaux, however, must the palm be given for the happy consummation of a proposal by its pharmaciens to observe the Sabbath day, not from any religious motives by the way, but rather from a conviction of the necessity for repose and recreation. The *modus operandi* is as follows:—The pharmaciens having agreed as to the order in which each shall take his turn to keep open, their clients are duly notified during the week by means of a printed announcement placed in evidence in the pharmacy and bearing the name of the pharmacien whose turn it is to be on duty the following Sunday. In this manner the public are forewarned, and in the event of cases of emergency, lose no time in uselessly ringing peals upon all the pharmacy bells *en route*. Whereas our Bordelaise *confrères* have only agreed to close from mid-day, our fellow-craftsmen at Rheims do still better, by closing at 10 a.m. The scheme appears to work admirably, and the public, in nowise inconvenienced by its adoption, seem to appreciate the efforts of the pharmaciens, and help them by making their purchases early, as is evidenced by the animated appearance of the pharmacies in the morning. It is pleasant to hear and read that pharmacists can agree to work harmoniously together, and that by putting aside those petty jealousies so peculiar to the craft, much may be done to ameliorate their hard and none too happy lot. This is but the thin end of the wedge, and may possibly lead to the accomplishment of other aims which can only be attained by union and oneness of thought and action. Let us hope their scheme may be productive of much good to themselves and be an example for others, especially their Parisian *confrères*, to follow.

IRISH NEWS.

THE IRISH YACHT "SHAMROCK," is to be constructed of wolframium, an alloy of wolfram, copper, and aluminium. The latter is the principal constituent, and is obtained from bauxite, an Irish product mined in Glenavel, County Antrim, and made into alumina at Larne by Bayer's process. The pure aluminium oxide is afterwards reduced by Heroult's process to the metal, at Foyer's, on Loch Ness, Scotland. The predominant partner contributes her quota to the general "get-up" in the rolling mills of Milton, Staffordshire. Aluminium has come to the front slowly. It was first prepared pure in 1827 by Wöhler. It was exhibited by Deville at the Paris Exhibition, 1855, as "silver made from clay." Owing to the expense of production then it was only used in the manufacture of opera glasses and physical apparatus where lightness and strength were a *sine qua non*. Twenty years ago it cost £200 per cwt, to-day the British Aluminium Company supplies it at the rate of £7 10s, per cwt,

THE PRODUCTION OF ALUMINA, as conducted at the works of the British Aluminium Company at Larne, is as follows:—The bauxite having been ground and calcined, is placed in a kier along with a certain proportion of strong caustic soda, and by means of a steam jacket the temperature is increased and maintained until the alumina is held in solution by the soda. The mixture is then blown out by the pressure in the kiers into tanks, where it is diluted. To separate the liquid aluminate of soda from the refuse matter, the mixture is passed through filter presses, which retain the solid impurities but allow the liquid to run off into storage tanks. This liquid is then run off as required into decomposing cylinders, in which the soda separates from the alumina. The hydrate of alumina is now filtered and washed to remove any soda which remains, and is afterwards dried and heated in a furnace fired by Dowson gas to about 2000° F., when it becomes crystalline, ready to be converted into metal.

A POISON BOTTLE blue, fluted, and hexagonal is quite as necessary as a poison-label, as is evident by the mistake made by M. Auguste Van Biene, the popular artiste, in Dublin. During an illness he mistook, owing to the dim light, a bottle of liniment for an internal medicine. An emetic produced the desired effect. Perhaps in emulation of this example an old woman in Larne Union purloined from the medicine cupboard of a nurse, something which she may have expected to stay the "drooth"—it was liniment! A stomach pump was the agent of recovery in this instance.

AT AN INQUEST upon the body of an infant in Belfast the jury found that "death had been accelerated by an overdose of laudanum." A number of doctors had been attending the child, but the mother "gave it two drops of laudanum" for its good. It seems to be a pretty general practice to go behind the medical man's back and administer some quack's cordial or elixir, and when the patient is thus killed the doctor gets the blame.

THE EPIDEMIC IN BELFAST has caused the *British Medical Journal* and *Lancet* to forego their wonted professional calm and impartiality. The assertion of the latter organ that the typhoid mortality rate was in the first nine months of last year equal to 0.965 per million is without the slightest foundation. The total deaths from enteric in 1897, were 154; on the Registrar-General's estimate (304,000). This gives 506 per million, or less than 400 for nine months. But taking the population of the city at 350,000 (which can be easily shown since the extension of the boundaries to be the accurate one), the annual death-rate from typhoid per million would be 440 or 330 for nine months. The investigations of Professor Lorraine Smith, not yet concluded, may threaten the existence of some theories and hypotheses. It is said that Professor Smith has been unable to detect the typhoid germ as the cause of the epidemic, but has discovered in the sputum of patients Gertner's bacillus, which he has also found in his bacteriological examination to be present in the drinking-water.

Announcements.

Tuesday, November 22.

ROYAL PHOTOGRAPHIC SOCIETY, 12, Hanover Square, W., at 8 p.m., Mr. W. J. Russell will read a paper on "The Action of Certain Substances on a Photographic Plate in the Dark."

Wednesday, November 23.

PHARMACEUTICAL SOCIETY (North British Branch), 36, York Place, Edinburgh at 8.30 p.m. Evening meeting, at which Prof. Ralph Stockman will deliver an address on "Arrow and Ordeal Poisons: Their History, Sources, and Constituents."

SUNDERLAND CHEMISTS' ASSOCIATION, Grand Hotel, Bridge Street, at 5.30 p.m. Special meeting to discuss the new defence scheme as issued by the P.A.T.A.

Thursday, November 24.

CHEMISTS' ASSISTANTS' ASSOCIATION, Grand Hall, Freemasons' Tavern, Great Queen Street, W.C., at 8 p.m. The Annual Reunion (Smoking Concert). Mr. R. A. Robinson, L.C.C., in the chair.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION, Annual dinner.

MARKET REPORT.

The quotations here are given in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

London Report.

NOVEMBER 17.

Business in Drugs and Chemicals, without being very active, has nevertheless, somewhat improved during the past few days, due probably to the rather improved political outlook, combined with the advent of the busier season of the year. Quinine remains firm, with a further advance in price confidently anticipated. Cocaine is also very firm, and looks as if the long-predicted rise in price would soon, at last, take place. Quicksilver and Mercurials, Iodine and Iodides, Bromine and Bromides unchanged. Acid Citric and Acid Tartaric dull. Borax and Boracic Acid quiet. Permanganate of Potash slightly firmer. Opium, Morphia, and Codeia steady. In Sulphonal the advance in makers' prices has not yet fully come into force in consequence of offers from second-hand, a possible improvement is predicted in Phenacetin and Acetanilide. Sulphate of Ammonia dearer again. Acid Carbolic in fair demand at steady prices. Glycerin quiet. Cod Liver Oil rather dull. The following are the prices actually ruling for some of the articles of principal interest:—

ACETANILIDE.—The prospect of a combination amongst the makers, with a view to an advance on present very low prices, is freely spoken of. It must not, however, be overlooked that, besides the keen competition between the makers, the actual very low price of benzole may have something to do with the reduction in price of acetanilide. At present makers still quote 11d. up to 1s. 1d. per lb., according to quantity.

ACID ACETIC.—A fair business passing, and quotations are firm at 14s. 3d. per cwt. for 1 to 7, 15s. 6d. per cwt. for B.P., 40 per cent., 18s. per cwt.; 50 per cent., 21s. 6d. per cwt.; 60 per cent., 25s.; 70 per cent., 28s. 9d.; 74 per cent., 30s.; 80 per cent., 32s. 3d.; 85 per cent., 34s.; 90 per cent., 35s. 9d.; 95 per cent., 37s. 9d.; and glacial 39s. 6d. per cwt., with special quotations for half-ton lots and upwards.

ACID BORACIC.—Steady at 24s. per cwt. for *crystals* and 26s. per cwt. for *powder*.

ACID CARBOLIC.—Is in fair demand at 6½d. to 6¾d. per lb. for 35 to 36° C. *ice crystal* in large drums and overcasks, 39 to 40° C., 7¼d. to 7½d., 39 to 40° C. *detached crystals*, 8¼d. to 8½d. per lb. *Crude*, 60° F., 1s. 11d. per gallon; 75° F., 2s. 3d. per gallon. *Liquid*, 95 per cent. of pale straw colour, 1s. 2d. to 1s. 3s. per gallon, in 40 gallon casks.

ACID CHRYSOPHANIC.—Is quiet at 8s. 6d. per lb.

ACID CITRIC.—Is very quiet at 1s. 1¼d. to 1s. 2d. per lb. on the spot.

ACID OXALIC.—*Crystals* are steady at 3¼d. to 3½d. per lb., with *Powder* ¼d. per lb. more.

ACID TARTARIC.—Dull at 1s. 0½d. to 1s. 0¾d. per lb. for English crystals and 1s. to 1s. 0¼d. per lb. for foreign.

ALUM.—Unchanged at £5 7s. 6d. per ton for loose lump and £6 per ton for ground in bags.

ALOES.—*Curacao* are reported to be very firm from New York both for gourds and boxes. *Socotrine*: Sales of good kegs at 75s. per cwt.

AMMONIA COMPOUNDS.—*Sulphate* is dearer, closing steady. Grey prompt, 24 per cent., London, £10 2s. 6d. per ton; Hull, £10; Leith, £10 1s. 3d. per ton. *Carbonate* steady at 3d. to 4d. per lb., according to quantity and package. *Bromide* unchanged at 2s. 1d. per lb. *Iodide* steady at 13s. 7d. per lb. *Muriate*,

chemically pure, small crystals, 30s. to 32s. per cwt.; free from metals, white, 25s. 6d. to 26s. 6d. per cwt. *Oxalate*, 5¼d. to 5½d. per lb. *Sulpho-cyanide* quiet at 1s. to 1s. 1d. per lb., according to quantity. *Sal ammoniac* firm at 35s. per cwt. for firsts sublimed; seconds, 33s. per cwt.; crushed, 37s. and 35s. per cwt.

APOMORPHIA.—Is quoted at 17s. 9d. to 18s. 6d. per oz., according to quantity and make.

ARSENIC.—Remains steady at 18s. per cwt. for white *powder* and 34s. per cwt. for *lump*.

ATROPIA.—Makers are very firm in their prices, which are 15s. 6d. per oz. for the *Sulphate*, B.P., and 17s. 11d. per oz. for the *Alkaloid*.

BELLADONNA ROOT.—Is very firm, good quality being held for 45s. per cwt.

BLEACHING POWDER.—Quiet at £6 5s. to £6 15s. per ton on the spot.

BORAX.—Steady at 14s. 3d. to 14s. 9d. per cwt. for *lump*, and 14s. 6d. to 15s. per cwt. for *powder*.

BROMIDES AND BROMINE.—Are unchanged at 1s. 11d. per lb. for *Bromine* in 20-case lots, 1s. 9½d. per lb. for *Potass. Bromide*, 2s. 1d. per lb. for *Ammon. Bromide*, and 2s. 0½d. per lb. for *Sodii Bromide*.

BUCHU LEAVES.—The lower prices accepted in last sale stimulated the demand, and all the *ex* sale lots were cleared. Fair green rounds are now quoted 6d. to 7d. per lb. as to quality. No arrivals have taken place.

CAMPHOR.—The market for *crude* is somewhat higher and very firm. Business is reported in China, November to December steamer, at 96s. *c.i.f.*, importers now quoting 101s. per cwt. *c.i.f.*, and for Japan 110s. per cwt. *c.i.f.* German *refined* is ½d. per lb. dearer.

CASCARA SAGRADA.—Is in good inquiry, and several parcels have changed hands at full prices. The price for new bark in New York is 26s. per cwt. *c.i.f.*, London or Liverpool, but such can still be obtained on the spot at 25s. per cwt., and old bark at 27s. 6d. to 28s. per cwt.; latter grade is, however, scarce.

CLOVES.—Privately, *Zanzibar* steady business done in October to December delivery at 4d., and March to May at 3½d. At auction, 102 cases *Penang* sold without reserve, ordinary dark unpicked at 4¼d. to 4½d., and fair to good fair picked at 6¼d. to 7½d. 7 boxes ordinary *Java* sold, without reserve, at 4½d. 5 bags *Seychelles* sold at 4¼d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*, pure, 1s. 6d. to 1s. 9d. per gallon; commercial, 1s. 1d. to 1s. 2d. per gallon. *Benzole*, 50 per cent. 9d., 90 per cent. 8¼d. per gallon. *Crude Naphtha*, 30 per cent. at 120° C., 3½d. to 4d. per gallon. *Solvent Naphtha*, 95 per cent. at 160° C. 1s. 5d. per gallon; 90 per cent. at 160° C. 1s. 1d. per gallon; 90 per cent. at 190° C. 1s. 2d. per gallon.

COCAINE.—Is firm, a tangible advance in makers' prices being confidently anticipated in the near future. This predicted advance is ascribed to two causes: First, the continued advance in price of the crude material, it being also stated that the crop of leaves has suffered considerably, there is also, however, the fact that price of the manufactured article has been unduly cut, owing to excessive competition between the principal makers. Prices remain nominally 9s. 9d. per oz. for the *Hydrochlorate* in 25 oz. tins and 100 oz. tins, makers of the brands chiefly in favour decline, however, to book orders at the moment in view of the prospective advance in prices.

CODEIA.—Is in good demand, makers' price remaining unchanged at 12s. 6d. per oz. for the *pure*, and 1s. per oz. less for the salts.

COD-LIVER OIL.—The continued mildness of the season appears to be checking the demand for this article, in which there is not very much doing at the moment. Price of best non-congealing *Norwegian* oil in tin-lined barrels of 25 gallons each remaining nominally 80s. to 85s. per barrel, according to quantity and brand.

CREAM OF TARTAR.—Continues firm, although quiet; 73s. to 78s. per cwt. is quoted for *crystals* of first white quality, and 75s. to 83s. per cwt. for *powder*, according to analysis.

ERGOT.—*Russian* is quoted at 1s. 6d. per lb., and weevily *Spanis* at same price to 2s. per lb., according to condition.

GINGER.—*Cochin* dull; 470 bags rough kinds all bought in at 23s. to 28s.; also 209 cases cut kinds, native small 46s., B cut 62s. 6d., and A at 86s. to 90s. 265 bags limed *Japan* sold at 17s. to 18s. *Jamaica* quiet but firm, and mostly bought in, only about 15 packages being sold, low middling at 70s., fine 105s.

GLYCERIN.—Has been rather quiet at £50 to £55 per ton fo

English, and £55 to £62 10s. per ton for German best white double-distilled chemically pure 1260 quality in tins and cases.

GOLDEN SEAL ROOT—Has become dearer in New York and with a good demand, and small receipts from the country. Price is fully 2s. 6d. per lb. there.

GUM BENJAMIN.—*Sumatra Thirds* are becoming scarce, and more money is now asked. Some business has been done this week at from 75s. to 85s. per cwt.

IODIDES AND IODINE—Unchanged at 10s. 3d. per lb. for *Potass. Iodide*, 11s. 7d. per lb. for *Sodii Iodide*, 13s. 7d. per lb. for *Ammon. Iodide*, 13s. 7d. per lb. for *Iodoform cryst. powder* or *precipitated*, and 10s. 6d. per lb. for *Iodine resublimed*. *Crude Iodine* is quoted 7½d. per oz.

IPECACUANHA.—There has been very little doing in this article since our last. *Rio* is steady at 9s. 10d. to 10s. 2d. per lb., according to quality. *Carthagenia* firm at 7s. 6d. per lb.

JAPAN WAX—Is steady at 33s. per cwt. for good squares.

LITHIA—Is without change at 10s. 8d. for the *Carbonate*, 6s. 5½d. for the *Citrate cryst.*, and 6s. 11d. per lb. for the *Citrate powder* in 2-cwt. lots.

MENTHOL.—The price for forward delivery comes dearer, and the spot price is consequently firmer at 7s. 3d. to 7s. 6d. per lb., as to quantity.

MERCURIALS.—There has been no change in makers' prices during the week.

MORPHIA—Quiet and unchanged at 5s. per oz. for the *Hydrochlorate salt in powder*, price of *hydrochlorate crystals* being 2d. per oz. more.

NITRATE OF SODA.—Commercial is quoted £7 12s. 6d. to £7 15s. per ton; pure, £8 to £8 2s. 6d.

OILS (ESSENTIAL).—*Star Aniseed*: Cheap sales have been made this week, but buyers coming forward freely the market is firmer, 6s. 3d. per lb. being again the quotation. *Peppermint*, American H.G.H., is quiet at 5s. 6d. per lb. on the spot. *Wayne County*, 3s. 6d. to 3s. 8d. per lb. on the spot according to quality. *Japanese* is firm for arrival at 3s. 7½d., *c.i.f.* for dementholised and 4s. 7½d. per lb. *c.i.f.* for 40 per cent. *Cassia* is quiet on the spot but steady for arrival. *Lemongrass* quiet at 3½d. per lb.

OILS (FIXED) AND SPIRITS.—*Linseed*: Values have given way, but the market closes steady at the decline; on the spot, pipes, London, £16 12s. 6d.; barrels, £17 2s. 6d. *Rape* lower; ordinary brown, on the spot, £21 5s.; refined, spot, £22 15s. *Cotton* continues to fall in value; London crude spot, £12 12s. 6d.; refined spot, £14 10s. to £15 10s., according to make. *Coconut* very firm; Ceylon, £25; Cochin, £29. *Palm*: Lagos on spot, £22 10s. *Turpentine* firm at 26s. 9d. per cwt. for American on the spot. *Petroleum Oil* is quiet at 5½d. per gallon for Russian, and 5½d. to 6½d. per gallon for American; water white, 7½d. per gallon. *Petroleum Spirit*: American, 7¾d. per gallon; deodorised, 8d. per gallon.

OPIUM.—Market remains quiet but fairly steady, there being, however, but little doing in the article. Quotations are nominally unchanged at 11s. 3d. to 12s. per lb. for fair to finest *Persian*, 13s. to 14s. for good to fine *soft shipping* kinds, and 10s. 9d. to 11s. 9d. lb. for seconds, 11s. 3d. to 11s. 9d. for fine *druggists*, and 10s. 6d. to 11s. for good seconds and manufacturing kinds.

ORRIS ROOT—Is quiet but steady, best *selected Florentine* being quoted 42s. 6d. to 45s. per cwt., according to quantity and seller, the ideas as to what really is best selected root varying somewhat.

PERMANGANATE OF POTASH.—There is a better feeling in this article, several of the makers refusing to follow the decline in price. There are, however, still sellers of *small crystals* in 1 cwt. kegs, and for a quantity at 50s. per cwt., price of *large crystals* being 5s. per cwt. more.

PHENACETIN.—There is talk of the possibility of an advance in makers' price of this article; good quality, both *crystal* and *powder*, is, however, still obtainable at 3s. 9d. to 4s. 3d. per lb., according to quantity for bulk packing.

POTASH COMPOUNDS.—*Chlorate* continues firm at 3¾d. to 4d. per lb. for crystals, and 4¼d. per lb. for powder. *Bicarbonate* unchanged at 30s. to 35s. per cwt., according to make. *Bromide* firm at 1s. 9½d. per lb. *Bichromate* is quoted at 3¾d. to 3¼d. per lb. *Prussiate*: Yellow remains firm at 6¾d. per lb. for English; red, 1s. 2d. per lb. *Cyanide* firm at 1s. to 1s. 1d. per lb. for the 98 to 100 per cent. white cake. *Permanganate* steady at 50s. per cwt. for small crystals, and 5s. per cwt. more for large crystals. *Oxalate* steady at 5d. per lb. for the neutral.

QUICKSILVER—Remains unchanged at last week's prices; £7 10s. per bottle from importers, and £7 8s. 6d. from second hands.

QUININE.—The market for this article is very firm, and an advance in price is fully expected. Same remains nominally 11d. per oz. for best brands of *German sulphate* in 100-oz. tins and for 1000-oz. lots, which price has also been paid to second hand, there being, however, but little offering, while makers either refuse to sell at all, stating that they have none to offer at the moment, or will only book orders for quite limited quantities.

SALTPETRE.—English *refined* in kegs 21s. per cwt., casks 20s. per cwt.

SARSAPARILLA.—*Honduras* comes dearer from the other side, and holders here are inclined to ask more money. There seems very little to be had now at 1s. 5d. per lb., the last price paid in auction, 1s. 6d. per lb. being generally asked.

SHELLAC.—Business this week has been exceedingly slow, and at the auctions on Tuesday only a very small supply was offered. The demand was fair, and of a total of 358 cases 219 cases sold at steady rates for *Second Orange*. Fair bright realised 65s. 6d. per cwt., flat liver at 61s. to 62s. per cwt., ordinary red blocky at 61s. per cwt.

SODA COMPOUNDS.—*Crystals* remains at 57s. 6d. per ton, ex ship "Thames." *Ash* £5 to £5 10s. per ton here, according to strength and package. *Bicarbonate* steady at £7 5s. to £7 10s. per ton. *Caustic*, 70 per cent., £8 per ton; 60 per cent., £7 per ton.

SPICES (VARIOUS).—*Black Pepper*: 16 bags Singapore sold at 4¾d., and 12 bags Penang at 4¾d. *Tellicherry* bought in at 4¾d. to 5d. *White Pepper*: 10 bags Penang sold at 7½d.; 65 bags Singapore sold at 8¾d.; inferior, 7¾d. to 8¾d.; and 17 cases fine bold at 9½d. *Chillies*: 25 bales Zanzibar bought in at 38s., also 33 cases fine Japan at 45s. to 47s. 6d. *Capsicums*: 278 bags small West Coast African bought in at 34s. *Cassia Lignea*: 250 boxes bought in at 52s.; 100 bales chips partly sold at 45s. *Cassia Vera*: 149 baskets bought in at 36s. *Cinnamon*: 10 bales Ceylon, ordinary fifth sort, sold at 7d.; of 425 bags Ceylon chips, 61 bags sold at 4¾d. to 4¾d. *Mace*: 23 cases Penang sold, chiefly without reserve; pickings, 1s. 2¾d.; ordinary, 1s. 5d.; good middling red, 1s. 10d. to 1s. 11d.; good bold palish, 2s. 2d. to 2s. 3d.; 45 packages West India sold at 1s. 3d. to 1s. 7d.; good fair, 1s. 9d. *Pimento* mostly bought in at 4¾d. to 5d.

SUGAR OF LEAD—Is without change at 26s. 6d. for *Foreign* and 31s. per cwt. for *English*.

SULPHATE OF COPPER—Continues to be a very firm market at £17 10s. to £18 10s. per ton, according to brand. A very considerable business has been done.

SULPHONAL.—There are sellers from second-hand at somewhat lower prices than 17s. per lb., which the two principal makers now quote. It now remains to be seen how much of the article is in second-hands, as until this stock be exhausted full maker's prices are not likely to rule. Buyers who laid in a good stock of the article betimes as so often suggested in this Journal have cause to congratulate themselves.

SULPHUR—Unchanged at 7s. 6d. to 8s. per cwt. for *English roll*, and 11s. per cwt. for *flowers*. *Foreign*: *Roll*, 6s. 6d. per cwt.; *flowers*, 7s. per cwt.

TURMERIC—Is firm but quiet. Fair *China* fingers, 19s. per cwt., bulby ditto, 17s. per cwt. *Bengal* finger, 19s. per cwt. *Cochin*; finger, 21s. 6d. per cwt.; split bulby, 10s. 6d. per cwt.

Newcastle Chemical Report.

NOVEMBER 16, 1898.

Home orders for Soda Crystals are more showy, principally for the Channel ports, the cheaper water carriage from this district telling against railway routes. Heavy goods moves lowly. Prices are:—Soda Crystals, basis, 45s. Bleaching Powder, £5 10s. to £6, according to markets. Alkali, 50 per cent. £5 5s. Soda Ash, 70 per cent., £7 5s. Sulphur, £5 per ton.

Liverpool Market Report.

NOVEMBER 16, 1898.

Though a few articles in regular demand are at present somewhat slack, and in some cases down in price, a firm and healthy tone is generally noticeable. African produce has been selling at good rates, and so has Madras. Turmeric oils are not occupying any large share of attention just at present, and in the case of Castor, Linseed, and Cottonseed oils slight falls in price are the result. Spirits of Turpentine keep very firm, and Spanish Olive

Oils are likely to become dearer. Good brisk business has been done in heavy chemicals. Borax is very scarce, and rises have been experienced in Sulphate of Copper and Sulphate of Ammonia.

AMMONIA SALTS.—*Carbonate*, 3d. per lb.; *Sal ammoniac*, 33s. to 35s. per cwt.; *Sulphate*, £10 5s. per ton.

CANARYSEED.—Turkish seed continues steady at 28s. 6d. to 30s. per 464 lbs. About 400 bags have been sold at 28s. 6d. to 29s.

CHILLIES.—Fine Sierra Leone have found buyers at 36s. per cwt.

COPPER SULPHATE—Is very strong at £18 per ton for prompt delivery, and £18 10s. to £19 forward.

GINGER.—Sierra Leone has been moving off to some extent at 19s. 6d. per cwt. About 50 bags changed hands at this figure ex store.

LINSEED.—Calcutta forward is easier by 3d. per 416 lbs., and sells at 38s. for November to December, and 37s. 9d. for December to January. North American for spot delivery is 36s. 6d. per 424 lbs. *c.i.f.*

OILS (FIXED) AND SPIRITS.—*Castor* is very flat indeed, Calcutta selling at 3½d. per lb.; French, 2½d.; and Madras at 2¼d. per lb. *Olive* has advanced to £30 per ton for Spanish for shipment, owing to a fall in the rate of exchange; spot price £29 10s. for Malaga. *Linseed* has changed in buyers' favour, to 18s. and 19s. per cwt. *Cottonseed* is flat at 15s. to 15s. 6d. per cwt. *Spirits of Turpentine* continues firm at 27s. 6d. per cwt.

POTASH SALTS.—*Cream of Tartar*, Spanish, has been selling at 72s. per cwt., and 73s. is now asked for it. *Potashes* are very scarce at 24s. per cwt. *Saltpetre*, under 5 per cent. *Kurrachee*, has been selling from store at 16s. 6d. per cwt., for the small amount remaining, 17s. is asked.

SODA SALTS.—*Borax* is very firm and scarce at £14 to £15 per ton.

TURMERIC.—*Madras* "figer" 43 bags went for 28s. per cwt.

Manchester Chemical Report.

NOVEMBER 16, 1898.

There is a rather quieter tone prevalent all round, although generally, especially in drysalteries, a fair amount of business is passing locally. In Alkalies there is a somewhat lower tendency all round. Ammonia Alkali is quoted £4 to £4 2s. 6d. for 58 per cent. on rails. Bleaching Powder for prompt £4 10s., softwood casks, and over next year £4 to £4 2s. 6d. per ton on rails, makers' works. Contracts for Caustic Soda are being booked, but makers, while accepting lower figures for prompt delivery, are still disinclined to quote forward except at full rates. There is, however, great competition amongst producers in this department. Sulphate of Copper is the turn easier, and varies from £18 10s. to £19 per ton, best brands, delivered Manchester. Brown Acetate continues steady at £5 5s. to £5 10s. for Welsh and American at Manchester. Naphthas continue scarce, especially solvent wood. Benzoles are practically unchanged, but Aniline Oil and Salt are fractionally higher. Acetate of Soda firmer at £12 10s. per ton, spot. White Powdered Arsenic, £16 10s. to £17 per ton. The direct oil trade continues large. The "Barjom" and the "Rock-light" have left Batoum with cargoes, amounting in the aggregate to two million gallons of refined petroleum.

Partnerships Dissolved.

(From the London Gazette.)

R. A. Leadbetter, and Stephen Bird, Aerated Water Manufacturers, etc., High Wycombe.

S. J. Scott and John R. Hill, Surgeons and Apothecaries, Station Road, Chapelton, near Sheffield.

Maurice Parry-Jones and J. Corkery, Physicians and Surgeons, Alfreton and Pinxton, Derby.

R. Brown and E. V. Coles, Surgeon-Dentists, 3, Bedford Terrace, Tavistock Road, Plymouth, so far as regards R. Brown.

Advertisement.

(Received too late for Classification).

ENGAGEMENT wanted as TRAVELLER. Drugs or Sundries. First-class retail experience. ALBUS, "Pharm. Journal" Office, 5, Serle St., W.C.

Publications Received.

HOW TO MAKE LANTERN SLIDES, by S. L. COULTHURST. Pp. 81. Price (cloth) 1s. net. London: Dawbarn and Ward, Ltd., 6, Farringdon Avenue, E.C. 1898. From the Publishers.

CREMATION: THE RATIONALE OF IT, by "LENNOX." Pp. 23. Price 6d. London: L. Peirson, 3B, Blenheim Mansions, Stafford Street, N.W. 1898. From the Author.

TANNIGENO E TANNALBINA, pel DOTT. FRANCESCO CORLETTI. Pp. 29. Bologna: Dottor Vittorio Dall'olio, Editore. 1898. From the Publisher.

GOUT: ITS PATHOLOGY AND TREATMENT. By ARTHUR P. LUFF, M.D. Lond., B.Sc., F.R.C.P. Pp. viii. + 248. Price 5s. London, Cassell and Company, Ltd. 1897. From the Publishers.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Six Pieces Perfume Ribbon, each 36 yards long (216 yards), assorted colours, post free, 5s.—Edward Peck, East Dereham, Norfolk.

For Sale.—Field Camera, ½-plate; rapid rectilinear lens; extra dark slide; tripod and satchel. What offers? Apply, G. T., 6, McDowall Road, Camberwell, S.E.

Formula, Straw Hat Polish, black; sells like magic. Formula for many colours. Recipe, 2s.—Huntley, Chemist, Kidderminster.

Two large mahogany cases, plate-glass front, sides, top, mirror doors, 50 in. by 26 by 28; also mahogany case, glass front, sides, door, and top, containing 4 plate-glass shelves; 2 8-gall. carboys, pear-shaped; 2 2-gall. ditto; what offers?—Kitching, Oakengates, Salop.

Best Cash Offers, 100-oz. original tin Howards' quinine.—Endle, Chemist, Boscombe.

Magic Lanterns, second-hand; triples and biunials: oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Pamphlet on the Manufacturing of all kinds of Household, Toilet, Dog Soaps, Bleaching Fats, Oils, making Cloudy Ammoniated Solution, Soda, etc., 1s. 6d.—Garforth, Chemist, Sheffield.

Two Shaped Marble Slabs, 4 feet long and cased in mahogany, on supports; mahogany counter case, 9½ feet long, and 2½ feet wide; also two small glass cases and old window casing. What offers?—John Wild, 307, Oxford Street, Manchester.

Books.

The Journals 'Pharmaceutical' and 'Chemist and Druggist,' clean and unbound, from 1878 to date (few exceptions); any price to clear.—Brodrigg, 344, Mare Street, Hackney.

Squire's 'London Hospitals,' 1869, 9d.; Pereira's 'Materia Medica,' 3 vols., cloth, 6s. 6d.; Cassell's 'Family Physician,' 2 vols., half-calf, 15s.—W. Pemberton, 34, Church Street, Preston.

Roscoe's 'Chemistry,' 1894, 2s.; Wills' 'Pharmacy,' 2s.; 'Fruits and Flowers,' 2s., and 'Analysis,' 1s. 3d.; Attfield's 'Chemistry,' eleventh edition, 1885, 2s. 6d.; Bentley's 'Manual of Botany,' latest edition, 1887, 4s.; Newth's 'Practical Chemistry,' 1897, 1s. 6d.; all in good condition.—A. W., 372, London Road, Thornton Heath.

WANTED.

A Complete Set of 'Pharmaceutical Journals,' bound; state lowest price for cash.—"Journals," care of Thomas Kerfoot and Co., Bardsley Vale Mills, Ashton-under-Lyne.

Old Electric Lamps and Scrap Platinum for prompt cash.—P. Rowsell, 9, Derwent Grove, East Dulwich, London, S.E.

Marked Copies of the following Newspapers, have been received during the week:—*Grimsby News*, *Newcastle Daily Journal*.

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Acton, Andrews, Ball, Barrass, Branch, Brown, Browne, Campkin, Carter, Cowley, Daniel, Dixon, Duncan, Dyson, Evans, Fairley, Fassett, Foster, Gadd, Gerrish, Gifford, Hasselby, Hickling, Hill, Howitt, Johnson, King, Kirkby, Lescher, Merson, Oppenheimer, Pater, Pemberton, Ransom, Reynolds, Roberts, Robinson, Saunders, Smith, Sproston, Stanford, Summers, Treacher, Urwin, Valentine, Warren, Wilson.

PHARMACY IN AUSTRALASIA.

VICTORIAN PHARMACISTS CONSIDER that they have strong grounds of complaint as regards the system on which the Friendly Societies' dispensaries are conducted at present, as there appears to be little doubt "from information received" that they are practically available, without any pretence of restriction, to the general public, as well as to members. The matter is at present in the hands of the Pharmacy Board, and legal opinion is being taken.

A VETERINARY DENTIST, holding the certificate of Sayre and Drake's Veterinary Dental College, Chicago, U.S., was recently fined £2, with £3 3s. costs, at the Melbourne District Court for exhibiting the words "Veterinary Dentist" on his brass plate. The defendant apparently laboured under the delusion that American certificates were recognised in Victoria, and had accordingly omitted to obtain the necessary registration under the Veterinary Board of Victoria.

THE VICTORIAN DENTAL BOARD recently interviewed the Chief Secretary on the subject of the long-delayed Amended Dental Bill, and secured a promise that a measure would be introduced this session in time to be finally disposed of. The deputation expressed the strong objection to a proposed clause prohibiting any member of the Board from being an officer, lecturer, examiner, or member of the Council or Committee of any dental college or hospital, on the ground that many of the best known and most experienced dentists of Melbourne were connected in one or other of those capacities with a dental college or hospital, and the clause would mean their withdrawal from either the Board or the institution, with consequent loss and injury to one or the other. The Chief Secretary promised to place these representations under the consideration of the Cabinet.

A REGISTERED DENTIST NAMED FREDERICK MASTIN, carrying on business under the style of the Melbourne Dental Company, was recently sued in the County Court for £99 damages, under the following circumstances. Plaintiff stated that, on April 26 last, he called on defendant to have a tooth extracted, and, before submitting to the operation, asked what preparation was intended to be used to deaden the pain. Defendant said he used a preparation of his own, the component parts of which he would not disclose for £500, and assured him that it would have no injurious after effects. Plaintiff then consented to have the tooth extracted. Next morning his tongue was very much swollen, and three days later the gums commenced to bleed. A medical man plugged the cavity in the gum, but it became worse, and he was unable to do anything for six weeks. Medical evidence for the plaintiff was directed to show that the injury might have been due to impurity in the preparation, or to the use of a syringe that had not been properly sterilised. For the defence one medical man asserted that the symptoms experienced might have followed the extraction of a tooth where no solution had been used, and another that the symptoms might have arisen from the state of the gums. Judgment was eventually given for defendant with costs.

LATEST REPORTS FROM NEW ZEALAND are not very sanguine as to the prospects of the Pharmacy Bill being passed this session. The Pharmacy Board was arranging a deputation to wait upon members of the legislature and enlist their sympathies. Acting on the advice of Mr. Justice Edwards, efforts are to be made to introduce a clause exempting chemists from jury service.

A VERY SAD DENTAL MISHAP is reported from Adelaide, South Australia. In June last a young lady named Maud Catchlove had two teeth extracted by Mr. B. Thomson, dentist, of King William Street. The operation was followed by coughing and symptoms of chest irritation, and subsequently abscess developed on the lung. Medical attendance was secured, but the patient gradually became worse, and died on July 28. A post-mortem examination revealed a tooth in the first division of the left bronchus, and at the close of the inquiry the jury found that death was caused by the tooth found in the bronchus, and added a rider to the effect that Mr. Thomson should be more careful in extracting teeth. Evidence was given at the inquest that after the dental operation Mr. Thomson requested the friend of the patient who accompanied her to leave the room, and that he then inverted the patient and tapped her on the back. Mr. Thomson, however, denied that he had

any suspicion that a tooth had gone down, and in explanation of the inversion said that he feared some pus from the abscess at the root of the tooth had gone down into the lung, and did this to get rid of it. Had information been given at once as to the probability of a tooth having been swallowed, an operation might, according to the medical evidence, have saved the patient's life.

IN NEW SOUTH WALES the Pharmacy Board—of which, by the way, Mr. L. Williams has been elected President—still continues to have a good deal of its time occupied in considering applications for registration. Amongst those recently dealt with was that of a Mr. W. J. Graburn Morris, of Dubbo, who claimed to have the "Major" qualification of Great Britain. In reply to a letter from the Board, demanding his personal application, and that he should be examined on oath, Mr. Morris wrote that it was not convenient for him to proceed to Sydney and comply with the wishes of the Board; and so the matter rests for the present. [No such name appears either in the Register of Pharmaceutical Chemists or the Register of Chemists and Druggists for 1898.—Ed. P. J.] The report of the proceedings at the September meeting of the Board reveals the fact that there seems to be a regrettable disposition, on the part of one of its members at least, to look upon the Council of the Pharmaceutical Society as a somewhat too forward child, meddling with matters which should be left in the hands of their wiser seniors. The occasion for the display arose out of a letter from the Council requesting the Board to acknowledge the course of lectures and examinations proposed by the authorities of the Sydney University. Mr. Bellemey on this remarked that it was a very strange proceeding on the part of the Council to usurp the functions of the Board by writing to the Registrar of the Sydney University, and stating that they (the Council) accepted the curriculum suggested by them, and he characterised the business as most improper. Mr. Brothwood and the President claimed, on the other hand, that the Pharmaceutical Society was the proper body to attend to the education of young pharmacists, and also that the deputation which waited upon the University professors in June last was from the Council of the Society, and the Board was only invited to accompany them. Mr. Bellemey replied that even at the time referred to he realised that the members of the Council, in taking such a step as projecting a deputation to the University, were exceeding their functions, and, in conclusion, most strenuously objected to the Pharmaceutical Society being permitted to transact the business of the Board with the University or any other body. Mr. Bellemey, it may be added, has not apparently forgotten or forgiven his defeat in connection with the alteration of the rules of the Society a few months ago, and although he now admits the legality of the vote then taken, he still objects to the alterations, and recently announced that he intended to sever his connection with the Society at the end of the financial year, and would take no further active part in its management.

IN CONNECTION WITH THE NEW PHARMACOPŒIA, the following notice was sent by the Pharmacy Board to the Secretary of the New Zealand Branch of the British Medical Association:—"The Pharmacy Board intends publicly to recommend the adoption of the 1898 edition of the Pharmacopœia, for use on and after January 1, 1899, and suggests the propriety of the medical faculty adopting the same course, and further, that medical men wishing to use the new formulæ before that date should insert the words 'B.P., 1898,' in connection with the preparation ordered." A notification of the action taken by the Board has also been posted to all the registered chemists in the colony.

AN ACTION BROUGHT BY THE WIDOW of the late Dr. Samuel Irvine Williams—the circumstances in connection with whose sad death were described in previous notes—to recover £3000 from Mr. James Christopher, Chemist, Clifton Hill, father and employer of the assistant who was presumed to have made the fatal mistake in dispensing, has, after a trial of six days in the Melbourne County Court, ended in a verdict for the defendant. Briefly put, it was alleged by the plaintiff that on March 6 last, defendant, by his son, negligently, carelessly, and improperly supplied her husband, the deceased, with a poison known as atropine, instead of morphine as ordered, and that Dr. Williams died from the effects of the drug. The order given by deceased was for cocaine hydrochlorate and morphine sulphate. Atropine sulphate was unfortunately supplied instead of morphine sulphate, and the cocaine hydrochlorate was inadvertently

labelled morphine sulphate, but deceased was informed of that fact before he left the pharmacy. For the defence it was urged among other things that although it was admitted a mistake was made, and that the deceased had been in the habit of injecting morphine, he had, as was proved, endeavoured to break himself of the morphine habit by injecting cocaine, and that he, therefore, probably prepared the cocaine solution specially for his own use in his patient's room, and used that cocaine solution. Several well-known medical authorities, including Mr. Sidney Plowman, F.R.C.S., gave evidence to the fact that the symptoms exhibited by the deceased did not point specifically to atropine as the cause of death, that they were, in fact, unable to say that death was due to atropine poisoning; while Mr. Blackett, the Government analytical chemist, stated that he had been unable to discover any atropine in the deceased's system. The frank attitude adopted by both father and son from the moment of their discovery of the mistake made a very favourable impression on the public mind, and there seems to be a feeling of relief that they have escaped a heavy monetary penalty in addition to the mental anguish which the unfortunate mischance has entailed upon them during the past six months.

AT WELLINGTON, Mr. W. C. Fitzgerald, chemist, was recently sued for £500 damages, for alleged unskillful treatment in vaccinating an infant. Counsel for the plaintiff claimed that Fitzgerald failed to take any of the usual antiseptic precautions to prevent poisonous matter getting into the vaccinal sores. Defendant denied negligence, and said he vaccinated the child under and by virtue of the Public Health Act. He further claimed that a loathsome disease which subsequently developed in the child was the result of unclean and insanitary surroundings. The case was decided in favour of the defendant, who is now petitioning the Government for return of the expenses he has been put to in the case, and claims £735.

ENGLISH EXPORTERS OF CERTAIN SPECIALTIES should note the fact that it may be necessary to revise the accompanying "literature" before forwarding the goods to South Australia, where the recently adopted Indecent Advertisements Act may prove a severe censor. The following paragraph from the report of the September meeting of the S.A. Society will illustrate my hint:—"Messrs. Bickford and Sons wrote informing the Council of advices from their London agents intimating that the circular sent out by Mr. Beecham with his pills had been revised to comply with the Indecent Advertisements Act of this colony, and that each packet of one dozen boxes of pills would contain a notice to that effect." *Verb sap.*

FRENCH NEWS.

GROCCERS AND CHEMISTS.—In France, as in England, the grocer is no mean opponent of the pharmacien, retailing, as he does, at cut prices, anything and everything pharmaceutical which does not bring him within the pale of the pharmacy laws. Recently, however, the grocers of the northern provinces seem to have been having anything but a rosy time at the hands of the pharmaceutical bodies, councils of hygiene, etc., whom they think labour under a mistaken idea of the extent of the powers with which they are vested. Their cup of sorrow, already full, has been brought to the point of overflowing by the action of the aforesaid societies in prohibiting the sale of cinnamon by any but qualified chemists. Indignant with the chemists for arrogating to themselves the monopoly of simple and harmless commodities in everyday use, they threaten to petition the Minister of Commerce to define their rights and obtain for them justice. One of the trade organs, whilst citing the above prohibition, sarcastically adds: "This is carrying the game too far; in the near future we shall probably be forbidden to sell candles because some people with colds make use of them to grease their noses"; also "May we expect to see gherkins placed upon the 'prohibited' list, because these Cucurbitaceæ when ripe are used to make cucumber pomade?"

INFECTION FROM PASTEURISED MILK.—Whatever the merits or demerits of the discoveries of the late illustrious Pasteur, his method of pasteurising milk appears to leave much to be desired. M. Koplik takes exception to this milk for the nourishment of infants. In the milk of model farms, germs are always found.

The milk sold in large towns for the nourishment of young children, though exempt from infectious bacteria like those of tuberculosis, diphtheria, typhoid fever, or scarlatina, still contains germs peculiar to milk, which are always recognisable. And those are the bacteria which are the cause of the gastro-intestinal troubles of children. These deleterious organisms are not destroyed by the method of "pasteurisation" as generally practised. In certain subjects nourished by this pasteurised milk a series of symptoms, sometimes very pronounced, is developed, which Monsieur Koplik denominates "milk poisoning." More often it is an intestinal breakdown which is the first symptom. The child has five or six evacuations instead of one; these are at first yellowish, clotted, and of an acrid disagreeable odour, or they are greenish with an offensive smell. The child is restless and peevish, and has colic and is at times feverish. In other cases the child apparently enjoys good health, with three or four normal evacuations daily, then it will suddenly have a great number, of a greenish colour with a disagreeably acrid odour, which, after the administration of a dose of castor oil, assume their normal condition. In still other cases the child will have three or four normal evacuations and the following day semi-fluid, acrid motions. In all cases, however, extreme exhaustion is evident, and the evacuations more liquid and disagreeable in odour than they should be. The temperature rises and the child does not seem to thrive as it ought. Monsieur Koplik thinks that the remedy lies in substituting "sterilised" for "pasteurised" milk, and recommends the following treatment of the milk, which may be practised in the home. The milk is placed in a steriliser and raised to 100° C., and maintained at that temperature for ten minutes. It is then allowed to cool, and placed on ice, or in a refrigerator, and kept at a temperature under 20° C. until required for use. These remarks are worthy of the serious attention of all who have the treatment of infantile complaints, the above symptoms being a common every-day occurrence, and if, as M. Koplik thinks, the mischief lies in the method of treating the milk, then his suggestions, so simple and easy of accomplishment, are certainly worthy of a trial.

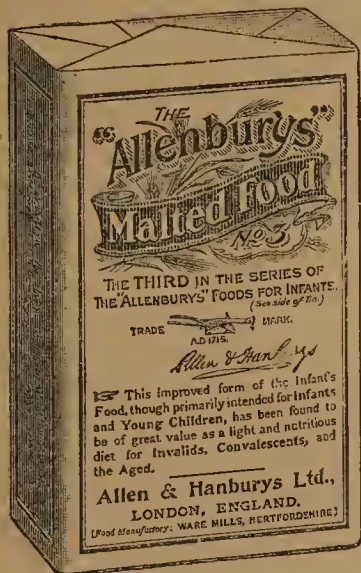
CHEAP DRUGS.—*La Revue Médicale*, a French medical journal, waxes warm over a case which has recently been brought to light respecting the shady practices of a certain Parisian pharmacien. It appears that a newly-fledged chemist not long ago bought a good "going" pharmacy in a populous quarter of the north-east of Paris. No sooner had he established himself than he found, to his dismay, that in retailing his pharmaceutical products according to his predecessor's tariff he was on the high road to ruin. Still, to raise his prices in order to ensure a living profit would lead to the loss of his *clientèle*, and to continue to sell at list prices meant bankruptcy ere long. Beset on all sides with difficulties, he set about considering as to the means employed by his predecessor. To this end he examined the books, sought information from his employés and neighbouring *confrères*, and finally succeeded in discovering the *pot aux roses*. The *modus operandi*, according to the medical paper quoted, was as follows:—When prescriptions were brought in to be dispensed many artful dodges were resorted to in order to ensure a good margin of profit for this pharmacien, whilst charging the patient a very nominal fee. Sometimes he would substitute an inferior article for that prescribed; sometimes only dispense half the quantity. At other times (in cachets, for instance) he would substitute an innocuous powder, and so on. Although, according to French law, the pharmacien is bound to enter a copy of all prescriptions in a book for that purpose, our *confrère* was in no wise disposed to contravene this law; in all cases he complied with it *in toto*, but he had an ingenious device, which consisted of a number of signs and abbreviations, of which he had the key and which he placed in the margin opposite the drug he had perhaps omitted or substituted for. Taking, for instance, antipyrine in cachet, he would use a sign in the margin which to him meant soda bicarb., and thus he was enabled to redispense the prescription when required to be repeated. Many doctors in the vicinity, the journalist goes on to say, were astounded at the inefficacy of their prescriptions; they now know the reason why. If this little incident be a plea to endow medical men with powers to do their own dispensing it is to be feared such shady practices as the above will be frequent occurrence.

EXPOSITION UNIVERSELLE, 1900.—The Sub-Commission No. 5 of the Committee of Admission of Class 87 (group xiv.) of the Paris Exposition, 1900, is about to organise a "Musée Retrospectif" of

the history of chemistry. In this museum will be exhibited such objects as bear relation to scientific discoveries and industrial improvements, viz.: (1) Laboratory apparatus; (2) books of experiments; (3) correspondence; (4) reports upon discoveries; (5) portraits of inventors, *savants*, or manufacturers; (6) descriptions of processes; (7) drawings, plans, models in relief; (8) products obtained by the inventors, or in the scientific laboratories—in short, all such as will clearly and concisely convey to visitors an idea of the successive stages of the progress accomplished in chemical industry, and the importance of the discoveries made by French *savants*. Industrial museums, faculties, schools or private individuals desirous to take part in this exhibition should formulate a separate demand, giving the nomenclature and value of such objects as they purpose exposing. The Administration undertakes to defray part, or the whole, of the expenses entailed by this retrospective exhibition, and will insure the exhibits of which it may be composed.

Trade Notes.

MESSRS. ALLEN AND HANBURYS have opened a special food manufactory at Ware, in Hertfordshire. It is desired, in order to deal with the largely increased sale of their infants' food to draw the attention of the trade to the changed title and design of label of the firm's Malted Infants' Food. On and after December 1 next it will be known and labelled as "Allenburys" Malted Food (No. 3), thus bringing the title into harmony with the "Allenburys" Milk Foods (Nos. 1 and 2), and completing the series of the "Allenburys" Foods, which offer a succession adapted to the progressive development of the child from birth upwards. No change is made in the composition of the malted food. The firm will be glad if chemists will make this alteration of title in all future



issues of their price-lists.

MR. VINCENT WOOD, of Albion Place, Blackfriars, S.E., sends a copy of his new wholesale price-list of surgical appliances. He will shortly issue a similar list with retail prices attached, and in addition one with illustrations and particulars, but without any prices, so that his customers can fix their own prices.

MESSRS. CADETT AND NEALL, of Ashted, Surrey, intimate that in six years they have secured the largest home sale for their photographic plates, and that they are now devoting their attention to secure a foreign trade, and are manufacturing plates suitable for this. They also state that they will shortly be advertising their printing out papers.

D. C. L. MALT EXTRACT.—The D. C. L. malt extract, manufactured by the Distillers' Company, Limited, Edinburgh, maintains its high quality for diastasic power, as referred to in the *P. J.*, lviii., 464a. Examination of a sample just submitted showed that it will convert its own weight of starch into maltose and dextrin in six minutes at 100° F. It is of good colour and consistency, and free from candied sugar. In addition to the malt extract, the Distillers' Company supply a preparation of malt extract and cod-liver oil. It was found to contain the D. C. L. malt extract, combined with a good proportion of cod-liver oil. It forms an emulsion with water, possessing a very agreeable flavour.

EUGOL: A NEW ANTISEPTIC.—Eugol is an antiseptic solution having a faint odour of wintergreen, and containing β -naphthol, extract of hamamelis, eucalyptol, salol, menthol, boric acid, and a small percentage of formaldehyde. As none of the ingredients possess poisonous or irritating properties, in proportions used, the solution should find wide application as an antiseptic, germicide, and deodorant. It is extremely pleasant to use, is quite colourless, and may safely be trusted in the hands of unskilled persons. Eugol tooth powder possesses decided antiseptic and stimulating

properties, and it is also slightly astringent. It should, therefore, prove extremely useful in keeping the teeth and gums in a firm and healthy condition. The powder is free from grit, delicately perfumed, and can be cordially recommended as being all that a tooth powder should be. It is manufactured by Messrs. Bayard, Sons, and Bayard, 26, Bridle Lane, Golden Square, London, and sent out in dainty boxes of attractive appearance.



SANITARY POLISH AND CLEANSER.—"Ronuk" is a sanitary polish and cleanser, manufactured by the firm of Ronuk, Ltd., 83, Upper Thames Street, E.C. It is intended for use on linoleum, parquets, stained floors, furniture, etc., etc. Ronuk has an agreeable odour and is pleasant to use, and has already found favour in some of the large hospitals, on account of its sanitary properties. Other preparations of this firm are boot polishes (both brown and black), and a waterproof

composition polish for harness.

DR. HOMMEL'S HÆMATOGEN is a solution containing pure hæmoglobin, all the salts of fresh blood, and serum albumin, in a concentrated, purified, and non-decomposed form. It is intended for use as a dietetic article and as a natural substitute for ordinary iron preparations, peptone, and cod-liver oil. The solution, which is highly spoken of by leading medical practitioners, is supplied in bottles containing 250 grammes. Messrs. Nicolay and Co., 36 & 36A, St. Andrew's Hill, E.C., are the British agents.

A NOVELTY IN DISPENSING BOTTLES.—The Surgical Supply Association, Ltd., 35, Market Street, Manchester, has introduced on the market dispensing bottles, the necks of which are uniform in size, so that only one size of cork is required to fit all sizes of bottles from 1 drachm to 40 ozs. The outside diameter of the neck is kept perfectly symmetrical with the size of the bottle, so that the necks of large bottles are very much strengthened. The inventor, Mr. S. Thistlethwaite, has applied for a patent.

MESSRS. JEWSBURY AND BROWN, of Manchester, have received the Lord Steward's warrant of appointment as purveyors of mineral waters to the Queen.

MR. E. J. REID, of 11, Dunedin House, Basinghall Street, E.C., has been appointed the British agent for the sale of Phenalgin, an ammoniated synthetic coal tar product with antipyretic and analgesic properties.

THE VITÆ ORE COMPANY, LTD., of 30, Temple Chambers, E.C., has submitted samples of its specialty together with a certificate of analysis from Messrs. Newlands Brothers, of St. Dunstan's Hill, E.C., in which the results are stated to be as follows:—

	Per Cent.	
Insoluble in Water	Insoluble Silicious Matter	69.64
	Bisulphide of Iron	3.62
	Sulphur	0.97
Soluble in Water	Protosulphate of Iron	3.04
	Persulphate of Iron	13.67
	Sulphate of Alumina	1.17
	Sulphate of Magnesia	0.20
	Sulphate of Soda	0.54
	Moisture at 212° Fah.	2.60
	Water of Crystallisation	4.55
	100.00	

Vitæ ore, as taken from the mine, is a very hard, black, magnetic mineral, much the same as iron pyrites. When exposed to the air it becomes oxidised, and after being kept in a damp even temperature of about 60° for some time is converted into a dry ash-coloured powder, 20 per cent. of which is soluble in water, forming a chalybeate mineral water. The therapeutic value is solely in this portion, and the iron, which forms so considerable a proportion, is in a form unusually easy of

assimilation. The Vitæ Ore Co. only supplies specially appointed agents, who must be registered chemists, and the material can only be obtained direct from the firm, and not through the "patent" medicine houses. The Somerset House officials have decided that it is not subject to stamp duty.

SYLVIA'S DIAMOND FROST is one of Messrs. Ayrton and Saunder's (of Liverpool) novelties for the Christmas season. It is intended for decorative purposes and is capable of producing pleasing effects on texts, mottoes, Christmas trees, etc., etc.

ST. RAPHAËL QUINQUINA TONIC WINE is prepared from a fruity wine of Burgundy type, and contains a suitable proportion of quinine. The flavour of the mixture is decidedly piquant, and it is not surprising to find that in Paris this is the most widely sold tonic wine. It may be mixed with mineral waters as a beverage, or taken alone before or during meals as an appetiser. The London agents for the wine are Messrs. Bowen and McKechnie, Cross Street, Finsbury.

THE VALENTINE EXTRACT COMPANY, LTD., sends samples of Valentine Meat Globules and Flavour Peloids. The globules are made of specially treated gelatin, and contain extract of meat made by a modification of Liebig's process. This extract, which must not be confused with Valentine's meat juice—a totally different preparation—is not flavoured in any way, but by using the Flavour Peloids, almost any desired flavour can be obtained.

"CARNOSE" is a meat substitute, said to be prepared from yeast. It is manufactured at the Tower Brewery, Grimsby, in the form of jelly and extract. The extract is sent out without any added flavouring or colouring matter, and it is claimed that no butcher's meat is used in the process. But one teaspoonful is said to make the equivalent of a cup of good beef tea. Carnose is of a rich ruby colour, agreeable odour, and not unpleasant taste.

X RAYS IN WARFARE.—During recent Volunteer manœuvres at Wardend, near Birmingham, an interesting demonstration of the application of Röntgen rays in warfare was given by the ambulance section of the 1st V.B. Royal Warwick Regiment. Bullet and bayonet wounds were assumed, and, after being bandaged on the field, the "wounded" were placed in an ambulance wagon and driven to the hospital tent. Here Dr. Hall Edwards, provided with a portable coil specially made and designed to stand rough usage and any kind of climate by Messrs. H. W. Cox, Ltd., 10, 11, and 28, Cursitor Street, Chancery Lane, London, was in readiness to locate the bullets, in cases of bullet wounds. Several patients were dealt with, spent bullets having previously been inserted within the bandages. The Crookes' tube was brought over the injured part, and a black envelope, containing a film, was placed underneath, and the electric current switched on for two and a half minutes. The film was then developed, with satisfactory results. Before carrying out the experiments the apparatus was carried to the ground in an ambulance wagon, and in order to give it a good jolting was driven over two fields; nevertheless, it worked perfectly. Dr. Hall Edwards was congratulated upon the success of his experiments by the surgeons present, and it was unanimously agreed that the application of X-rays to military surgery had been demonstrated possible and of the greatest usefulness.

CHRISTMAS NOVELTIES, ETC.

MESSRS. MAW, SON AND THOMPSON.—Those chemists who are able to call at Messrs. Maw, Son and Thompson's, in Aldersgate Street, London, to select their stock of Christmas goods, certainly cannot complain of lack of variety, the abundance of it is somewhat bewildering. There is a good display of Roger and Gallet's perfumery, put up in various styles at once neat and effective. One line in cases, contains two cut glass bottles, with globe stoppers, satin lined, in assorted colours with celluloid medallions at 60s. per dozen. Another variety comprises globular toilet bottles, with cut stoppers, filled with perfumes, each in an elegant box, at from 70s. to 84s. per dozen. Tapered cut bottles in harp-shaped boxes, assorted colours, are sold at from 21s. to 33s. per dozen, also square cut bottles in plush cases, satin lined, at 30s. per dozen. The pot pourri caskets of burnished brass, said to be untarnishable, are new and attractive; they are extremely pretty and very suitable for presents,

the prices range from 50s. to 102s. per dozen. There is also a large variety of perfumery in boxes from 8s. to 84s. per dozen. With regard to sprays, there have been so many improvements of late that one might be inclined to think perfection had been attained in design and delicacy of tint long since, but on looking over a splendid selection of these dainty articles, several new designs caught the eye that were not to be seen previously. One series (No. 0382) consists of five different tints at the popular price of 5s. per dozen. A very neat article in clear, cane cut glass is a puff-box and spray combined to sell at 3s. 6d. No. 2779 is a very attractive, delicate, green-tinted spray, sold at 30s. per dozen, and is decidedly pretty. There is also a series of thistle sprays at the same price, and white flint and tinted sprays in various cuttings from 18s. to 21s. per dozen; also elegant white flints in different cuttings, to sell at 3s. 6d. each. A series of eau de Cologne flasks, in five different tints, at 5s., 6s. and 8s., are very suitable for Christmas presents, while there is a cheap line of silver-collar salt jars at 14s. per dozen. A new toilet article is a white bone shaving brush, with a stick of soap let into the handle, it is extremely handy and should sell well. The firm has a very good line of white celluloid hair brushes, with mirror backs, at 36s. per dozen. A very useful article for the nursery is the "New Baby Companion Thermometer," marked with Dr. Bland's specifications for infants and children, at 6s. 6d. per dozen; while the "Nursery Thermometer," after the same style as the clinical, is sold at 12s. per dozen. In view of the requirements of the new B.P., Messrs. Maw, Son, and Thompson have a good stock of alcohol percentage tubes, by means of which the various strengths required may be easily and accurately obtained; these are sold at 2s. 6d. They have also a large assortment of metric weights and measures.

MESSRS. FRANCIS NEWBURY AND SONS.—This firm is offering some capital lines in the "St. Paul's" Perfumes. These include 2s. 6d. Dome perfumes, boxed in quarter dozens, at 16s. per dozen bottles. The 1s. Christmas souvenir in a padded lid case is excellent value at 8s. 6d. per dozen, as is also the G series of perfumes in English stoppered bottles at 27s. per dozen. This G series has already taken well, and as the cases range from 18s. per dozen upwards, all classes of customers can be satisfied. Other 1s. Christmas souvenirs can be obtained at 8s. and 9s. per dozen. The 2d. and 3d. perfumes supplied by the firm still maintain their position, the high quality of the perfume being strictly maintained. Parma violet, Russian violet, lily of the valley, and white violet perfumes are supplied in 6d. bottles, with the appropriate flowers attached, at 3s. 9d. per dozen. These should sell at sight. The price-list of the firm shows that it can meet all requirements in the way of silk-lined cases and spray producers for the coming festive season, and every reader is advised to apply for a copy forthwith.



MESSRS. EVANS, LESCHER, AND WEBB.—If on the lookout for Christmas specialties, chemists will do well, when in London, to visit the firm of Messrs. Evans, Lescher, and Webb, 60, Bartholomew Close, E.C. It will give them an opportunity of viewing the model pharmacy and new showroom, recently established on the premises, which owing to the great strides the firm's sundry trade has taken within the last few years have been considerably extended. The fixtures have been designed by an eminent architect, in fine English oak and Spanish mahogany, and are certainly a credit to the firm's Liverpool shop-fitting staff. The fittings are very elegant and such as the firm is prepared to reproduce to suit any sized shop. Chemists about to open a business should not fail to see this model pharmacy. A complete series of Hawley's counter adjuncts is exhibited, comprising over 300 different articles. Every adjunct is shown, with its different sizes and styles, the artistic labels giving a rich tone to the whole. The labels are a speciality, and are designed by artists who have made a study of this class of work. Moreover, the name and address of any particular chemist is printed on the labels free if an order for three dozen and upwards is given. The side cases are stocked with sundries, including rubber goods, fancy glass, brushes, combs, and all toilet and household requisites, Margerison's and Savar's well-known soaps, and a fine collection of perfumes, put up in plush-covered cases and in bottles of pretty design, very suitable for presents. In the centre of this show-room

is an interesting case, occupied by samples from the firm's stock of crude drugs, oils, essences, and other fine galenical preparations. There is a good assortment of winter requisites—including hot-water bottles, bronchitis kettles, footwarmers, inhalers, cough elixirs, balsams, lozenges, etc., etc. Of sachets in butterfly series, etc., sprays, puffs, and boxes there is a goodly array in many designs, suitable for all sorts and conditions of people. Many other articles are shown which, on account of space, cannot be mentioned here, but there are one or two chemists' requisites which deserve notice; for instance, the firm are prepared to supply a set of metric weights up to 100 grammes, which for cheapness and quality cannot be beaten, the price being 5s.; then for 2s. 3d. one may become the possessor of an alcohol percentage tube for diluting to the various strengths of the new B.P. There is also a good line of real horn spatulas and scopes; chemist-dentists can also obtain here a selection of dental instruments. Those who wish to change the old-fashioned window carboys for something more elegant should see the new patterns of carboys exhibited in the model pharmacy, one, a triple carboy, being especially neat, novel, and attractive. The firm's new registered shield shaped recess labels are a great improvement on the old style; they are a clear white, and show up very distinctly. It may be said with confidence that a visit to Messrs. Evans, Lescher and Webb's show-room will not be time wasted if one is on the lookout for novelties and for points worth noting.

MESSRS. EVANS, GADD AND Co. are not behind any other firm doing business with chemists and druggists in the variety and attractiveness of the bottles of perfumery, toilet preparations, etc., they offer for the present season. The fancy bottles filled with perfumes range in price from 6s. per dozen upwards, and there is a unique special line—eau de Cologne and lilas de France, in long wedge shaped bottles—which should readily attract the attention of purchasers of Christmas gifts. The toilet and winter requisites include Victoria violet powder, Victoria violets soap, eucalyptus oil, glycerin, glycerin and cucumber, ammoniated tincture of quinine, etc. Exonia malt extract is supplied in large bottles, to retail at 1s. 6d. each. Ambrosia is now sent out in white opal glass bottles, enclosed in handsome cardboard cases. The chemical food and compound syrup of hypophosphites supplied by this firm are excellent specimens of pharmaceutical preparations; they seem specially suited for export, and the same may be said of the Food Preservative, a fine white granular preparation, packed in air-tight tins.

ENGLISH NEWS.

ROYAL INSTITUTION.—The Christmas course of lectures, specially adapted to young people, at the Royal Institution, will be delivered this year by Sir Robert Stawell Ball, LL.D., F.R.S., Lowndean Professor of Astronomy and Geometry in the University of Cambridge. The subject will be "Astronomy," and the lectures (which will be illustrated by models and the optical lantern) will deal with the sun, the moon, the inner planets, the great planets, shooting stars, and new methods. The first lecture will be delivered on Tuesday, December 27, at three o'clock, and the remaining lectures on December 29 and 31, 1898., and on January 3, 5 and 7, 1899.

MR. ANDREW THOMPSON, of Lowther Street, Carlisle, has been appointed an Alderman of the Borough. Mr. Thompson has been a pharmaceutical chemist member of the Pharmaceutical Society since 1846.

ALDERMAN MAUD, J.P., chemist and druggist, of Pontefract, was heartily thanked by the Corporation on November 9 for his services as Mayor both in Committee and on the Council, and in appreciation of his services the newly-elected Mayor appointed him as his deputy. Earlier in the week Alderman Maud was publicly thanked for the manner in which he had administered justice as chief magistrate.

ALDERMAN WM. MOUNT, of Canterbury, after twenty-seven years' public service on the Town Council in various capacities, holding the office of Mayor three times, has been compelled to resign his seat as an Alderman on account of ill-health. His resignation was received with great regret by the Mayor and

Corporation, who bore high testimony to his long and honourable record of public service. Alderman Mount has been connected with the Pharmaceutical Society as a pharmaceutical chemist member since 1853.

INLAND REVENUE PROSECUTIONS.—George William Nicoll, described as a hair dye manufacturer; Frederick Rowe, a clerk; and Harry Mobsby, an advertising agent, were charged, at West London Police Court on November 11, with being concerned in vending and exposing medicines liable to stamp duty, and for other offences alleged to have been committed under the Revenue Acts.—Mr. Hawkins prosecuted on behalf of the Board of Inland Revenue.—It was stated that the business was carried on in the names of Mrs. Rose and Mrs. King entirely through the post-offices in Dawes Road, Fulham, and Cambridge Road, Chiswick, orders being received for medicine and posted. Some of the contents of bottles were analysed, and found to contain methylated spirits.—Mr. H. Davis a Government analyst, said the medicine did not contain spirits of wine.—Mr. Hanson, for the defendants, said the prisoner Nicoll never purchased methylated spirits. He always purchased spirits of wine.—Mr. Rose (magistrate), having decided to adopt Mr. Hanson's suggestion, asked what was known of Nicoll.—Mr. Hawkins said he had been known for five years in a number of names and at eight different addresses. On one occasion the prisoner was fined £10 for selling medicine without stamps.—Mr. Hanson read a form of declaration which the prisoner had made, and said he was under the impression that he was not liable if he supplied the authorities with the names of the drugs used in the medicines.—In convicting the prisoner Mr. Rose said he had carried on an extensive and lucrative business in violation of three Revenue Acts. He then inflicted penalties on Nicoll amounting to £115, with £5 costs, and discharged Rowe and Mobsby.

CARBOLIC ACID POISONING.—An inquest was held at Norwich on Friday, November 11, concerning the death of Henrietta Nicholls (23), which was caused by taking carbolic acid on the previous Wednesday. The poison was supplied to the girl at the establishment of Messrs. Jesse Boot, Ltd., and the Coroner, in examining the manager of the shop, said he should be glad if it were made compulsory for chemists to give directions as to use when selling such dangerous ingredients. He did not impute any blame to the manager, but he hoped it would be made obligatory for instructions to be given at the sale of carbolic acid in pure liquid form. The jury expressed its approval of the Coroner's remarks.

PUBLIC DISPENSERS' ASSOCIATION.—There will be a meeting of the Association at 46, Clarendon Square, King's Cross, on Tuesday, November 29, at 7.30 p.m., when Mr. Donnan will give a paper on "Urine and Its Analysis," with pathological, physiological, and microscopic notes; also a discussion on the new pharmaceutical Bye-laws.

COUNCILLOR JOHN MACHIN FURNESS, chemist and druggist, 51, Milton Street, Sheffield, has been appointed Chairman of the Highways Committee of the Sheffield City Council.

MR. F. ORCHARD, chemist and druggist, of Bridgwater, has taken over the business recently carried on at Highbridge by Mr. S. F. S. Carpenter, of Burnham.

SUCCESS OF BLOOMSBURY STUDENTS.—At the Final B.Sc. Examination, London University, Mr. Charles Edmund Ashby, who was a Bell Scholar in 1893, passed in the first division, and Mr. Ernest Goulding, Bell Scholar in 1892, in the second division.

THE ANNUAL SMOKING CONCERT of the Football Club of the School of Pharmacy will be held on Thursday, December 1, at the Crown Room, Holborn Restaurant, when Professor Greenish is expected to take the chair. Mr. J. Evans, 17, Bloomsbury Square, is the Hon. Secretary, and he will be glad to receive applications for tickets, price 1s. 6d. each, as early as possible. A strong company of professional artistes has been engaged, and it is hoped that many old students, as well as others, will turn up.

WAREHOUSE FIRE.—The premises owned and occupied by Messrs. H. Gilbert-on and Sons (Limited), wholesale dealers in "druggists' sundries," at 9 and 11, St. Andrew Street, City, E.C., were the scene of an outbreak of fire on Saturday morning, November 19.

Just before 10 o'clock dense volumes of smoke began to roll out of the warehouse numbered 11, which is a structure five floors high, and extending about 45ft. in one direction and 25ft. in another. The news was sent from floor to floor to the various employes, and in a short time the fire had extended from the basement to the ground floor. The flames were so vigorously attacked by the first of the firemen to arrive that they were speedily checked. By half-past 10 o'clock three hose carts, twenty-five steam engines, two horsed escapes, three long ladders, and 165 men had been concentrated at the scene from all parts of the metropolis; but, happily, the aid of this large force was not required, and the engines and men were ordered back to their stations. The cause of the fire has not been ascertained. The damage to the contents of the premises is covered by insurance in the Sun and other offices, and that to the building by insurance in the Hand in Hand.

ACCIDENT TO A CHEMIST.—On Thursday, the 17th inst., Mr. A. E. Hobbs, pharmaceutical chemist, of 33, Mount Pleasant, Tunbridge Wells, met with a serious accident. A lady, accompanied by her son, wished to purchase some metallic sodium for the lad to experiment with. Mr. Hobbs, foreseeing the danger of the experiment, refused to supply it, but offered to show them some burning sodium. Placing a mortar filled with warm water on the floor, he put a small piece of sodium in it, and was standing upright some three feet from the mortar. For some reason the sodium failed at first to ignite as usual, but suddenly it exploded and was projected on Mr. Hobbs' face, several pieces alighting in and around his eyes. Medical assistance was immediately obtained, owing to the prompt action of a nurse who was in the pharmacy at the time of the accident. At first it was feared that the sight of the right eye was permanently injured, the left eye not being quite so badly hurt, but greater hopes are now entertained that the eyesight may be saved. Mr. Hobbs' condition, however, is still very grave. The sympathy of the entire trade in Tunbridge Wells and district is with Mr. Hobbs in this distressing misfortune, and in consequence of which it has been decided to postpone the reception and dance which the Tunbridge Wells and District Chemists' Association intended to hold on December 8.

PRESENTATION TO MR. J. A. DEWHIRST.—At a meeting of students of the School of Pharmacy on Thursday, Nov. 17, a presentation of a handsome dressing case was made to Mr. J. A. Dewhirst, Demonstrator of Practical Chemistry, on the occasion of his leaving the School. Mr. H. Payne took the chair, and having alluded to the fact that Mr. Dewhirst had been long connected with the School, first as student then as demonstrator, asked him to believe how sorry they all were that he was leaving, and on behalf of the students asked him to accept the dressing case as a small token of their esteem. Mr. Dewhirst thanked the students for their kindness, and said he should value the present as a token of their goodwill, and he referred to the pleasant time he had had in connection with the "Square." He wished the students every success. Mr. Evans said that as a Minor student last session he had derived much benefit from Mr. Dewhirst's help. Mr. Wild spoke in a similar strain, and Mr. Finnemore, on behalf of the Minor students, said that although they had known Mr. Dewhirst for such a short time they were all extremely sorry he was leaving. The proceedings then terminated.

FOOTBALL.—Owens College Pharmaceuticals *versus* Clayton's Northern College of Pharmacy. Played on Tuesday, the 22nd, on the ground of the former. A pleasant game ended in a draw of 3 goals each. Teams—Owens College: goal, Newton; backs, Woolley and Oldfield; half-backs, Stephens, Morton, Pickup; forwards; Drummond, Higson, Patchett, Ryder, Kerfoot. Northern College team: goal, Harrison; backs, Billington and Dalton; half-backs, McIntyre, Crook, Harem; forwards, Patison, Smithson, Hadfield, Phillips, Hughes.—The following Association teams met together at Hackney Marshes, Homerton, on Saturday, November 19:—Metropolitan College of Pharmacy and Westminster College of Pharmacy, the game resulting in a win for the "Metros" by two goals to nil.—The match between the Pharmaceutical Football Club and the Ealing B team, played at Ealing on Saturday last, resulted in a win for Ealing of five goals to nil.

PEARS' ANNUAL for 1898, is the usual "picture gallery for a shilling" that it is wont to be, and excellent value for the money. The three supplements accompanying the number are reproduc-

tions in colours of the late Mr. Calderon's "Captain of the Eleven"; Mr. Albert W. Holden's "Naughty Polly"; and Mr. W. S. Coleman's "The Sunny South." The literary contents of the number consist of an original novelette, entitled, "Who Fears to Speak of '98?" being a story by Mr. R. E. Francillon of the Irish Rebellion. The story is illustrated by thirty-two pictures, after the drawings in black and white, by Mr. Frank Dadd.

POLICE PROSECUTION UNDER THE PHARMACY ACTS.—At the Heanor Petty Sessions on Monday, November 21, Miss Mary Ann Slack, shopkeeper, residing at No. 1, Mount Street, Heanor, was summoned by the police authorities for unlawfully selling a certain quantity of laudanum, to wit one pennyworth, to Louisa Vickerstaffe without properly labelling the bottle "Poison," on the 5th inst.—Defendant acknowledged letting the person have it, but denied selling it.—Louise Vickerstaffe, in answer to questions put by Supt. Daybell, who prosecuted, stated that on November 5 last she took a bottle to the defendant's shop and asked for a pennyworth of laudanum. There was no label on the bottle.—Supt. Daybell stated that witness was the person who was brought up before the magistrates at the last court and charged with attempting to commit suicide by taking laudanum, which was purchased at defendant's shop (see *ante* p. 514c). There was a quantity of laudanum kept in the shop not labelled.—The defendant stated that Mrs. Vickerstaffe, who used to be a neighbour, came to her shop and asked for a pennyworth of laudanum. She told her that she did not keep it for sale, but for her own private use in making white oils. She had been an assistant to the late Miss Roscoe. She never charged Mrs. Vickerstaffe for it, but on going out she threw the penny on the counter. She thought the laudanum was wanted for external purpose, or she would not have let her have it.—Mr. Huish, the magistrates' clerk, said that was the first case they had had before them for many years.—Defendant was fined 1s. and 12s. costs.

MR. PERCIVAL SIDNEY CAMPKIN, son of Mr. A. Sidney Campkin, J.P., M.P.S., of Cambridge, was one of the successful candidates at the recent dental examination held in London, qualifying as L.D.S.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY.—A very enjoyable and successful smoking concert, organised by the above Society, was held on Thursday evening in last week, at Bird's Hotel, Mr. G. Squire, President of the Society, took the chair, and the entertainment was provided by Messrs. Hardcastle, Honey, Newton, Percival, Brown, and Hull. There was a good attendance.

MEDICAL, SURGICAL, AND HYGIENIC EXHIBITORS' ASSOCIATION.—The members and executive of this Association will hold their third annual dinner at the Café Royal, Regent Street, on Saturday, November 26, at 6.30 p.m.

SCOTTISH NEWS.

LAUDANUM POISONING.—A hawker named John McIntosh (27), residing in School Street Lane, Fraserburgh, had suffered acutely for some few days from toothache, and was unable to sleep. He was, it appears, in the habit of taking laudanum, and in order to get an increased quantity from the chemist, he made out that he required it for a horse. He sent his cousin to the chemist for another supply, and it is supposed took the whole of it. On Sunday, November 13, he was noticed to be breathing heavily, and Dr. Beddie was called in. The usual restorative measures were employed for over five hours, but without effect.

A CHEMIST PARISH COUNCILLOR.—Mr. David Watson, chemist, 558, Cathcart Road, Glasgow, contested one of the vacancies of the Govan Parish Council on Tuesday, and in his own ward was returned at the head of the poll. Mr. Watson is Secretary of the Glasgow and West of Scotland Pharmaceutical Association, and a popular man in his district, as the result of the contest shows. Among his brother pharmacists his return was very popular, but he is not the only member of the Association who gives part of their time to the work of a public board. Mr. J. A. Russell, one of the Vice-Presidents of the Association, having held office in the City Parish Council for some years, and being at the present time one of the candidates for a seat at the newly constituted combined council for the City of Glasgow.

MARKET REPORT.

The quotations here are given in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

London Report.

NOVEMBER 24.

Business has been quiet during the past few days. There are, however, some changes to report. First, prices of Iodides have been suddenly and rather unexpectedly advanced 3d. per lb. Cocaine is also dearer, while there has also been a further advance in makers' price of refined Camphor, due to the continued firmness in the price of Crude Bromides, Mercurials and Quicksilver unchanged. Borax and Acid Boracic quiet. Cream of Tartar firm. Acid Citric and Tartaric dull and weak. Morphia, Opium, and Codeia without change. Cod Liver Oil rather weaker for new oil, 1896 import being also lower in price. Glycerin quiet. Sulphonal, Phenacetin, and Acetanilide unchanged. Quinine quiet, and somewhat unsettled. The following are particulars of prices actually ruling for articles of principal interest:—

ACETANILIDE—Is being offered below makers' Convention price of 11d. per lb. for 5 cwt. lots. The quality of these cheap offerings is, however, hardly to be considered as satisfactory.

ACID BORACIC—Unchanged at 24s. per cwt. for *crystals*, and 26s. per cwt. for *powder*.

ACID CHRYSOPHANIC—Is quiet, but makers are firm at 8s. 6d. per lb., in view of the position of the crude article.

ACID CITRIC—Moves off in a small way at 1s. 1½d. to 1s. 1¾d. per lb. for *crystals*.

ACID OXALIC—Unchanged at 3¼d. to 3½d. per lb. for *crystals*, and 3¼d. to 3½d. per lb. for *powder*.

ACID TARTARIC—Is very quiet, and but little business is passing in the article. *English crystals* are quoted 12¼d. to 12¾d., and about ¼d. per lb. less for the *foreign* article.

ALUM—Is quiet but steady at £5 7s. 6d. per ton for loose lump, and £6 per ton for ground in bags *ex store*.

AMMONIA COMPOUNDS.—*Sulphate* dull and slightly lower at £10 for grey, prompt, 24 per cent. London, Hull, or Leith. *Carbonate* firm at 3d. to 4d. per lb., according to package and quantity. *Bromide* firm at 2s. 1d. per lb. *Iodide* dull at 13s. 7d. per lb. *Oxalate* firm at 5¼d. to 5½d. per lb. *Sulphocyanide* unchanged at 1s. to 1s. 1d. per lb., according to quantity. *Sal ammoniac*: Sublimed firsts are steady at 35s. per cwt.; seconds, 33s. per cwt.; crushed, for batteries, 37s. and 35s. per cwt. respectively.

ARSENIC—Without change at 18s. per cwt. for white *powder*, and 34s. per cwt. for *lump*.

BLEACHING POWDER.—Unchanged at £6 5s. to £6 15s. per ton on the spot.

BORAX.—Firmer at 14s. 6d. to 14s. 9d. per cwt. for *lump*, and 15s. to 15s. 3d. per cwt. for *powder*.

BROMIDES—Are unchanged at prices quoted in our last number.

CAMPHOR.—Makers again advanced their prices. *Refined* this week, 1d. per lb., present quotations being: Bells, 1s. 5½d. per lb.; flowers in 5 and 10-lb. boxes, 1s. 5½d.; blocks, 1 lb., ½ lb., and ¼ lb., 1s. 5½d.; other sizes in proportion. In view of the firmness of the *crude* article, a further advance in price of *refined* is considered not improbable. Owing to the large purchases of *crude* for America the market is exceedingly strong, 107s. 6d. per cwt., *c.i.f.*, being to-day's quotation from *China*, whilst *Japan* is not quoted.

CASCARA SAGRADA.—This article continues very firm, and from the other side very little old bark is offered at all, and that little at 26s. per cwt. *c.i.f.*, which at present is above our market. Here,

at the spot, new bark is still to be had at 25s. per cwt., but old bark is dearer at 27s. 6d. to 30s. per cwt., according to quality and holder. There is very little about and higher prices seem certain.

CHAMOMILES—Are very firm but the demand is slack, owing to the high prices asked. Quotations range from 67s. 6d. to 72s. 6d. per cwt., according to quality.

CHAULMOOGRA OIL.—In original cases this is quoted 2s. 3d. per lb. for good pale quality.

CLOVES.—Privately, *Zanzibar* quiet but steady, October to December delivery 3½d.; and January to March, 3¼d. to 3½d. At auction only 7 cases picked *Penang* offered and bought in at 10d.

COCAINE.—Makers advanced price to 10s. 3d. per oz. for the best brands of *Hydrochlorate* for 100-oz. lots in 25-oz. tins, it being stated that, in view of the position of the raw material, a further advance is probable.

CODEIA.—Is still quoted by the makers at 12s. 6d. per oz.

COD LIVER OIL.—The value of old *Norwegian* has declined several shillings per barrel this week, probably owing to pressure to sell on part of holders. New *Norwegian* is nominally without change at 80s. to 85s. per barrel, according to brand.

CREAM OF TARTAR.—This is a very firm market, and a good business has been done this week. *Crystals* of first white quality are quoted 73s. 6d. to 78s. 6d. per cwt.; and *powder*, 75s. 6d. to 83s. 6d. per cwt., according to strength.

DAMIANA LEAVES—Rather easier at 7d. per lb. on the spot. Demand is very quiet.

ERGOT.—This article has changed hands this week at again dearer rates, 2s. 3d. per lb. having been paid for *Spanish*, and 1s. 6d. per lb. for *Russian*.

GINGER.—Only small supplies of *Cochin* offered. Of 433 bags, rough kinds, only 40 bags, ordinary washed rough, sold at 22s. to 22s. 6d.; of 62 cases, cut, 52 cases, B cut, sold at 61s. to 61s. 6d.

GLYCERINE.—Market is quiet at about late rates.

GOLDEN SEAL ROOT.—The high prices asked keep buyers back, but a good business is reported from New York on the basis of 2s. 6d. per lb. here.

IODIDES.—At the moment of going to press we learn that prices have been advanced 3d. per lb.; full particulars will be given in our next week's issue.

JAPAN WAX—Moves off slowly at 33s. per cwt. for good squares.

KAVA KAVA—Is very scarce both in New York and San Francisco, at present rates on the other side the article costs 10d. per lb. to import.

MENTHOL—Is exceedingly firm, and again comes dearer from Japan. Price on spot is still 7s. 3d. to 7s. 6d. per lb. according to quantity.

MERCURIALS—Are unchanged, the following being makers' present prices: *Calomel*, 2s. 8d. per lb.; *Corrosive sublimate*, 2s. 4d. per lb. *Red oxide, B.P.*, 3s. per lb. *Yellow oxide, B.P.*, 3s. 1d. per lb. *Ammoniated, B.P.*: 3s. 1d. per lb.

MORPHIA.—The price of the *Hydrochlorate powder* is 5s. per oz. for quantity and bulk packing, *crystals* costing 2d. per oz. more.

OILS (ESSENTIAL).—*Peppermint*: American HGH steady at 5s. 6d. per lb. on the spot. Wayne County firmer at 3s. 9d. to 4s. per lb. for fine quality. Japan is firmer, and from the other side more money is asked. *Star Aniseed* is steady at 6s. 3d. per lb. *Cassia*, 4s. 9d. to 5s. 6d. per lb., as to quality. *Citronelle*, 1s. 1d. to 1s. 2d. per lb., as to package. *Spearmint*, 4s. per lb. *Wintergreen*, 6s. 3d. to 7s. per lb. *Sassafras*, 1s. 7d. to 1s. 8d. per lb.

OILS (FIXED) AND SPIRITS.—*Linseed* is again lower with the decline in the value of seed. Pipes, on the spot, £16 5s., barrels £16 15s. *Rape* is steady at £21 5s. for ordinary brown on the spot, refined spot £22 15s. *Cotton* steady; London crude spot £11 15s., refined spot £14 to £15, according to make. *Coconut* again dearer, closing very firm at £26 for Ceylon on the spot, and £30 nominally for *Cochin*. *Palm*: Lagos on the spot £22 10s. *Turpentine* much dearer, closing a firm market, American spot 28s. 3d. per cwt. *Petroleum oil* quiet at 5½d. per gallon for Russian, and 6½d. per gallon for American. *Petroleum Spirit*, American 7¼d. per gallon, deodorised 8d. per gallon.

OPIUM.—Quiet and unchanged from last week.

PARAFFIN WAX.—*Refined*: 2½d. to 3½d. per lb., according to quality.

PHENACETIN—Is unchanged at 3s. 9d. to 4s. 3d. per lb. for both *crystal* and *powder*, in quantity and bulk packing.

POTASH COMPOUNDS.—*Chlorate* steady at 3¼d. to 4d. for *crystals*, and 4d. to 4¼d. per lb. for *powder*. *Prussiate*: Yellow, 6¼d. per

lb. for English; red, 1s. 2d. per lb. *Bicarbonate* steady at 30s. to 35s. per cwt. for crystals or powder, according to brand. *Bromide* firm at 1s. 9½d. per lb. *Bichromate* steady at 3½d. to 3¾d. per lb. *Oxalate* firm at 5d. per lb. for the neutral. *Permanganate* firm at 50s. per cwt. for small crystals, and 55s. per cwt. for large crystals. QUICKSILVER—Is firm at £7 10s. per bottle from importers and 1s. less from second hands.

QUININE—Market is somewhat undecided. Makers of best *German* brands stating that their price is nominally 11d. per lb., but that they are sold out and have none to offer at the moment. A little is obtainable from second hands slightly below alone figure.

SAFFRON.—It is said that the crop has been damaged by early frosts, and quotations from Spain come rather dearer. Finest *Valencia* is quoted 33s. 6d. to 35s. per lb., whilst *Alicante* is steady at 22s. 6d. to 25s. per lb.

SALTPETRE.—English, *refined*, in kegs, 21s. per cwt.; casks, 20s. per cwt.

SHELLAC.—The demand on the spot is very slow, with only retail sales of *TN Orange*, basis fair, at 65s. per cwt., and *AC Garnet* at 65s. to 67s. per cwt. for cakey to good free. Both the arrival and speculative markets are quiet.

SODA COMPOUNDS.—Crystals are steady at 57s. 6d. per ton, ex ship in the Thames. *Ash*, £5 to £5 10s. per ton on the spot, according to strength and package. *Bicarbonate* quiet at £7 2s. 6d. to £7 7s. 6d. per ton for the 97 per cent., and 18s. 6d. per cwt. for the fully bicarbonated quality. *Bromide* quiet at 2s. per lb. *Iodide* unchanged at 11s. 7d. per lb. *Bichromate* unchanged at 2¾d. to 3d. per lb. *Hyposulphite* dull at 6s. to 8s. per cwt., according to brand. *Caustic*, 70 per cent., white, £8 per ton; 60 per cent., £1 per ton less.

SPICES (VARIOUS).—*Black Pepper* all bought in, Singapore at 4¾d., and *Tellicherry* at 4¾d. *White Pepper* also almost all bought in, Penang at 7½d., Siam at 8d., Singapore, fair to fine, 8¾d. to 9½d. *Capsicums*: 278 bags West Coast African sold, without reserve, at 27s. 6d. *Cinnamon*: 39 bales Ceylon sold, without reserve, at 7d. to 7¾d. *Mace*: 54 cases Penang, nearly all bought in, pickings 1s. 3d., middling to good 1s. 9d. to 2s. 2d.; 1 box West India sold at 1s. 3d. *Nutmegs*: Dull and mostly bought in. *Pimento*: Firm but quiet, 153 bags sold, fair to good 4¾d., one lot 4¾d.

STROPHANTHUS SEEDS.—Green *Kombé*, the official kind in this country, are firm at 3s. 6d. to 4s. per lb., according to quantity, whilst the brown kind have been taken this week in good quantity for the Continent at 10d. to 1s. per lb.

SUGAR OF LEAD—Is quiet, but quotations are firm at 26s. 6d. per cwt. for *Foreign* and 31s. per cwt. for *English*.

SULPHONAL.—Buyers who failed to secure a stock at late low prices are now looking round for anything which is procurable from second hand below makers' present price of 17s. per lb. It is believed, however, that the quantity thus available from second hand is limited.

SULPHUR—Is firm, with a fair business passing. *English*: Roll, 7s. 6d. to 8s. per cwt.; flowers, 10s. per cwt. *Foreign*: Roll, 6s. 6d. per cwt.; flowers, 7s. per cwt.

SULPHATE OF COPPER—Is strong at £18 to £19 per ton, according to brand.

TURMERIC.—All kinds are extremely slow of sale, still holders are firm. *Bengal finger* 19s. per cwt., *Cochin finger* 21s. per cwt., *China finger* 19s. per cwt., split *Cochin bulbs* 10s. 6d. per cwt.

To-day's drug auctions passed off somewhat quietly, a considerable number of the lots offered being bought in. Chief alterations were weaker prices for *Ipecacuanha* and *Buchu Leaves*, and a decline in value of *Rhubarb*. It has been decided that the first drug sale of the New Year will take place on January 19, and this will mean an interval of six weeks, assuming the Christmas week auction is, as usual, passed over. The sales of March 31 and August 3, 1899, will also be passed over. The following are the particulars of to-day's sales:—

ALOES.—15 boxes dark to good livery *Curacoa* were bought in, bids of 21s. and 21s. 6d. per cwt. not being entertained. 8 kegs *Socotrine* of good quality taken out at 80s. per cwt.

AMBERGRIS.—Under this name 1 tin of evil-smelling stuff, of a whitish colour, was shown. An authority stated that it was the "brain of a whale." The brokers offered it without giving it a name, but no bid was made.

ANISEEDS.—44 bags fair, *Russian*, part sold at 19s. per cwt.

ANTIMONY.—40 cases *crude Japan* bought in at £22 10s. per ton. ARGOL.—17 bags *Cape* sold at 56s. per cwt.

BALSAM COPAIBÆ.—2 casks good thick *Muranham* bought in at 1s. 8d. per lb.

BALSAM TOLU.—17 cases good fair bought in at 1s. 7d. per lb.

BUCHU LEAVES.—12 bales good green rounds realised 5½d. to 5¾d. per lb., yellowish green selling at 4¾d. per lb.

CALUMBA ROOT.—160 bags low dark sorts sold at 12s. per cwt.; 213 bags sold at 20s. 6d. to 23s. 6d. per cwt. for fair bright sorts up to 75s. 6d. per cwt. for good, part slightly dull.

CAMPHOR.—10 cases, each 112 lbs. in 1-oz. tablets, *Japan refined*, were taken out at 1s. 4d. per lb., 30 cases selling without reserve at 1s. 2d. per lb. for 1-oz. tablets, and 1s. 3¾d. for ½-oz. tablets.

CARDAMOMS.—About 230 cases were catalogued, all selling at full prices. One lot of fine bold bleached Ceylon *Mysore* were held for 4s. 2d. per lb., 4s. being refused. Good realised 3s. 3d. to 3s. 9d. per lb. Seeds 3s. per lb.

CASTOR OIL.—25 cases medium *Calcutta firsts* were taken out at 4¾d. per lb.

CINCHONA BARK.—10 cases *red Guayaquil* bought in at 8s. per lb. for 3CCD. 11 cases ditto, but of different quality, sold at 1s. 7d. per lb. down to 4d. per lb. for inferior 3CCD.

COCOA LEAVES.—5 bales fair *Truxillo* were held for 7d. per lb.

COD LIVER OIL.—25 barrels fair Norwegian of 1896 import, slightly darkish in colour, sold without reserve at 50s. to 57s. per barrel, which shows a considerable reduction in value, same quality realising 65s. per barrel in previous public sale.

COLOCYNTH.—9 casks fair pale *Turkish*, part broken sold cheaply at 11½d. per lb.

CROTON SEED.—34 bags fair quality held for 75s. per cwt.

CUBEBS.—15 bags of fair quality sold at 24s. per cwt.

CUTTLE FISH BONE.—20 mats fair, pale broken, held for 2½d. per lb.

DAMIANA LEAVES.—5 bales, rather yellow in colour were taken out at 7d. per lb.

DILL SEEDS.—100 bags fair pale were taken out at 15s. per cwt., a bid of 12s. being declined.

DRAGON'S BLOOD.—One case of good bright but damp saucers realised £11 per cwt., other lots being bought in. Reeds are held for £12.

ERGOT OF RYE.—7 bags *Spanish*, of which no sample was forthcoming, were bought in at 2s. 6d. per lb., 15 bags small weevily *Russian* at 2s. per lb., 10 cases very weevily ditto at 1s. 5d. per lb. less would, however, probably be accepted to clear.

ESSENTIAL OILS.—9 cases *Japan Peppermint* of good quality and guaranteed to contain about 40 per cent. menthol were taken out at 5s. 3d. per lb. 20 cases fair *Citronella* at 1s. 2d. per oz. 2 cases *Essence Neroli*, *Bigarade*, were held for 3s. per oz. 4 cases distilled West Indian *Lime Oil* part sold at 2s. 6d. to 3s. per lb., subject to approval. 1 box *Bay Oil* sold at 6s. per lb.

GALANGAL ROOT.—10 bales of fair quality were taken out, 22s. 6d. per cwt. being price required.

GAMBOGE.—6 cases fair, bright pipe, part somewhat rough, sold at £7 10s. per cwt. 12 cases bought in at £7 5s., for fair bright, softish, down to £6 12s. 6d. per cwt. for very mixed pipe.

GUM AMMONIACUM.—5 cases fair fair pale part blocky were taken out at 40s. per cwt.

GUM ARABIC.—4 cases pale grains were bought in at £6 12s. 6d., 3 cases picked grains selling at £5 per cwt., 20 serons good soft sorts taken out at 90s.

GUM ASAFETIDA.—40 cases, which had previously been offered in public sale on the 10th inst., were again bought in at 40s. to 52s. 6d. per cwt. for very heavy brown to dark blocky, part slightly almondy, down to 30s. per cwt. for inferior quality. Of 63 cases shown for the first time, 2 cases good grey broken block, part loose almonds, sold at 50s. per cwt., and 22 cases common heavy brown block at 25s. to 27s.

GUM BENJAMIN.—*Sumatra*, very good almondy block, well packed, was bought in at £11 per cwt., fair ditto for £10, fair to medium seconds at £6 to £6 10s. 29 cases small to medium, free *Siam*, part slightly blocky, were taken out at £18 per cwt., dark blocky seed at 55s. per cwt.

GUM GUAIAACUM.—1 cask good glassy block was held for 1s. 6d. per lb.

GUM KINO.—3 cases fair *African*, part dark and blocky, were taken out at 2s. 6d. (only 1s. 2d. being bid), 1 case good bright *African* being bought at 8s. 11 packages genuine were taken at 10s. per lb.

GUM MYRRH.—5 cases good sorts bought in at 70s. per cwt., a

bid of 65s. being refused. 5 casks medium sorts taken out at 50s., 9 casks bought in at 100s. per cwt. for good bright pale sorts, and 50s. per cwt. for pickings.

GUINEA GRAINS.—2 bags of fair quality were held for 65s. per cwt.

HONEY.—20 packages medium *Jamaica* sold at 20s. per cwt., down to 18s. 6d. per cwt. for slightly inferior.

IPECACUANHA.—44 bales *Rio* and 18 bags *Carthagera* were offered of these part of the latter sold at 7s. per lb., whilst only one bale of the former sold at 9s. 10d. per lb., a decline of 2d. per lb. on this quality. Demand generally is very slow.

KAMALA.—8 cases fair bright were bought in without mention of price.

KOLA NUTS.—10 bags of fair quality taken out at 3d. per lb.

MATICO LEAVES.—9 bags, fair green, part broken, were taken out at 6d. per lb.

MUSK.—1 caddy, net, about 24 ozs., old-fashioned, small to bold, thin skin and some few slightly damp, bought in at 50s., good pile 3 small to bold at 26s. per oz.

NUX VOMICA.—479 pockets, each about 56 lbs., small dull were held for 5s. 6d. per cwt., 1 bag fair bright small selling cheaply at 4s. per cwt. 40 bags good bright *Cochin* bought in at 9s. 6d. per cwt.

ORANGE PEEL.—7 cases old thick cut held for 5d. per lb.

QUININE.—2 cases, each 1000 ozs., *Sulphate Taillandier's* make were held for 10½d. per oz.

RHUBARB.—Sold at somewhat lower rates. 27 cases very common rough round horny high-dried sold at 4½d. per lb., bold flat realising 10½d., rather smaller ditto 10d. per lb., dull ditto selling cheaply at 9d. per lb. Very bold round *Canton*, fair colour, part rough, was bought in at 1s. 2d. per lb., flat ditto at 1s. 3d. per lb., medium round and flat ditto at 1s. Bold flat *Shensi*, grey and pinky fracture, sold at 1s. 6d. per lb., medium ditto at 1s. 3d. per lb., bold round at 2s. 4d. per lb., fair small round trimming root at 2s. 9d. per lb., pickings at 9½d. per lb.

SARSAPARILLA.—10 serons good *Honduras* were bought in at 1s. 6d. per lb.

SENNA.—450 packages in all were catalogued, 409 bales *Tinnevelly*, 14 packages *Alexandrian*, and 27 bales *Mecca*. Of the *Tinnevelly*, the bulk being in importers' hands, sold with strong competition; good green bold leaf at 5d. per lb.; medium grades, 2½d. to 4d. per lb., and small leaf, 2d. to 2½d. per lb. *Pods* were dearer at 2½d. per lb. No *Alexandrian* sold, quality being undesirable. The *Mecca* was also bought in.

STAR ANISEED.—1 case of fair quality was bought in at £7 10s. per cwt.

SQUILLS.—8 bags realised 2¼d. per lb.

TAMARINDS.—50 barrels black *Calcutta* were bought in at 17s. per cwt.

TONQUIN BEANS.—3 cases good *Angostura* were held for 2s. 9d. per lb. 2 cases *Para* bought in at 1s.

TURMERIC.—53 bags *China* bought in at 26s. per cwt.; 10 cases *China* turmeric powder sold without reserve at 12s. 6d. per cwt.

VANILLA.—Over 300 tins were offered. The lower qualities of Bourbons and Madagascar sold very well at higher prices. Fine qualities were full up to 2s. per lb. dearer on last auctions. *Tahiti's* sold well at 7s. 6d. to 8s. per lb.

VERMILION.—For 3 cases *China* price required was 2s. 1d. per lb.

WAX.—45 cases *Japan* held for 32s. 6d. per cwt. 72 packages fair *Madagascar* bought in at £5 17s. 6d., a bid of £5 15s. per cwt. being declined. 20 bales *Gambia* were taken out at £6 10s. per cwt. 7 bales *Spanish* at £8 5s. 22 packages *Jamaica* sold at £6 7s. 6d. to £6 15s. per cwt. 4 packages *East Indian* at £5 5s. 2 cases *Australian* were taken out at £6 per cwt. 5 bags *Zanzibar* sold at £6 5s. subject to approval.

Manchester Chemical Report.

NOVEMBER 23, 1898.

There is little movement in heavy chemicals, especially for export, and prices tend downward generally. There is more doing in drysalteries and anilines, owing to a greater demand in the dyeing and printing industries, though how long this will continue is problematical. Aniline Oil and Salt are a fraction higher than last week, but values are still low. Sulphate of Copper continues active, and about £19 is the figure for best brands, delivered Manchester. In Glycerin there is not so much doing, and prices are

somewhat easier. In all probability we shall witness a substantial reduction in this article at an early date. Benzols are unchanged, but Pitch and Creosote continue firm. Alum is rather lower, loose lump being quoted £4 15s. per ton, on rails, Manchester, packages and ground extra. Yellow Prussiate is exceedingly firm at 6½d. to 7d. per lb. best Lancashire make. Green Copperas unchanged.

Newcastle Chemical Report.

NOVEMBER 22, 1898.

Not much change in heavy chemicals. Sulphur scarce and is the turn dearer. Soda Crystals are a trifle in more request for the Channel ports. Prices are: Bleaching Powder, £5 10s. to £6; Soda Crystals, basis, 45s.; Sulphur, £4 15s. to £5; Alkali, 52 per cent. £5 5s.; Caustic Soda, 70 per cent. basis, £7; Soda Ash, 52 per cent., £4 5s. per ton.

Liverpool Market Report.

NOVEMBER 23, 1898.

Business has been fairly good during the week and several good transactions in oils have taken place at full prices. Carnauba Wax has attracted some attention, selling in good quantity, whilst Spirits of Turpentine has run rapidly up to 29s. per cwt., in consequence of large deals in American. Chemicals have been moderately brisk, Borax, Sulphate of Ammonia, and Sulphate of Copper continuing very strong.

AMMONIA SULPHATE.—£10 2s. 6d. to £10 per ton.

BORAX.—Firm and still in short supply at £14 10s. to £15 per ton.

CANARY SEED.—Turkish is quoted at 28s. 6d. to 30s. per 464 lbs., but there have been no sales upon which to base a price. 180 bags of Spanish have been sold on private terms.

CARNAUBA WAX.—290 bags changed hands at 34s. to 52s. 6d. per cwt.

CHILLIES.—35 bags of Sierra Leone sold at 23s. 6d. to 34s. per cwt.

COPPERAS.—Is firm, Lancashire at 39s. per ton and Welsh at 37s.

COPPER SULPHATE.—Is very firm at £18 10s. per ton for immediate delivery and £19 in the spring.

GINGER.—25 bags of Sierra Leone, off quality, sold at 18s. 6d. per cwt. *ex store*.

LINSEED.—Is firmer in tone, though sales are not of much account. *Calcutta* seed, December-January delivery, offers at 37s. 6d. per 416 lbs., River Plate at 35s. 6d.; 100 bags "feeding" Turkish went for 41s. to 43s. per 416 lbs.

OILS (FIXED) AND SPIRITS.—*Castor* is commanding more attention; sales of 650 cases of *Calcutta* at 3½d. per ton, *ex store*, are reported, as well as 600 cases "to arrive" on private terms; French, 1st pressure, 2½d. per lb.; and Madras, 2¼d. 31 barrels sold privately after auction. *Olive* commands only a moderate consumptive demand at £29 to £29 10s. per ton on the spot for Spanish. For shipment, Malaga is quoted at £30 per ton, "cost and freight." *Linseed* is quietly moving off at 18s. to 19s. per cwt. for Liverpool pressed, in export casks. *Cottonseed* is flat at 15s. to 15s. 6d. per cwt. *Spirits of Turpentine* has become 1s. 6d. per cwt. dearer than last week, and is now held for 29s. per cwt.

POTASH SALTS.—*Bichromate*: 3½d. per lb. *Chlorate*: 3½d. to 4d. per lb. *Cream of Tartar* is firm at 75s. per cwt. *Pearlashes* are slow of sale at 34s. to 35s. per cwt. *Potashes* are very firmly held at 25s. per cwt., sales of Montreal having been effected at 24s. 6d. *Saltpetre* scarce at 22s. per cwt.

SODA SALTS.—*Bicarbonate*: £6 15s. per ton. *Caustic*: 76 to 77 per cent., £7 12s. 6d. per ton. *Crystals*: £3. *Nitrate*: 7s. 7½d. to 7s. 9d. per cwt.

Publications Received.

YEAR-BOOK OF PHARMACY, 1898, with the transactions of the British Pharmaceutical Conference at the thirty-fifth annual meeting held at Belfast, August, 1898. Pp. 536. London: J. and A. Churchill, 7, Great Marlborough Street. 1898. From the Publishers,

Calendar for Next Week.

Sunday, November 27. Sun rises 7.40; sets 3.56.

Monday, November 28.—O 4.39 M. Sun rises 7.41; sets 3.55.

PHARMACEUTICAL SOCIETY OF IRELAND, 67, Lower Mount Street, Dublin. Dr. J. C. McWalter will contribute a paper on "The Pharmacy of the Organoids."

ROYAL GEOGRAPHICAL SOCIETY, University of London, Burlington Gardens, W., at 8.30 p.m. Lecture on "A Year on Christmas Island," by Chas. W. Andrews.

Tuesday, November 29. Sun rises 7.43; sets 3.54.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION, County Restaurant, Bradford. Musical evening, arranged by A. Hanson.

PUBLIC DISPENSERS' ASSOCIATION, 46, Clarendon Square, King's Cross, N.W., at 7.30 p.m. S. B. Donnan will read a paper on "Urine and its Analysis," which will be followed by a discussion on the new Pharmaceutical Bye-laws.

Wednesday, November 30. Sun rises 7.44, sets 3.53.

MANCHESTER PHARMACEUTICAL ASSOCIATION, Chemical Club, Victoria Hotel, at 8 p.m. Special meeting to discuss the resolutions submitted by the Federation of Local Associations.

WESTERN CHEMISTS' ASSOCIATION (of London), Westbourne Restaurant, 1, Craven Road, W., at 9 p.m. A special general meeting for the purpose of considering the question of Compulsory Poison Regulations.

Thursday, December 1. Sun rises 7.46; sets 3.53.

CHEMICAL SOCIETY, Burlington House, W., at 8 p.m. Paper to be read on "The Oxidation of Polyhydric Alcohols in Presence of Iron," by H. J. H. Fenton and H. Jackson, followed by a ballot for the election of Fellows.

CHEMISTS' ASSISTANTS' ASSOCIATION, 73, Newman Street, London, W., at 9 p.m. Demonstration of Röntgen rays.

LINNEAN SOCIETY OF LONDON, Burlington House, Piccadilly, W., at 8 p.m. Papers on "The Biology of Agaricus Velutipes, Curt.," by R. H. Biffen," and on "The Gastric Glands of the Marsupialia," by Jas. Johnstone.

MIDLAND PHARMACEUTICAL ASSOCIATION, Mason University College (Medical Theatre), Birmingham, at 8.30 p.m. Lecture by Dr. Hall Edwards on "The Practical Application of the X-Rays," with lantern slide illustrations.

SCHOOL OF PHARMACY, Crown Room, Holborn Restaurant, London, W.C., at 8 p.m. Annual Smoking Concert of the Football Club. Professor Greenish in the chair.

Friday, December 2. Sun rises 7.47; sets 3.52.

CAMBRIDGE PHARMACEUTICAL ASSOCIATION, Dale's Assembly Rooms, at 9.15 p.m. Smoking concert.

IRISH PHARMACISTS' ASSISTANTS' ASSOCIATION, 67, Lower Mount Street, Dublin. Debate.

Saturday, December 3. Sun rises 7.48; sets 3.52.

Obituary.

KERRY.—On November 14, Thomas Kerry, Chemist and Druggist, Dewsbury. Aged 67.

LUMSDEN.—On November 18, David Lumsden, Chemist and Druggist, Aberdeen. Aged 81.

Receiving Orders in Bankruptcy.

(From the London Gazette.)

William J. Wilson, Chemists' Manager, 496, Moseley Road, Moseley, Wores.

Alfred Toyer, Drysalter, 65, High Town Road, Luton.

Henry Taylor, Photographer, Watton, Norfolk.

Partnerships Dissolved.

(From the London Gazette.)

J. W. Traini and W. Crowthers (trading as the National Teeth and Optical Co.), Artificial Teeth Manufacturers and Opticians, South Shields and Jarrow.

Dr. G. Andrew and G. M. Winter, Medical Practitioners and Apothecaries, Torquay and St. Mary Church, Devon.

F. W. Smith and G. F. Dickinson, Physicians and Surgeons, Leamington, so far as regards F. W. Smith.

Llewellyn Davies and J. H. Wilson, Chemists, Ordnance Road, Enfield Wash.

Advertisement.

(Received too late for Classification.)

ENGAGEMENT wanted as ASSISTANT. 26. Qualified. London preferred. 10 years' good experience, town and country. WILLIAMS, 24, Great Russell St, W.C.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Six Pieces Perfume Ribbon, each 36 yards long (216 yards), assorted colours, post free, 5s.—Edward Peck, East Dereham, Norfolk.

Magic Lanterns, second-hand; triples and binoculars; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewer House, 82, Mortimer Road, Kingsland, N.

All New, unsoiled, bought before advance, hot water bottles, best quality. Maroon plush covers (detachable) included, 10 by 6, 4s.; 12 by 8, 5s. 10d.; 12 by 10, 6s. 6d.; 14 by 10, 7s. Sponge bags, best quality, silk cords and bindings, full sizes, as Maw's, eight dozen, assorted, Nos. 2, 4s. 6d.; 3, 6s.; 4, 7s. 6d.; 5, 9s.; 6, 10s. 6d. Tooth stopping wrapped pink paper, as Stevens', gross box, 2s. 6d.; 3 dozen 3d. sticks, 2s. 6d. Hypodermic syringe, complete, cased, 1s. 6d. Post free 10s. lots. Cash returned if sold.—Warnes, Chemist, 333, Gray's Inn Road, W.C.

Fletcher's Gas Stove for heating shop or bedroom, with copper reflector, seven hot-air tubes, giving pure warm air without deleterious gas products, 7s. 6d.—Chemist, 34, Avondale Road, Chorley.

Offer wanted for 'Pharmaceutical Journal,' posted every Saturday.—Eastman, Forest Lane, Stratford.

What offers? 1 oz. each Orthoform, Piperazin, Celloidin, Protargol, Zymine Fairchild, 3x2/6 1zal, 2x1 lb. Formalin Schering, 1x500 Tabloid Thyroid, B. W. and Co., together or separate.—C. R., 156, Green Lanes, Stoke Newington, N.

What offers? Eastman's Kodak, double back, and 4 doz. Film Holder.—Wilbourne, Wycombe House, Coventry.

A Handsome globe-lamp and bracket for sale, ruby flashed glass, richly gilded, perfectly new, splendid advertisement for any chemist, £3 10s., worth double.—Humphrey, 121, Charing Cross Road, London.

WANTED.

Old Electric Lamps and Scrap Platinum for prompt cash.—P. Rowsell, 9, Derwent Grove, East Dulwich, London, S.E.

A Complete Set of 'Pharmaceutical Journals,' bound; state lowest price for cash.—'Journals,' c/o Thomas Kerfoot and Co., Bardsley Vale Mills, Ashton-under-Lyne.

Balance. Second-hand Sartorius, Becker (Brussels), or Oertling. Send fullest particulars to—E. L., 35, Hayter Road, London, S.W.

Photographic Apparatus, 1/2-plate, complete. Offered in exchange, 'Old England,' in two folio volumes (rare), Cruikshank's 'Comic Almanack,' in 2 vols. (20 years), and 'Verdant Green' (1856 edition).—Chalmers, Chemist, Eastville, Bristol.

COMMUNICATIONS, LETTERS, NEWSPAPERS, etc., have been received from Messrs. Austin, Bacon, Barrass, Baxter, Blau, Bound, Branch, Brown, Brunt, Butler, Campkin, Cracknoll, Curtis, Davidson, Dawney, Dawson, Dunlop, Emary, Evans, Forster, Gough, Hardwick, Harper, Hill, Jackson, Keen, Lockyer, McClumpha, Mumbray, Newbery, Orton, Owen, Sewell, Sharpe, Stewart, Thomas, Tirard, Tonkin, Walker, Wamsley, Wass.—Dudley Express and Star.

EXTRACTS FROM CONSULAR REPORTS.

THE PRACTICAL RESULTS of a sound commercial education at the Higher Institute of Commerce, Antwerp, are well illustrated by the following interesting figures, which show the use to which old students have turned the knowledge acquired by them at the establishment:—Two hundred and forty-nine are principals or managers of large mercantile houses in Belgium, 218 are bank managers or commission merchants, 6 are Belgian Consuls-General, 32 are Consuls or Vice-Consuls, and a late student is Home Secretary of the Congo Free State. Others, again, have become professors at foreign establishments of a similar nature to that of the Antwerp Institute. The fees paid by the students amount to £8 for the first year, and £10 for the second and third years. The instruction in all branches is thoroughly practical, that in science being limited to such branches thereof as may prove of use in industrial and mercantile pursuits. Attention is bestowed upon chemistry, mineralogy, natural history, etc., but these studies are only pursued with a view to their practical utility in manufacturing and commercial callings. The number of students now attending the Institute is 249, of whom 163 are Belgians and 86 foreigners.

A NEW USE FOR KEROSENE, according to Consul Hopkins, has been adopted in the district around Chefoo, China. He states that with such crops as are sown in drills the farmers, at the time of sowing, allow a few drops of kerosene to fall on the seed as it lies in the drill, and they assert that the oil acts as a strong protection against certain insects that are accustomed to feed on the plants at that early stage.

SOME OF THE PRINCIPAL REGULATIONS with respect to the manufacture and sale of margarine in Belgium are to the effect that (1) margarine intended for sale shall not contain more than 5 per cent. of butter—this stipulation is made in view of the difficulty of distinguishing between pure butter and margarine when the latter contains a large proportion of the cream product; (2) margarine shall not be exposed for sale in the same place (shop, stall, etc.) as butter, nor shall producers or vendors of cream butter keep margarine, even for their own consumption, in the same place as butter intended for sale. Other regulations stipulate that pats of margarine shall always be made in the form of cubes; that margarine must not contain preservatives of any kind nor be coloured except with such matters and to such a degree as authorised by the Minister of Agriculture. There are some fifteen factories for the manufacture of margarine in the neighbourhood of Antwerp, with an output of upwards of 22,000,000 lbs.

THE ACUTE DISTRESS which followed a recent failure of the wheat and rice crop in certain provinces of China is attributed in a great measure to the large increase in the areas of land now under poppy cultivation that were formerly planted with wheat and rice. The imports of foreign opium continue to decrease considerably, while the native drug is taking the place of the imported article, hence the reduction in the wheat and rice area and the increase of that under poppy cultivation.

THE IMPORTATION OF DRUGS AND MEDICINES into Persia during last year was greatly influenced by influenza and fevers which were very rife in the interior, notably at Shiraz. There was an increased demand for drugs and medicines, and the trade is reported to have been very lucrative, profits of 10 per cent. to 15 per cent. being recorded. The condition of the market at the close of the year, however, was somewhat unfavourable.

IN THE QUALITY OF JAPANESE CAMPHOR exported from Hiogo and Osaka in 1897 there was, according to the report of Mr. J. C. Hall, a manifest falling-off. This deterioration, however, was not observable in Formosan camphor, consequently the latter was preferred for the European market, whilst the American market, evidently less discriminating, took of the Japanese article more than double the export of 1896. India takes an increasing proportion of refined camphor, Europe and America of crude.

THE FOREIGN OPIUM imported into Amoy, China, in 1897 was valued at £329,566, against £318,153 the previous year. Native opium imported amounted to £40,238 against £43,938 in 1896. The greater part of the opium imported into Amoy is re-exported to Formosa.

PRACTICAL PHOTOGRAPHIC NOTES.

MM. LUMIÈRE, the well-known firm in Lyons, have just introduced on to the English market under the name of "vitrose rigide," a film for which they claim absolute immunity for six months at least from any deleterious action of the support; further, they state that the transparency and rigidity of the support is superior to celluloid. From a brief examination we should say that they are celluloid films, at least the support is soluble in the solvents of ordinary celluloid, and burns like that substance. It is, however, extremely transparent and very flat. The chief point about these new films, however, is the cardboard sheaths, which consist of a sheet of black card and a thin metal frame, the two being bound together by black paper. They form a very convenient and neat film carrier. The price of the films is high, namely, 2s. 6d. per doz. $\frac{1}{4}$ plates. Our English makers would probably stare if they were told that their films would only be guaranteed for six months.

A NEW TONING BATH was recently suggested at one of the London photographic societies for gelatino-chloride paper, the great advantage of which, it was said, was the avoidance of all double toning. It is an open question whether it can actually be called a toning bath in the strictly accepted reading of the words. We have always hitherto accepted as a definition of the word toning the replacement of part of the silver image by gold reduced from the toning solution by the double decomposition of the aurous chloride formed in the bath by the action of the alkaline salt on the auric chloride. In the new bath, which, by the bye, will not keep, the gold is deposited from the bath by the action of the salt formate of soda, and there is no double decomposition. The actual formula recommended is—

Sodium Formate	3.5 Gm.
Gold Chloride	0.25 Gm.
Distilled Water	1000 C.c.

or

Platinum Perchloride	0.25 Gm.
Sodium Formate	7.0 Gm.
Formic Acid	1.75 C.c.
Distilled Water	1000 C.c.

The prints must be immersed for five minutes in a 5 per cent. solution of salt and then transferred direct to the toning bath.

EVERY PHOTOGRAPHIC DEALER probably throughout the country has heard of Velox paper. If anyone has not we should strongly commend it for sale during the winter months. It is stated to be a chloro-bromide of silver emulsion paper, and it has the enormous advantage that, although slow, it can be manipulated in candle or gas-light, without a ruby lamp. The special developer recommended for it is—

Water	1000 C.c.
Metol	1.5 Gm.
Sodium Sulphite	50 Gm.
" Carbonate, Anhydrous	60 Gm.
Potassium Bromide.....	0.15 Gm.

This developer should be applied with a brush, the exposed paper being held face upwards on a sheet of glass. The best fixing bath is an acid one, and this is easily made as follows:—

Citric Acid	10 Gm.
Sodium Sulphite	50 Gm.
Water	200 C.c.

Dissolve and add to—

Sodium Hyposulphite	250 Gm.
Water	1000 C.c.

Velox paper can be obtained with several varieties of surface, and some artistic show-cards can be obtained from the agents, Messrs. J. J. Griffin and Co., Sardinia Street, W.C.

SOLUTIONS FOR STRIPPING THE FILM from negatives, the glass of which may happen to be accidentally broken, are often wanted by amateurs. The following is effective and will strip a film without enlarging it, which is just what is wanted:—

Distilled Water	500 C.c.
Alcohol	500 C.c.
Glycerin	40 C.c.
Hydrofluoric Acid.....	80 C.c.

In this the negative should be placed till it begins to lift at the corners, then it should be transferred to a dish of clean water, when

it can be readily coaxed from the glass with a soft brush, and transferred to a clean glass coated with gelatin. An almost better way is to simply leave the negative in the solution till it begins to lift well at the corners, then remove, squeegee a piece of clean writing paper down on to it, and in a very short time the paper may be lifted and with it the film, and the two squeegeed to a clean glass coated with gelatin, when the paper may be lifted. If the alcohol be omitted from the above, a solution is obtained which is very similar to that put up as a proprietary article for enlarging negatives by extension of the film. If a powder of similar action is required one may use a mixture of—

Sodium Fluoride	120 Gm.
Citric Acid	240 Gm.

directing this to be dissolved in 1000 C.c. of water. It is, of course, needless to point out that as the solution given above must be stored in an indiarubber bottle, or one well coated inside with paraffin wax.

PHARMACEUTICAL MAYORS.

Although pharmacy has at present no direct representative in the great law-making assembly of the United Kingdom, it is well represented on the various local governing bodies of the country, and in many cases pharmacists occupying the honourable and responsible position at the head of municipal affairs. Below is a list of pharmaceutical mayors, elected or re-elected to that position during the present month, together with a few brief particulars of their careers.

ALDERMAN JOHN BOWER, Mayor of Macclesfield, Cheshire, commenced his municipal work in 1873, when he was elected as a Liberal to the Town Council, but latterly he has supported the Conservative party. He is one of the oldest members of the Corporation, and is also Chairman of the House Committee of the Board of Guardians, of which body he has been a member for seventeen years. He was born in Wimslow in 1837. His connection with pharmacy dates from the year 1850, when, being then thirteen years of age, he was apprenticed for seven years to Mr. Hadfield, chemist and druggist, of Macclesfield. He subsequently founded the chemist and druggist's business in Mill Lane, which has been carried on for the last forty years. One of his sons at one time held the position of medical officer of health for the district, and another is a qualified partner in the business.

MR. LEONARD PARKER CHAPMAN, chemist and dentist, Mayor of Barrow-in-Furness, is the son of Dr. Chapman, J.P., of Garstang (Lancs.), and was born in 1853. He was educated at the Royal Grammar School, Lancaster, and afterwards at the Westminster College of Pharmacy. He was apprenticed to the late Alderman Edward Taylor, of Rochdale, and commenced in business at Barrow-in-Furness in 1878. He was elected to the Town Council in 1890. Mr. Chapman is a Conservative in politics. For many years he has been an Associate of the Pharmaceutical Society and Local Secretary for Barrow-in-Furness.

MR. JOHN COLES COLES, Mayor of Chippenham (Wilts), has been a pharmaceutical chemist member of the Society since 1870. This is not the first occasion on which Mr. Coles has occupied the civic chair of the borough, having been elected to that position in 1891. As Chairman of the District Technical Education Committee, his election this year is specially associated with the scheme for building secondary and technical schools. Two other chemists are also active members of this Committee, viz., Councillor Edgar Neale, A.P.S., and Mr. A. B. Turpin. Mr. Coles politically is a Liberal.

ALDERMAN JAMES FLOYD, Mayor of Bury St. Edmunds (Suffolk), joined the Pharmaceutical Society as a chemist and druggist member in 1869. He retired about two years ago from the firm of Messrs. James Floyd and Co., chemists and wholesale druggists, Bury St. Edmunds. Mr. Floyd served the borough as Mayor in 1880, and has devoted much time to philanthropic and public work, especially in relation to improved sewerage works and water works, in which his special knowledge has been of great value.

ALDERMAN T. SCOTT FOSTER, L.D.S., J.P., Mayor of Portsmouth, for many years carried on the business of a chemist at 99, Fratton Street, Landport, but of late years has relinquished it, in order to devote his whole attention to dentistry. He was first elected to the Town Council in 1876, was appointed Mayor in 1891, and an Alderman the following year. It was during his mayoralty in 1891 that the Portsmouth Building Society failed, thus causing much distress, in the relieving of which he took a prominent part. The Sanitary Congress of 1892 was also held at Portsmouth during his term of office. Alderman Foster has held many public honours, having served on the Portsmouth School Board (1883-86), as Chairman of the Board of Guardians (1885), to which body he was elected in 1880; then he has served for many years as one of the Governors of the Grammar School, and has held the office of overseer. The British Medical Association is to meet in Portsmouth during his term of office, and he is desirous of raising £3000 to furnish the new wards of the hospital.

MR. JOHN GILLING, Deputy-Mayor of Saffron Walden (Essex), was elected Mayor of the Borough in 1895, re-elected in 1896, and Deputy-Mayor the following year, being re-elected to the same office for 1899 owing to the absence from the town of the late Mayor, who early this year went to reside at Brighton. Mr. Gilling has been a pharmaceutical chemist member of the Pharmaceutical Society since 1867.

ALDERMAN JOHN HORSLEY, Mayor of Hartlepool (Durham), has previously served in this capacity during the years 1881, 1882, 1883, 1884, and was re-elected on November 9, after again serving as Mayor last year. Mr. Horsley is an Alderman of the County of Durham and a Justice of the Peace for the Borough of Hartlepool. He has been a chemist and druggist member of the Pharmaceutical Society since 1869.

MR. J. KINSEY JONES (re-elected), Mayor of Llanidloes (Montgomery), is the youngest son (aged 33) of the late Mr. William Jones, who in 1850 established the chemist's business now known as Jones and Sons, Llanidloes. He received his early education at the local Board School, and subsequently at the Northern Institute, Liverpool, and at the Aberystwith Grammar School. His pharmaceutical training began with his apprenticeship to Mr. E. Owen, chemist, of Newtown, and was continued at the Westminster College of Pharmacy. After qualifying as a chemist he took over the management of that branch of the business of the firm at Llanidloes. He was first elected to the Town Council in 1889, while in other ways he has taken an active part in public life, being a Liberal in politics.

MR. FREDERICK MASON, Mayor of Rotherham (Yorks) was apprenticed to the late Mr. T. Outwin, Church Street, Rotherham, whose business he afterwards purchased and merged with his own in High Street. He has taken an active part in the municipal work of the town, having served on the Council since 1883, doing good work as Chairman of the Public Health Committee. Mr. Mason is a Freemason and an honorary member of the Phoenix Lodge of Oddfellows; he is also a life governor of the Boys and Girls' Masonic Charities. Politically he is a Liberal.

DR. JAMES SOUTTER, Mayor of Hedon (Yorks) for the third year in succession, although not a pharmacist, is the son of Mr. J. S. Soutter, chemist and druggist, of that town. Mr. Soutter has been the Borough Treasurer for thirty-eight years, his family having supplied four mayors to the town during the present century.

MR. JOHN ALFRED STEWARD, Mayor of Worcester, was born in 1845, at Tenbury, and was apprenticed to the business of a chemist and druggist at Leominster. He afterwards acted as assistant to Mr. S. Betty, and with Messrs. Savory and Moore, Lancaster Gate, London, subsequently serving for several years in the Pharmacie Béal, Paris. In 1876, he acquired the business of the late Mr. Woods, at 27, High Street, Worcester, which was established in 1776. The "Mr. Featherstonhaugh," of Mrs. Henry Wood's novels was at one time owner of this business. Mr. Steward was first elected to the City Council in 1887, and last year filled the office of High Sheriff. He is a Conservative, and is W.M. of the Worcester Lodge of Freemasons.

IRISH NEWS.

THERE HAS BEEN MUCH ANALYSING of the various water supplies throughout Ireland lately. The Downpatrick people have been put to much expense and trouble, owing to the Tannaghmore stream not proving to be a good drinking water. During the period in which the cause and cure of its deficiency was much debated, the county court judge arrived to conduct the assizes. On the Bench he remarked that he could not but sympathise with those who objected to the water, for he certainly never tasted worse in his life. The point and absolute impartiality of this judgment will be better appreciated when it is said that the water which supplied the mansion at which the judge stopped was not from Tannaghmore, but a private well.

AT A RECENT MEETING of the Board of Governors of the Adelaide Hospital, Peter Street, Dublin, Mr. Henry Hunt, M.P.S.I., manager of the Harcourt Medical Hall, Charlemont Street, was unanimously elected resident staff apothecary and demonstrator in pharmacy and materia medica to the institution, *vice* Mr. Alexander F. Allen, M.P.S.I. Mr. Hunt is President of the Irish Pharmacists' Association, and is eminently qualified to fill with credit the important position for which, out of a large number of candidates, he has been selected.

THE GUARDIANS OF THE SOUTH DUBLIN UNION are about to elect a pharmaceutical chemist for their Grand Canal Street Dispensary, *vice* Mr. W. Barker, M.P.S.I., resigned. The position is a coveted one, and carries with it a salary of £125 per annum, together with quarters, fire, and light. The competition is already very keen.

THE LOCAL GOVERNMENT BOARD insists that all drugs supplied to the Irish dispensaries shall be found in the list of drugs in the new B.P. Nevertheless, the Board refuses to allow the Guardians of the Poor Law Unions to buy a copy of the work for the guidance of their medical officers, being apparently of opinion that these officials should pay for it out of their own pockets.

THE SCHOOL OF PHARMACY, BELFAST, promotes the only classes in that city for preparation for the final examination. They are under the principal-ship of Mr. Templeton, whose lectures are ornate in style, delivered with true Irish eloquence and verve. It is this form of instruction which Lord Dufferin recently highly commended as an innovation which sought out "the best means of imparting knowledge." To be versatile and vivacious in the class-room used to be a discount on erudition; it is now a gift. Huxley, Tyndall, Roscoe, and others have rescued science from its dry-as-dust associations. The laboratory at the School of Pharmacy is a model of neatness. The chemico-architectural design and arrangement of benches, bottles, apparatus, etc., are no doubt intended to play their part in tempting the unwary amateur into the mysteries of alchemy. Associated with Mr. Templeton are Mr. Harper, L.P.S.I., and Mr. Rice, B.A. The latter is in charge of botany; the former presides over the materia medica class, of which subject he has a thorough grasp.

THE MEDICAL SUPERINTENDENT OF THE BELFAST LUNATIC ASYLUM was over-ruled by His Honour the Recorder of Belfast for refusing an affidavit, for less than three guineas, upon the state of health of a patient in the asylum. His Honour laid down the inflexible regulation that as a servant of the Government it was his duty to render such a declaration without charge, which was the rule followed by his predecessor, Dr. Merrick.

MESSRS. HAYES, CONNYNGHAM, AND ROBINSON, Dublin, who entered an action against the Pharmaceutical Society to compel the latter body to accept their certificates, contended that although a limited company, (1) the directors are all pharmacists, (2) the shareholders are only holders of debenture stock, thus not coming into the same category as shareholders who share all the risks incidental to the company. The subtle dividing lines of pharmacy laws in Ireland bid fair to rival even the close distinctive convergencies of the lines in the solar spectrum.

THE ULSTER PHARMACEUTICAL ASSOCIATION, which has lain dormant for a period, is making a further attempt to stimulate among chemists a desire to communc and collaborate. Such a body, if vigorous and representative, would prove vastly serviceable to chemists in the province.

THE PHARMACY OF MR. WHITLA, of Monaghan, possesses an ancient and unique style of mortar. This is an old church bell of a fairish size, its cubic capacity being about half-a-gallon. It bears upon it the year 1771, and an inscription which has not yet been deciphered. When this bell-mortar is struck it responds with a tone of great harmony, so that the chemists' not least muscular performance of pounding drugs can be varied by a little hand-bell ringing. Several offers of purchase have been made to Mr. Whitla in vain. This suggests that perhaps the British Pharmaceutical Society should inaugurate a "curiosity shop," for the reception of *Æsculapian* treasures. An autographic prescription of Hippocrates and a medicine bottle of Galen would be rare curios—if they could be got.

MESSRS. LESLIE AND Co., wholesale druggists, Dublin, have been appointed medicine contractors to the Mill Street, County Cork, Board of Guardians. Three firms competed, and the contract was given to the lowest tender.

IN THE LECTURE THEATRE OF THE ROYAL DUBLIN SOCIETY, Mr. Hugh Ramage, of the Royal College of Science, delivered an interesting lecture on the chemical properties and constitution of matter. In the course of his lecture, which was illustrated with numerous experiments and limelight views, Mr. Ramage dealt with the early history of iron, its occurrence as a metal and in combination. He explained some of the ancient and modern processes for the extraction of iron from its ores, and the forms in which the metal was used. Iron was present in meteorites, also in the sun and some of the stars. Native iron was found in basaltic rocks, but only in very small quantities. He dealt with the rusting of iron, and explained the methods which had been employed to protect iron from rust. He referred to the value of a theoretical as well as a practical knowledge of chemistry. The subject, he added, was so extensive that it could not be properly learned by any one person during his lifetime.

THE DEATH HAS OCCURRED of Mr. William Savage, Chemist, who came home recently from Cape Town to Ireland for the benefit of his health. Mr. Savage was well known and very popular in Dublin, and much regret is felt at his early demise.

A MEETING of the Irish Branch of the British Dental Association has been held at Dublin. Mr. G. J. Goldie read a paper on "Some Practical Considerations in Crown Work," in the discussion of which many tributes were paid to its instructive character. A vote of thanks was accorded to the essayist.

IN THE RECORDER'S COURT, BELFAST, a curious point of law arose recently in an action brought by Messrs. Cantrell and Cochrane, chemists and mineral water manufacturers, against the Belfast Steamship Company to recover the sum of £2 damages occasioned by defendants allowing two casks of ginger ale to fall into the sea and get destroyed while in transit to Liverpool. His Honour said there was no ground for action in the case; the defendants only contracted to carry the goods from quay to quay, and wilful negligence had not been proved against them. It was a most difficult task to educate the trading public into the difference that existed between sea and land carrying companies, but there was a vast difference. He dismissed the action.

AN IRISH PRESCRIPTION.—Some amusement was created recently at the Ballinacasha dispensary district by the reading of a prescription signed "R. Morgan, M.D.," in which it was stated that the patient was suffering from an abscess on the front side of the neck. A pint of milk a day, and one bottle of port wine, and one pint of whiskey were ordered.

SEVERAL SHOPKEEPERS HAVE BEEN SUMMONED at Dublin under the Sale of Food and Drug Act for selling linseed meal which was not of the substance and quality of the article asked for. A trader named Murray, in Cork Street, was fined £1 for selling as linseed meal ground linseed cake from which nearly all the oil had been extracted, and Walter Murphy, of North King Street, was mulcted in a penalty of 10s. for vending linseed meal which contained only 24.4 per cent. of linseed oil instead of 30 per cent.; the shrinkage was caused by the article being kept too long in stock.

MR. JAMES HOGG, of York Street, Belfast, has been informed by the Lord Lieutenant that he has been pleased to reduce the fine of £5 recently imposed upon him to £2. Mr. Hogg had submitted an influential memorial to the Lord Lieutenant on the subject, signed by several medical men in Belfast.

PHARMACEUTICAL SOCIETY OF IRELAND.—At Dublin, on Monday, November 28, the usual fortnightly evening meeting of this Society was held at 67, Lower Mount Street, Dr. J. A. Walsh, M.C.P.S.I., presiding in the absence of the President, Mr. Robert J. Downes. Some routine business having been disposed of, Dr. McWalter proceeded to read a paper on "The Pharmacy of the Organoids."—At the conclusion of the paper there was much applause.—The paper was criticised in a friendly spirit by Messrs. Smith, O'Connor, Dr. Walsh, and others.—Mr. Smith did not pose as a specialist on the organoids. To be an adept in that science would to his mind suggest a preliminary visit to a slaughter-house. He spoke of the activity of the thyroid glands as being due to iodine, and agreed with the essayist as to the inadequacy of the B.P. test for pepsin. He gave an account of a test which he himself applied, but it was not according to the B.P. formula. He followed step by step the various points made by Dr. McWalter, and spoke at some length on their merits and demerits.—Mr. O'Connor gave his experience of the pharmacy of the organoids, and referred to the recent Pharmaceutical Conference, and to Mr. Stanford's (of Glasgow) remarks in relation to the subject.—Dr. Walsh said the paper suggested an important point—the necessity for the up-to-date and advanced pharmacist having a knowledge of histology and physiology; without an acquaintance with these subjects it was very hard to keep abreast of the times. This pointed to the institution of a post-graduate course in pharmacy, and if time permitted the pharmacist to go beyond the Licence examination, he would prove a valuable help to the physician. Medical men had very little time to devote to things outside their own immediate calling, and if the chemist could take up additional threads of knowledge he would not only be enhancing the esteem with which he is already regarded, but would be assuring his right position. The public, moreover, would have more reliance in the pharmacist who could answer the numerous questions put by them daily. He hoped that a research laboratory would be established by the Society in the near future. He differed from the essayist in regard to the superiority of solutions over tabloids; the latter were more convenient for chemists, and generally more advantageous.—Dr. McWalter having replied to the speakers, and a vote of thanks to the essayist having been passed by acclamation, the proceedings terminated.

AN ECHO OF THE CONFERENCE.—In connection with the proposed erection in Belfast of a statue of Her Majesty the Queen, an interesting retrospect of the Pharmaceutical Conference held recently in that city took place at a meeting of local merchants and traders held last week. Reference was made to the garden party given by the Lord Mayor in honour of the Chemical Congress, the sumptuous character of the reception, to which 3000 invitations had been issued, and the excellence of the whole arrangements left, it was thought, nothing to be desired. It was trusted that the English visitors took away with them a good impression of Irish hospitality in general, and of that of the Lord and Lady Mayoress in particular.

SCOTTISH NEWS.

MONT BLANC AND THE MATTERHORN.—These majestic mountains and the wide expanse of Alpine territory, in France, Italy, and Switzerland, that lies between, were the subject of a fascinating lecture, beautifully illustrated, which was given by Mr. W. L. Howie, F.C.S., London, in the Town Hall, Inverness, on November 27. The hall was well filled by a highly appreciative audience. Mr. Howie was accompanied to the platform by Provost Macbean, who occupied the chair, and Mr. John Fraser, President of the Inverness Chemists' Association, under whose auspices the lecture was given, the proceeds being devoted to the fund of the local branch of the Jubilee Nurses' Institute. The Chairman, in introducing Mr. Howie, referred to the deserving object of the lecture and to the good work of the Chemists' Association which kept the members in touch with the latest scientific developments in connection with their profession, with which was bound up the physical well-being of the community. The delightful character

of the lecture was subsequently dwelt upon by Dr. F. M. Mackenzie, in moving a vote of thanks to Mr. Howie. That gentleman acknowledged the compliment, which had been warmly paid by the audience, and he complimented Mr. Ogston upon his excellent manipulation of the limelight views. Mr. L. MacLeod, secretary to the Chemists' Association, thanked the audience for their attendance, and a vote of thanks was passed to the Chairman, or the motion of Dr. Moir.

GLASGOW AND WEST OF SCOTLAND SCHOOL OF PHARMACY.—The first of an arranged series of visits to the chief chemical works of Glasgow was made on Saturday last by students of the Glasgow and West of Scotland School of Pharmacy under the care of their Principal, Mr. Barrie. Messrs. Hope Bros.' Works was the place visited, where immense quantities of sulphuric acid, nitric and marine acids are turned out annually. Considerable interest was aroused by the method employed of removing arsenic from crude sulphuric acid, by causing the latter to fall in spray down a tower up which a steady stream of sulphuretted hydrogen was passing.

MR. BOA has been appointed Convener of the Committee to arrange the Annual Ball of the Edinburgh District Chemists' Trade Association, which takes place on Thursday, January 19, 1899.

WELSH NEWS.

MR. GWILYM EVANS, D.L., J.P., pharmaceutical chemist, of Llanely, occupied the first place on the list of those nominated for the office of High Sheriff of Carmarthenshire. Mr. Evans at one time was a member of Council of the Pharmaceutical Society, and was in business as a chemist at Llanely, afterwards as managing director of the Quinine Bitters Manufacturing Company. Since his retirement from business about nine years ago he has taken a deep interest in public affairs. He has acted as Chairman of the Carmarthenshire County Council and of the Technical Instruction Committee, and as President of the local Chamber of Commerce. He is a governor of Aberystwith and Cardiff University Colleges, and is largely interested in several commercial undertakings in the neighbourhood of Llanely. Until recently Mr. Evans was the Liberal parliamentary candidate for Carmarthen, but retired on account of the numerous calls made upon him by his constituents.

JURY AND PRESCRIBING CHEMIST.—At an inquest held at Dowlais on the body of Herbert L. Evans (ten months), who it was found died from bronchial pneumonia, the mother stated that until a fortnight previously Dr. Thomas had attended deceased. Then she took the child to Mr. Rees, chemist, who examined it and made up some medicine for it. The Jury expressed disapproval of Mr. Rees' action in prescribing.

FRENCH NEWS.

PARIS DOCTORS ARE now in an uneasy state of mind consequent upon a new law respecting the library of the Faculty of Medicine, which quite recently took effect. Hitherto the library has been free to every doctor and medical and pharmaceutical student, but the new rule lays it down that persons using it will have to pay an annual subscription of 30 francs. The medical societies are bent on protesting against this injustice, and their efforts, it is understood, will be seconded by the General Union of Medical Syndicates. The doyen of the Faculty, Professor Brouardel, is said to be hostile to this new departure, and has given his promise to do his utmost to render it ineffective, so that the library will in the future as in the past be free to doctors and students alike.

EXERCISE OF PHARMACY BY COLONIALS IN FRANCE.—Pharmacists who have qualified in the French Colonies do not enjoy the same privileges and advantages as their *confrères* who possess the diploma granted by the Minister of Public Instruction, in the name of the French Government, to such as have passed the examinations prescribed by the State Pharmaceutical Body; they have not the right to exercise their profession in France. However, such qualified colonials as desire to establish themselves in the Metropolis are eligible for the diploma of *Pharmacien de 2^{me} Classe*, provided they pass the three probatory examinations. In this case they dispense with the certificate of studies, of apprenticeship, of the three years' university course and examinations at

the end of the year, for the privilege of escaping which all colonia aspirants will no doubt be devoutly grateful.

DEATH OF AN ENGLISH DOCTOR AT PARIS.—We regret to announce the untimely death of Dr. Harold Faure Miller, aged 34, son of Dr. J. Faure Miller, of Paris. Dr. Harold had been for some time in poor health, but intended returning shortly to his practice at Cannes if death had not occurred. He died at his parents' residence, 28, Rue Matignon.

ENGLISH NEWS.

THE FEDERATION OF LOCAL PHARMACEUTICAL ASSOCIATIONS is issuing a circular letter to the federated associations, in which it is pointed out that there is at present a decided tendency on the part of registered chemists to assert their rights and call for an improved Pharmacy Act. The 1868 Act, it is contended, has failed to protect both chemists and the general public in whose interest the Act was framed. As the present time seems opportune for demanding that the public should be protected from illegitimate traders, it is suggested that local pharmaceutical associations should, without delay, consider the following points:—(1) The desirability of seeking to make the word "person" in the Pharmacy Act, 1868, include any corporate body; (2) the feasibility of a Clause compelling men to register as students three years before entering for the Minor examination; (3) The desirability of adopting regulations for the keeping, dispensing, and selling of poisons, in accordance with Section 1 of the Pharmacy Act, 1868; (4) Whether the Pharmaceutical Council should ask for power to strike off the Register the names of chemists and druggists who are guilty of "covering" or other conduct "infamous" from a professional point of view.

MESSRS. C. J. HEWLETT AND SON'S cricket club commemorated the first season of its existence by a supper and smoking concert at Kohler's Restaurant, Wool Exchange, E.C., on Saturday evening, November 26. The chair was occupied by Mr. E. J. Millard, F.C.S., and over fifty members were present. After the usual loyal toast had been honoured, the Chairman proposed "Success to the Club," and expressed his pleasure at the position it had already attained, as it was only last year that he had suggested its formation, and, thanks to the liberal assistance of the firm and enthusiasm of the members, they were already a strong club. Their record for the past season was very good, and he believed that the promotion of a challenge shield amongst the drug trade clubs would increase the friendly rivalry, and it would enhance their prospects now that it was decided to limit it to those actually connected with the various firms, Mr. A. Trussell (Captain) and Mr. H. Gillard (Hon. Sec.) responded. The smoking concert was most successful, songs by Messrs. T. B. Fieking, A. Street, and J. Chanee, and the comic songs of Messrs. E. Thompson, and D. C. Charsley, calling for special mention. Violin solos by Mr. H. Gillard and pianoforte solo of Master Bertie Loosley were also warmly applauded. The accompanist was Mr. Walter Kellerd. At the conclusion the usual votes of thanks to the Chairman and Vice chairman (Mr. E. J. Tucker) were suitably acknowledged, and the company dispersed at about 11 p.m.

PHARMACY STUDENTS DESCEND A COAL MINE.—On Friday last, November 25, the students of the Sheffield College of Pharmacy, accompanied by the Principal, Mr. J. W. J. Turner, had a novel experience. Through the kindness of the proprietors, permission was given to visit the new pit of the Birley collieries. Each student was provided with a safety lamp, and under the guidance of the under manager, Mr. Gray, were accompanied to the workings, where coal was being got out, and the whole system explained. The shaft was 200 feet deep. A thousand men and boys are employed. Over 1400 tons are brought up daily. Everything was in perfect order. An excellent tea was given by Mr. Cutts, one of the colliery officials, and the party returned by wagonette at 6.30.

MR. ERNEST MASON, son of Mr. A. J. Mason, of Bexley Heath Kent, was one of the successful candidates at the recent dental examination held in London, and has obtained the L.D.S. diploma of the Royal College of Surgeons.

ACCIDENTAL POISONING CASES.—An inquest was held at St. Alfege Mission Room, Greenwich, on Thursday, November 24, on the body of John Carr (47), of 60, Blackwall Lane, East Greenwich.—Deceased had been a great sufferer from dyspepsia, and on the previous Sunday morning he went to get a drink and got hold of the wrong bottle, there being two bottles exactly alike near to each other, one containing spirits of ammonia and the other gin and ginger beer. A doctor was sent for, who administered antidotes and used the stomach pump, and the man was afterwards removed to the Seamen's Hospital.—Dr. Earnshaw, house physician at that institution, said that deceased was admitted on Sunday morning at half-past ten, but died at a quarter to six on Wednesday morning from pneumonia, due to the action of the ammonia on the lungs.—The jury returned a verdict of "Death by misadventure."

AN ALDERMAN POISONED.—Alderman Cory Wright, chairman of the Hornsey District Council, was indisposed, and on Friday, November 25, took what he thought was some medicine. The substance, however, turned out to be a poison. Medical aid was quickly obtained, with the result that the alderman is progressing favourably.

CHEMISTS' ASSISTANTS' ASSOCIATION "CINDERELLA."—The second "Cinderella" dance of the season in connection with this Association will be held in the Dorset Hall, Portman Rooms, Baker Street, W., on Thursday, December 8, dancing to commence at 7.30 p.m. Tickets may be procured from Mr. Charles Morley, 3, Bueklersbury, E.C., or Mr. H. H. Robins, 113, Ridley Road, Forest Gate, E.

CHEMISTS' ASSISTANTS' UNION OF GREAT BRITAIN.—The first smoking concert under the auspices of this Union will be held at the Horse Shoe Hotel, Tottenham Court Road, W.C., on Tuesday, December 6, Dr. Henry Dutch in the chair.

FOOTBALL.—In the match played at Shepherd's Bush on Saturday, November 26, between the South London School of Pharmacy and Westminster College, play was stopped six minutes before time on account of darkness, the former team having scored 3 goals and the latter 1 goal.—The match between the Pharmaceutical Football Club and Central Technical College, Chelsea, played at Shepherd's Bush, W., on Saturday, November 26, resulted in a loss for the Square of no goals against 2.

MEDICAL, SURGICAL, AND HYGIENIC EXHIBITORS' ASSOCIATION.—The third annual dinner of this Association took place at the Café Royal last Saturday evening. The chair was taken by Mr. F. Weiss, the President, who was supported by Mr. F. J. Rebman, the Treasurer, and Mr. H. Blau, the Hon. Secretary. The toast of the evening was proposed by the President, and responded to by Mr. Albert Cooper. A capital programme of vocal and instrumental music was interspersed with the speeches. The most successful item, perhaps, was the topical song composed and admirably rendered by Mr. Arthur, a member of the Association, which humorously recapitulated the history and progress of the undertaking. The Hon. Secretary, Mr. H. Blau, in a witty speech brought down the house by alluding to himself as the *enfant terrible* of the Association.

MORPHINE POISONING.—On Friday, November 25, Mr. T. Taylor held an inquest at the White Horse Inn, Gomersal, on the body of Thomas Thornton (35), brass finisher, of Church Lane. It appeared from the evidence that he had been troubled with asthma, and, to relieve his pain, morphine was injected according to a doctor's instructions. Recently, however, he had taken a few drops of morphine on sugar, although the doctor disapproved of the practice. The man went to bed on the previous Wednesday night, remained in bed, and died the next afternoon.—The inquest was adjourned so that a post-mortem examination could be made.

CHLORAL POISONING.—At an inquest at New Penshaw, on Monday, November 28, touching the death of Dr. Edward McGarity, whose body was found in bed early on Sunday, the jury returned a verdict of "Death from an overdose of chloral, taken to procure sleep, but with no intention to destroy life."

THE EXAMINATION OF BLOODSTAINS will be the subject of an illustrated lecture which, we are requested to state, will be delivered at a special meeting of the Society of Public Analysts to be held on Wednesday evening next, December 7, by Mr. A. H. Allen, F.I.C., of Sheffield. The title of the lecture is "The Use of the Micro-Spectroscope and the Methods of Detecting Blood in Chemical-Legal Investigations." Any persons who may be interested in the subject are invited by the Council of the Society of Public Analysts to attend. Intending visitors who will not be introduced by members of the Society are requested to apply for tickets to Mr. E. J. Bevan, Hon. Secretary, 4, New Court, Lincoln's Inn, London, W.C.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.—A most enjoyable musical evening was spent at the County Restaurant on November 29. The entire programme was arranged by Mr. Hanson and was of a superior order. Songs were rendered by Miss Hanson and Miss Roberts. Miss Hanson and Mr. Stott gave a pianoforte duet, and Mr. Stott gave a pianoforte solo. Master Mortimer gave a clever violin solo, and showed great promise. Mr. Foster in his best style gave "Dollars and Dimes," and in response to an encore gave "How Bill Adams Won the Battle of Waterloo." Songs were also rendered by Messrs. Calverley, Waddington, and Hanson. Mr. Sibson proposed a vote of thanks to the friends who had so kindly favoured the Association with their services. Mr. Moulson seconded, and it was carried very heartily.

MERCURY POISONING.—The Hull City Coroner held an inquest on Tuesday, November 29, with respect to the death of Emily Darlow (43), of Cogan Street.—It was stated in evidence that on November 11 Mrs. Darlow got some liquid disinfectant, said to be obtained from tabloids containing chloride of mercury, in a cup ready for washing an instrument and some soda water in another cup of similar size and appearance, and that she had taken up the wrong cup and drunk its contents. She was taken ill and died on Monday, November 28, from poisoning by mercury.—A verdict of "Death by misadventure" was returned.

METROPOLITAN COLLEGE OF PHARMACY.—The fifth annual dinner of the students was held in the Royal Venetian Chamber, Holborn Restaurant, on Saturday, November 26. There were considerably over two hundred persons present including many well-known pharmacists and old students. After an excellent dinner and the usual loyal toast, the Chairman, Dr. Frederick B. Power, F.C.S., proposed "The Metropolitan College of Pharmacy." The Principal of the College, Mr. W. Watson Will, replied, and the distribution of medals and certificates to the successful students then took place. "The Student Past and Present" was proposed by Mr. Thomas Mason and responded to by Mr. A. Tate (past) and Mr. H. J. Kluge (present). "The Visitors" was given by Mr. W. Watson Will, and responded to by Captain David Peters. The last toast, that of "The Chairman," was ably proposed by Mr. Thomas Tyrer, F.I.C., F.C.S. The Vice-Chairmen of tables were Messrs. W. Burnett, A. Tate, F. Filmer de Morgan, G. T. Branch, H. Lucas, W. S. Carver, and J. H. Allon. A very good musical programme had been arranged and was successfully carried out, a most enjoyable evening terminating with the hearty chorus of "Auld Lang Syne."

DEATH OF PROFESSOR G. J. ALLMAN.—We regret to announce the death of Professor George James Allman, M.D., F.R.S., which took place at Ardmore, Parkstone, Dorset, on Thursday, November 24. Professor Allman was born in Cork in 1812, and was educated at the Belfast Academical Institution. He graduated in arts and medicine in the University of Dublin in 1844, and in the same year he was appointed Regius Professor of Botany in the University. In 1854 he was elected a Fellow of the Royal Society, and in 1855 was appointed Regius Professor of Natural History and Keeper of the Natural History Museum in the University of Edinburgh. This post he held until 1870, and shortly afterwards the honorary degree of LL.D. was conferred upon him by the Edinburgh University. Professor Allman devoted the greater part of his life to investigating the lower organisms of the animal kingdom, the result of which he has published in various forms from time to time. For his researches in this branch of biology he received in 1872 the Brisbane Prize from the Royal Society of Edinburgh; in the following year a Royal medal was awarded to him by the Royal

Society of London, and in 1878 he received the Cunningham gold medal from the Irish Royal Academy. When Mr. Bentham resigned the presidency of the Linnean Society, Professor Allman was elected, and he retained the position until 1883, when he resigned in favour of Sir John Lubbock. He was President of the British Association for the Advancement of Science in 1879. Professor Allman has served on the Councils of the Royal Societies of London and Edinburgh and of the Royal Irish Academy, and has filled the post of Examiner in Natural History for the Queen's University of Ireland, the University of London, the Army and Navy and Indian Medical Services, and for the Indian Civil Service.

PRACTICAL PHOTOGRAPHIC NOTES.

FASHION IS NOT UNKNOWN in photography, and at the present time there is a small craze for enlargements made through what is known as milling or bolting silk, which is used by millers for the sifting of flour. This can be obtained from Bryan Corcoran, 31, Mark Lane, E.C., and if a novelty is required, we should recommend a few examples to be prepared. The silk is placed at varying distances from the sensitive paper, and it breaks the image up, giving a peculiar soft result, which is extremely effective for broad effects, and the silk being translucent and being placed a little distance from the paper, no actual white lines are produced because diffraction effects are obtained, the result being that the slight deposit formed by the diffraction fringes softens the white lines and gives extra softness to the print.

FREIHERR VON HÜBL, a well-known authority on photographic matters, has recently published a book on development, and he strongly recommends a developer of the following composition:—

Hot Water	40 C.c.
Sodium Sulphite	25 g.
Glycine	10 g.
Potassium Carbonate	50 g.

The ingredients must be added to the water in the above order and the potash added gradually, as the glycine is acid and the solution effervesces. Actually a solution is not formed, but a thick paste, which must be shaken well before dilution for use. For normal exposure 1 part of the above should be diluted with 15 parts of water; for under-exposure 1 part should be diluted with 33 parts of water; for over-exposure use 25 parts of water and add bromide. These ingredients, if mixed together dry, will form a good powder developer.

Trade Notes.

THE CANADIAN PATENT LAW prohibits the importation into Canada of goods protected by Canadian patents. Burroughs, Wellcome and Co. have secured Letters Patent for processes and apparatus in connection with the manufacture of suppositories in Canada, and the introduction of these goods into the Dominion has been prohibited accordingly. They have, therefore, appointed Charles E. Scarff, of 2262, St. Catharine Street, Montreal, sole licensee for the manufacture in the Dominion of suppositories made under these patents, and to him all orders should be referred. It is important that any wholesaler who receives an order for B., W. and Co.'s patent suppositories should decline to supply the goods, as the discovery of the consignment by the Customs Authorities would subject the importer to the liability of a fine and the confiscation of the goods.

MESSRS. SOUTHALL BROTHERS AND BARCLAY, of Birmingham, offer chemists in business a free box of samples of their new towel for obstetrical purposes, in order that they may be shown to members of the medical profession and other customers.

Partnerships Dissolved.

(From the London Gazette.)

John Roberts and James Huskie, General Medical Practitioners, Chester, so far as regards James Huskie.

E. J. Caley, S. A. Caley, and F. W. Caley (trading as A. J. Caley and Son), Mineral Water Manufacturers and Chocolate Manufacturers, Chapel Field, Norwich. The business has been converted into a limited company under the style of A. J. Caley and Son, Limited.

James Anderson, M.D., and Percy C. Low, M.D., General Medical Practitioners, Tunbridge Wells.

MARKET REPORT.

The quotations here are given in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

London Report.

DECEMBER 1.

Business appears to have taken a decided turn for the better in the drug and chemical trades during the past few days. Not only has a fair amount of business been passing, but also people are beginning to take a more hopeful view of the prospects of the trade during the coming winter and spring. No doubt the various advances in makers' prices, such as have taken place in Quinine Iodides, Bromides, Cocaine, Sulphonal, Camphor, etc., have tended to foster this feeling, and holders who took the opportunity of the low prices to secure stocks, are, while thankful for past mercies, like Oliver Twist, if not asking, at least hoping for more, this more especially applies to Quinine, in price of which, provided next week's Amsterdam Bark sales do not disappoint expectations, we may probably see a further decided advance. Camphor is very firm, and expected to be dearer, the same may be said of Cocaine, Mercurials, Iodides, and Bromides are firm at the late advance, while the rise in price of Sulphonal also appears to have "come to stay." Phenacetin and Acetanilide are somewhat weak, partly owing to cheap offers of discredited makes. Acid Citric and Tartaric are quiet. Cream of Tartar firm. Borax and Acid Boracic steady. Cascara Sagrada dearer. Opium, Morphia, and Codeia without change. Glycerin and Cod Liver Oil quiet and weak. Sulphate of Ammonia steady. The following are prices actually ruling for articles of chief interest:—

ACETANILIDE—Is quiet and weak, the efforts on the part of makers of an inferior quality to press sales almost *à tout prix* only tending to defeat their own object in making buyers afraid to touch the article at all. A really reliable article is not obtainable below 11d. to 1s. per lb., according to quantity for bulk lots.

ACID BORACIC—Steady at 24s. 6d. per cwt. for *crystals*, and 26s. 6d. per cwt. for *powder*.

ACID CABOLIC—Is firm at 6¾d. per lb. for best make of 36-36° C. *ice crystals* in 2½ cwt. drums and overcasks, 39-40° C. ditto, 7½d. per lb., 39-40° C. detached crystals 8d. per lb. *Crude* 60° F. 1s. 11d. per gallon, 75° F. 2s. 3d. per gallon. *Liquid* 95 to 97 per cent. of pale straw colour in 40 gallon casks, 1s. 2d. per gallon.

ACID CITRIC—Is very quiet at 1s. 1¼d. per lb. on the spot.

ACID OXALIC—Is quiet at 3d. to 3¾d. per lb. nett, delivered free, London.

ACID TARTARIC—Quiet at 12¼d. per lb. for *English* and 12d. to 12¼d. for *foreign*.

AMMONIA COMPOUNDS.—*Sulphate* steady at £10 per ton for grey prompt 24 per cent., London, Hull, and Leith, and £9 17s. 6d. per ton, Beckton terms. *Carbonate* quiet at 3d. to 4d. per lb. according to quantity and package. *Bromide* firm at the late advance of 2s. 2d. per lb. *Iodide* steady at 13s. 10d. per lb., being 3d. dearer. *Muriate*: Chemically pure, small crystals, 30s. to 32s. 6d. per cwt.; white free from metals 25s. 6d. to 27s. 6d. per cwt. *Oxalate*: 5¼d. to 5½d. per lb. *Sulphocyanide*: 1s. to 1s. 2d. per lb., according to quantity. *Sal ammoniac*: Steady at 35s. per cwt. for sublimed firsts and 33s. per cwt. for seconds, crushed for batteries being quoted 2s. per cwt. dearer.

ANTIMONY.—*Regulus* is quoted £36 15s. to £37 15s. per ton, and *crude* £22 to £24 per ton.

ARECA NUTS—Are scarce, and holders ask 30s. to 32s. per cwt.

ATROPINE—Is very firm at makers' prices, viz., 15s. 6d. per oz.

for the *Sulphate B.P.*, and 17s. 10d. per oz. for the *pure*. Suitable raw material remains exceedingly scarce and dear, and in some quarters the possibility of a further advance in makers' price for *Atropine* is being discussed.

BALSAM TOLU—Is in demand, good quality being held for 1s. 8d. per lb.

BELLADONNA ROOT.—Really good quality is scarce and dear. Quotations vary from 38s. to 46s. per cwt., the latter figure being asked for really good quality free from chumps.

BLEACHING POWDER (CHLORIDE OF LIME).—*English* is quoted £6 per ton.

BORAX—Is steady, with a hardening tendency. *Crystals* are quoted 15s. per cwt., *powder* 15s. 6d. per cwt.

BROMIDES.—Makers advanced their prices towards the end of last week 1d. per lb., their quotations being now *Potassii bromid.* 1s. 10½d., *Sodii bromid.* 2s. 1½d., *Ammon. bromid.* 2s. 2d. per lb. *Bromine* is unchanged at 2s. 1d. per lb., in cases of 60 lbs.

CAFFEINE—Is firm at 14s. 4d. per lb. for the *Pure*, and 11s. 2d. for the *Citrate B.P.*

CASCARA SAGRADA—Is firmer. From New York the price is reported to be 31s. per cwt., *c.i.f.* Here, however, it is still possible to buy new bark at 24s. to 25s. per cwt., while for old bark tangibly higher prices, say, 28s. to 30s., are asked.

CASTOR OIL—Quiet. Belgian first pressing, spot, £26 10s.; December, £25 10s.; January to December, 1899, £24; second pressing, spot, £25. Hull manufactured, 26s. to 27s. per cwt. in barrels, 2½d. to 3½d. per lb. in cases, *f.o.b.*, Hull. London manufactured, 26s. 6d. per cwt. in barrels.

CAUSTIC SODA.—70 per cent. white is quoted £7 10s. per ton, and 60 per cent. £6 10s.

CHIRETTA—Is scarce and dearer at 9d. to 9½d. per lb.

CINCHONA BARK.—In view of the present interesting position of Quinine, the following statistics respecting the bark will probably be of interest to our readers:—

Statement of the movements of all sorts of Medicinal Bark in London in each month during the past two years.

Month.	Landed.		Delivered.		Stock.	
	1897.	1896.	1897.	1896.	1897.	1896.
November	Pkgs. 1,049	Pkgs. 1,909	Pkgs. 3,162	Pkgs. 1,500	Pkgs. 17,517	Pkgs. 23,456
December	1,078	571	1,900	1,837	16,695	22,190
January	1898. 2,301	1897. 794	1898. 179	1897. 1,424	1898. 18,817	1897. 21,560
February	3,232	883	2,756	881	19,293	21,612
March	3,329	677	2,313	1,319	20,309	20,970
April	2,517	1,289	1,181	1,119	21,441	21,142
May	2,288	1,347	3,512	1,704	20,218	20,785
June	1,989	1,530	1,376	285	20,830	22,030
July	1,892	1,405	1,864	2,863	20,858	20,572
August	1,953	930	1,659	883	21,150	20,619
September	1,832	1,086	1,431	1,781	20,550	20,174
October	1,843	1,272	2,659	1,816	20,734	19,630
Total 12 months	24,303	13,693	23,992	17,362	—	—

Statement of the Landings, Deliveries, and Stocks of Cinchona Bark in London in the first ten months of the last three years:—

	1898.	1897.	1896.
Landed	Pkgs. 23,176	11,463	17,210
Delivered	18,930	14,025	20,911
Stock, October 31	20,734	19,630	23,047

Statement of the movements of "Peruvian Bark" in the United Kingdom, according to the Board of Trade Returns for the first ten months of the last three years:—

	1898.	1897.	1896.
Imports	Cwt. 41,860	19,355	30,906
Exports	23,829	15,893	22,706
Left for Home Use	18,031	3,457	8,200
Declared value, imports	£39,926	39,712	53,708

Board of Trade Statement of the Import into and Re-export of "Peruvian Bark" from the United Kingdom in each month of 1898, compared with the year 1897:—

	Imports.		Exports.	
	1898.	1897.	1898.	1897.
	Cwt.	Cwt.	Cwt.	Cwt.
January	3,039	1,837	968	639
February	7,454	1,147	1,535	160
March	6,882	1,950	1,826	1,707
April	6,739	2,165	2,687	1,215
May	4,909	3,742	2,803	2,039
June	4,054	1,847	4,841	1,481
July	1,429	1,710	2,950	3,270
August	3,896	924	1,490	2,167
September	2,585	1,490	2,708	1,624
October	1,882	2,543	2,026	1,596
November	—	1,115	—	2,174
December	—	4,204	—	5,363
Total year	—	24,674	—	23,435

CINNAMON.—The last auctions of the year were held on Monday, when 3925 bales *Ceylon* were offered, against 1517 bales in the previous series, and 3093 bales in November, 1897. Owing to the large supply a dull tone prevailed, but as most holders met the market the large proportion of 2,650 bales found buyers. Prices were irregular, good to fine kinds declining 1d. to 1½d., ordinary and medium firsts and seconds 1d., and thirds and fourths steady to ½d. down; the following are the particulars:—*Worked.*—Firsts, superior 1s. 6d., good to fine 1s. 2d. to 1s. 4d., middling to good fair 10d. to 1s.; seconds, superior 1s. 3d. to 1s. 5d., good to fine 11d. to 1s. 2d., middling to good fair 8½d. to 10d.; thirds, superior 1s. 1d. to 1s. 3d., good to fine 10d. to 1s., middling to good fair 8¼d. to 9d.; fourths, good to fine 9d. to 10½d., middling to fair 7½d. to 8½d. *Unworked.*—Firsts, good to fine 11d. to 1s. 1d., middling 10d. to 10½d., common 7½d. to 8d.; seconds, middling 9d. to 10d., common 7d. to 7½d.; thirds 6d. to 9d.; fourths 5½d. to 8½d. per lb. *Chips*: 850 bags only partly sold, quillings and cuttings 6d. to 9d., ordinary fair chips 3¼d. to 4½d., coarse bark 3d. to 4d. per lb.

CLOVES.—Privately the market for *Zanzibar* has fluctuated somewhat, but closes steady, with fair business passing, including October-December delivery at 3¼d., January-March, 3½d. to 3¾d., and March-May 3¾d. to 3½d. In auction, of 56 bales *Zanzibar*, 44 bales sold at 4¼d. to 4½d.; 49 cases *Penang*, 1895 import, sold without reserve, fair picked at 6¾d., good fair 7¼d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: pure 1s. 6d. commercial, 1s. 1d. per lb. *Crude naphtha*: 30 per cent., at 120° C., 3½d. per gallon. *Solvent naphtha*: 95 per cent., at 160° C., 1s. 5d.; 90 per cent., at 160° C., 1s. 2d.; 90 per cent. at 190° C., 1s. 2d. per gallon. *Pitch*: 25s. per ton, *f.o.b.* *Tar*: Refined, 12s. per barrel, 1½d. per gallon; crude, 12s. per barrel, 1½d. per gallon. *Benzole* 50 per cent. 9d. per gallon, 90 per cent. 9d. per gallon.

COCAINE.—Market is again firmer, some makers quoting 10s. 9d. per oz. for the *Hydrochlorate* in 25-oz. tins and for 100-oz. lots. One specially favoured brand is still quoted nominally 10s. 3d., but makers state that they are sold out. It is possible to buy from second-hand at somewhat below these figures, but there are not many sellers in view of the fact that a further advance in makers' prices is considered as by no means improbable.

CODEIA.—Is steady at 12s. 6d. per oz. for the pure and 1s. per oz. less for the *Phosphate* and *Hydrochlorate* salts.

COD LIVER OIL.—The continued mildness of the season appears to have checked the demand for this article, to the disappointment of holders, who quite anticipated an advance ere this, rather than a decline. Best new season non-congealing *Norwegian* oil, in tinned barrels, is quoted nominally 80s. to 85s. per barrel, according to brand, while 1897 oil has been sold as low as 55s. to 60s. per barrel, which figure must show a very smart loss to the holders, as against original cost price at time of shipment.

CREAM OF TARTAR.—Is firmer at 73s. 6d. for first white *crystals* on the spot, and 75s. 6d. to 76s. for *powder*.

ESERINE (PHYSOSTIGMINE).—Makers' prices are 2s. per gramme for the *Sulphate* and *Salicylate*, and 3s. per gramme for the pure.

GENTIAN ROOT.—Quotations vary from 14s. 6d. to 18s. 6d. per cwt. *c.i.f.* according to quality, the latter price would have to be paid for really good sound red root.

GLYCERIN.—The market for *crude* has become somewhat quiet

with a rather weaker tendency, and this has in turn affected the *refined* article, which is quoted £50 to £55 per ton for *English*, and £53 to £60 per ton for *German*, according to quantity and brand, for the best white double-distilled chemically pure 1260° quality in tins and cases.

GINGER.—*Cochin* quiet; of 876 bags rough, only 280 bags sold, chiefly without reserve, consisting of shrivelled pickings, partly wormy, cuttings, and ordinary dusty, at 13s. to 14s. washed bought it at 24s. to 25s.; of cut kinds B bought in at 58s. to 63s. 6d., and A at 87s. 6d. 225 bags limed *Japan* bought in at 18s. to 19s. Of *Jamaica* 18 barrels sold, middling washed at 79s. 6d.

HYPOPHOSPHITES.—Makers' prices remain unchanged at 3s. 6d. per lb. for the *Lime Soda* and *Potash Salts*.

IODIDES.—While price of iodine remains unchanged at 7½d. per oz., the members of the iodine preparations convention have advanced prices 3d. per lb., they now quote Potassii Iodid., 10s. 6d. per lb.; Sodii Iodid., 11s. 10d. per lb.; Ammon. Iodid., 13s. 10d.; Iodoform *cryst powder and percep*; 13s. 7d. per lb. Iodine Resubl., 12s. per lb., the reason given for the advance in price is understood to be that the makers did not consider that profit previously shown on the manufacture of iodine preparations was commensurate to the labour and capital required, together with the risk incurred in handling so ticklish an article as Iodine, which, as our readers will be aware, is constantly threatened with a serious drop in value.

LITHIA.—Makers' prices are unchanged at 11s. 1d. per lb. for the *Carbonate*, 6s. 8d. per lb. for the *citrate crystal*, and 7s. 2d. per lb. for the *citrate powder*.

MENTHOL.—Market is firm at 7s. 6d. to 7s. 9d. per lb. for really good dry white crystals in 5 lb. tins.

MERCURIALS.—Manufacturers quote as follows:—Mercury chloride B.P. (calomel), 2s. 8d. per lb.; mercury bichloride (corrosive subl.), 2s. 4d. per lb.; mercury red oxide B.P. (red precipitate), 3s. per lb.; mercury ammoniated B.P. (white precip.), 3s. 1d. per lb.; mercury yellow oxide B.P., 3s. 1d. per lb.

MORPHIA.—Without change at 5s. per oz. for the *powdered salts* and 5s. 2d. per oz. for the *crystal*.

OILS (FIXED) AND SPIRITS.—*Linseed* is quiet, spot pipes (London) £16 5s., barrels, £16 15s. January-April £16 15s.; May-August, £16 10s. *Rape* steady, ordinary brown, spot £21 10s., December, £21 5s., January-April, £21 5s., refined, £23. *Ravison* naked, spot, £17 10s., December, £17 10s., January-April, £17 10s. *Cotton* easier, London crude spot, £12 7s. 6d.; December to April, £12 7s. 6d. Refined spot, £13 17s. 6d. to £14 10s., according to make. *Olive Oils*: Spanish, £29; Levant and Mogador, £29 to £32. *Cocanut Oil* firm; Ceylon spot, £26; near at hand, £25; Nov.-Dec., £24 10s.; Jan.-March, £24 *c.i.f.* *Cochin* spot nominally £31; afloat, £27; Nov.-Dec., £26 7s. 6d.; Jan.-March, £25 15s. to £26 *c.i.f.* *Turpentine*: Market is strong and active, American spot 28s., December, 28s. 9d., January-April, 29s. 3d. to 29s. 4½d., July-December, 24s. *Petroleum oil* firm; Russian spot 5¾d., December 5¾d., American spot 6¾d. to 6¼d., December, 6¼d., water-white, 7¼d. to 7¾d. per gallon. *Petroleum Spirit*, American, 7¼d., deodorised, 7¾d. to 8d. per gallon.

NITRATE OF SODA.—Price of the ordinary is £7 12s. 6d. to £7 15s., and of the refined £8 to £8 2s. 6d. per ton.

OPIUM.—Market remains exceedingly quiet, there being practically nothing whatever doing in the article. Quotations are nominally without change, 11s. 3d. to 11s. 9d. per lb. for fine *Druggists*, 10s. 6d. to 11s. per lb. for good second^s and manufacturing kinds, 13s. to 14s. for good to fine *soft shipping*, 10s. 6d. to 11s. 6d. for seconds. *Persian* is quoted 12s. 9d. to 14s. per lb. according to quality.

ORRIS ROOT.—Is quiet but steady at 37s. 6d. to 45s. per cwt. for fair to best selected *Florentine*, and 25s. to 27s. 6d. per cwt. for *Verona*.

PHENACETINE.—Has not so far shared in the improvement which has taken place in some other chemicals, although there is still talk of a possible combination of the makers of the article with a view to obtaining a better price for same. A good quality can, however, still be bought at 3s. 9d. to 4s. 3d. per lb. according to quantity and packing.

PERMANGANATE OF POTASH.—Is weak at 50s. per cwt. for *small crystals*, and 55s. per cwt. for *large crystals*. Manufacturers appear to be pressing sales at even lower figures for delivery over next year.

PILOCARPINE.—Is in only limited demand at 1s. 4d. per gramme for the *Nitrate* and *Muriate Salt*.

POTASH COMPOUNDS.—*Chlorate* is steady on the spot at 3¾d. per

lb. for crystals, and 4d. per lb. for powder. *Bichromate* 3½d. per lb. *Prussiate Yellow* is quoted 6¼d. per lb. for *English*. *Red* quiet at 1s. 2d. to 1s. 3d. per lb. *Bicarbonate* steady, both crystals and powder being quoted at 30s. to 35s. per cwt., according to quantity and brand. *Oxalate neutral* is steady at 5d. per lb. Bromide higher at 1s. 10¼d. per lb. *Permanganate* quiet and weak at 50s. per cwt. for small crystals, and 5s. per cwt. more for large crystals.

QUICKSILVER—Is quoted £7 10s. per bottle from first hand, but is obtainable at 1s. per bottle less from second-hand holders.

QUININE—Is quiet and unsettled, the makers quoting various prices from 10d. to 11d. per oz. for 1000-oz. lots in 100-oz. tins. Some makers, however, state that they are sold out, and that their quotation must be considered as nominal. The future course of the article appears now to depend much upon the course of the bark sales which take place this day week in Amsterdam. From second hand there have been a few sales from weak holders at 10¼d. to 10¾d. per oz. for 1000 oz. lots.

RESORCIN—Is quoted 6s. 6d. per lb. for best makes.

SALICYLATES.—Manufacturers' prices are: *Acid cryst.*, 2s. per lb.; *powder*, 1s. 10d. per lb.; *Physiologically pure cryst.*, 3s. 10d. per lb.; *Soda cryst.*, 2s. 6d.; *powder*, 2s.; *Physiologically pure cryst.*, 3s. 6d. per lb.

SALICINE.—The British makers still quote 10s. per lb. for cwt. lots, and the article is stated to be firm at this figure. A firm of German manufacturers, anxious to steal a march on its British confreres, lately sent out a list, quoting salicine 9s. 9d. per lb. for cwt. lots, in spite of the fact of it having been understood that 10s. should be the very lowest price. The "cutters" were promptly "called over the coals," and will hardly have added to their reputation for straightforwardness. We understand that they now also quote 10s. per lb. as very lowest price for 1 cwt., and "are sorry they spoke."

SALOL.—It is rumoured that makers are proposing to advance the price of this article, but so far nothing definite has transpired and price remains nominally 3s. 2d. per lb. Makers are, however, we understand, declining to book orders at the old price pending developments.

SANTONINE.—The agents for the Turkestan factory, which practically controls the market for this article, to-day reduced price from 4s. 11d. to 4s. 8d. per lb., a reduction which, in view of the already very low price of the article, has come rather unexpectedly, in fact, it was confidently anticipated that any alteration would be in an upward direction. Object of the reduction will probably have been to crush some smaller makers and to force them to fall into line, after which consumers will very possibly be called upon to pay much higher prices. At present figure the article should be worth stocking.

SODA COMPOUNDS.—*Crystals*, 52s. 6d. per ton in bags, and 55s. per cwt. in barrels, ex-ship Thames. *Ash*, £5 to £5 10s. per ton, according to quantity, strength, and package. *Bicarbonate* steady at £7 5s. to £7 15s. per ton for the 97 per cent., and 18s. 6d. per cwt. for the fully bicarbonated quality. *Caustic*: 70 per cent., £7 10s.; 60 per cent., £6 10s. per ton. *Nitrate*: Commercial, £7 12s. 6d.; refined, £8 2s. 6d. per ton. *Bichromate*, 2¾d. per lb. *Bromide*, 2s. 1½d. per lb. *Iodide*, 11s. 10d. per lb. *Hyposulphite* dull at 6s. 6d. to 8s. per cwt., according to quantity and make.

SODA CRYSTALS—Are quoted 52s. 6d. per ton in bags, and 55s. per ton in barrels.

SPICES (VARIOUS).—*Black Pepper* all bought in, Singapore at 4¾d., and *Tellicherry* at 4¾d. *White Pepper* mostly bought in, Penang 7¾d., Siam 8¾d., and Singapore 8¾d. to 9d., except 25 bags sold at 8d. to 8¼d. *Chillies*: 87 bales Zanzibar bought in at 36s. to 41s.; 3 cases sold, without reserve, slightly mouldy, at 36s. *Cinnamon*: 2 barrels West India, coarse bark, sold at 5d. *Mace*: Of 27 cases Penang, only 1 case good bold, sold at 2s. 3d.; 10 cases Singapore bought in at 1s. 5d.; 17 packages West India sold at 1s. 4d. to 1s. 7d., with two lots good and fine 1s. 10d. and 2s. 1d. *Pimento*: of 517 bags only 52 bags, good, sold at 4¾d.

SUGAR OF LEAD—Is quiet at 26s. 6d. to 27s. 6d. per cwt. for *foreign*, and 31s. to 32s. 6d. for *English*, according to quantity and make.

SULPHATE OF COPPER—Is quiet at £18 to £19 per ton on the spot.

SULPHONAL.—Price is maintained at 17s. per lb. by the makers for both *crystals* and *powder*. There are, however, sellers from second hand below this figure.

THYMOL—Is rising, there being few sellers below 8s. 6d. per lb., while higher figures are predicted. It must not be overlooked

that even present figure is extremely low compared with the price which formerly ruled for the article.

Newcastle Chemical Report.

NOVEMBER 30, 1898.

Contracts for heavy goods over next year are in progress. Despite the fact of a higher cost for production, there is a difficulty to move present quotations upwards. Sulphur keeps scarce. Prices keep as follow:—Soda Crystals, basis, 45s. Bleaching Powder, £5 10s. to £6. Soda Ash, 48 per cent., £4 to £4 10s. Caustic Soda, 70 per cent., £7 5s. Sulphur, £5 per ton.

Liverpool Market Report.

NOVEMBER 30, 1898.

Quotations are practically unchanged from last week, and the only articles exhibiting a tendency to fluctuate are Spirits of Turpentine and Cream of Tartar. Good sales of Brazilian Gum Acacia have been made at fair rates.

AMMONIA SALTS.—Sulphate is a little easier—£10 to £10 2s. 6d. per ton.

BEE SWAX.—17 bags of Chilian sold at £6 10s. per cwt.

BORAX—Is very firm at £14 10s. to £15 per ton.

CANARYSEED—Continues steady at 28s. 6d. to 29s. 6d. per 464 lbs. for Turkish, but transactious have been "nil."

CARNAUBA WAX.—30 bags of grey changed hands at 35s. to 36s. per cwt.

CHILLIES.—Common Sierra Leone fruit, ex store, sold at 35s. per cwt.

COPPERAS—37s. to 39s. per ton.

COPPER SULPHATE.—£18 10s. per ton. £19 per ton spring delivery.

CREAM OF TARTAR.—72s. per cwt. is asked for Spanish, and 73s. per cwt. for finest French cream.

GUM ARABIC.—One ton of Brazilian sold at 23s. 6d. per cwt.

OILS (FIXED) AND SPIRITS.—*Castor* is generally quieter in tone; Calcutta, 3d. to 3½d. per lb.; French, 2½d. per lb.; and Madras, 2¾d. per lb. *Olive* is selling steadily, and finest Spanish has changed hands at £29 10s. and £30 per tun. *Linseed*, of Liverpool make, is quiet at 17s. 9d. to 18s. 6d. per cwt. *Cottonseed* is flat at 15s. to 15s. 6d. per cwt. *Spirits of Turpentine* rose to 30s. per cwt. early in the week, but is now selling steadily at 29s. 6d.

PEARLASHES—Are nominal at 34s. 6d. per cwt.

POTASHES—Are scarce at 25s. per cwt.

Manchester Chemical Report.

NOVEMBER 30, 1898.

In the heavy Alkali trade business continues far from brisk, although in many minor articles the improvement is very marked. Caustic Soda is unchanged nominally, but there is every disposition on the part of producers to accept orders at low rates. Bleaching Powder is dull but unchanged. At a meeting held recently of representatives of the English Glycerine Combine, it was decided that the price, naked, should be £47 10s. per ton, in 10 ton lots, and for chemically pure £51 per ton, tins and cases, less 2½ per cent. discount, delivered in Manchester and Liverpool district. Sulphate of Copper continues to improve on account of the state of affairs in the metal market, and may be said to be £19 per ton, best brands, delivered Manchester, with £19 10s. for spring delivery. Tin Salts are also firm, White Sugar of Lead, although offered at lower prices, is easy. For prompt delivery, Chlorates of Soda and Potash are rather dull, but for next year's delivery prices are fairly firm at somewhat under current rates. Coal Tar products are on the whole very dull, except, perhaps, Creosote. Anthracene is a shade lower, being quoted 3¾d. A, and 2¾d. to 3d. for B quality. Naphthas and Benzols remain quiet. Acetate of Soda is about 10s. per ton higher. Green Copperas is in demand for export. Yellow Prussiate for prompt is fractionally higher—6¾d. to 7¼d. The s.s. "Petriana" has arrived at Manchester with 2500 gallons of American oil, chiefly for the Manchester Corporation for gas enrichment.

NOTICES TO CORRESPONDENTS.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ADVERTISEMENTS AND ORDERS for copies of the 'PHARMACEUTICAL JOURNAL' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers.

ARTICLES AND REPORTS sent for the Editor's approval should be accompanied by stamped directed envelopes, otherwise no guarantee can be given that they will be returned if not found suitable.

CORRESPONDENTS should write in ink, on one side of the paper only, and must authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

DRAWINGS FOR ILLUSTRATIONS should be executed twice the desired size; clean sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

NAMES AND FORMULÆ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

QUERIES addressed to the Editor will be replied to in the Journal as early as possible after receipt, though not necessarily in the next issue. Replies cannot be sent by post, even though stamped envelopes accompany the queries.

Calendar for Next Week.

Sunday, December 4. 2nd in Advt. Sun rises 7.49; sets 3.51.

Monday, December 5. Sun rises 7.51; sets 3.51.

SOCIETY OF CHEMICAL INDUSTRY, Burlington House, Piccadilly, W., at 8 p.m. Colonel W. J. Engledue, R.E., will read a paper on "Oxone and its Commercial Applications, while Mr. Arthur Marshall will deal with (1) "An Improved Apparatus for the Estimation of Carbonic Acid in Minerals, etc." (2) "The Preparation of Standard Solutions of Sulphuric Acid."

Tuesday, December 6. (10.6 M. Sun rises 7.52; sets 3.50.

CHEMISTS' ASSISTANTS' UNION OF GREAT BRITAIN, Horse Shoe Hotel, Tottenham Court Road, W., at 9 p.m. The first smoking concert, Dr. Henry Dutch in the chair.

ROYAL COLONIAL INSTITUTE, Whitehall Rooms, Hôtel Métropole, Whitehall Place, S.W., at 8 p.m. Dr. Alfred P. Hellier will read a paper on "The Native Races of South Africa."

Wednesday, December 7. Sun rises 7.53, sets 3.50.

NEWCASTLE-ON-TYNE AND DISTRICT CHEMISTS' ASSOCIATION. Smoking concert.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN, 17, Bloomsbury Square, W.C. Meeting of Council.

PHARMACY CLUB.—Dinner at the Café Royal, 68, Regent Street, W., at 6.45 p.m.

SOCIETY OF PUBLIC ANALYSTS, Burlington House, Piccadilly, W., at 8 p.m. An illustrated lecture by Mr. A. H. Allen on "The Use of the Micro-Spectroscope, and the Methods of Detecting Blood in Chemical-Legal Investigations."

Thursday, December 8. Sun rises 7.54; sets 3.49.

CHEMISTS' ASSISTANTS' ASSOCIATION, Dorset Hall, Portman Rooms, Baker Street, W. Second Cinderella Dance of the season.

Friday, December 9. Sun rises 7.56; sets 3.49.

Saturday, December 10. Sun rises 7.57; sets 3.49.

Obituary.

JONES.—On November 21, Enoch Henry Jones, Chemist and Druggist, Bristol. Aged 54. Mr. Jones was an Associate of the Pharmaceutical Society.

SHORT.—On November 24, Edward Curteis, Chemist and Druggist, Bushey Heath (Herts). Aged 51.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Magic Lanterns, second-hand; triples and binoculars: oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s. —Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Sulplus Stock.—12 1-gallon tins Izal, 96s. dozen; 23 lbs. cochineal, 1s. 6d. lb.; 1 cwt. oxide of zinc, 50s.; 30 lbs. oil of sassafras, 2s. 5d. lb.; 6 lbs. essence of bergamott, 5s. 6d. lb.—Sowerby, North Street, Middlesbro'.

Wholesale and Retail Druggist: Advertiser is overstocked with superfine oil of lemon in 10-lb. coppers, and solicits offers; 1-lb. sample delivered free 2s. 9d.—Moss, 34, Avondale Road, Chorley.

All New, unsoiled, bought before advance, hot water bottles, best quality. Maroon plush covers (detachable) included, 10 by 6, 4s.; 12 by 8, 5s. 10d.; 12 by 10, 6s. 6d.; 14 by 10, 7s. Sponge bags, best quality, silk cords and bindings, full sizes, as Maw's, eight dozen, assorted, Nos. 2, 4s. 6d.; 3, 6s.; 4, 7s. 6d.; 5, 9s.; 6, 10s. 6d. Tooth stopping wrapped pink paper, as Stevens', gross box, 2s. 6d.; 3 dozen 3l. sticks, 2s. 6d. Hypodermic syringe, complete, cased, 1s. 6d. Post free 10s. lots. Cash returned if sold.—Warnes, Chemist, 333, Gray's Inn Road, W.C.

Leath-Ross show-case and medicines, specie-jars and stands, cheap; *Chemist and Druggist*, unbound, from beginning; cheap to clear; Stern's Narissa and Pumliline.—Williams, Bournemouth.

White Oils: Acetic Embrocation, cheap creamy permanent emulsion, formula, 1s.—Chemist, 68, West Street, Stoke-on-Trent.

Operating Chair, with movable back, rising and falling head-rest, adjustable footstool, stained walnut, freshly upholstered in best morocco, £8 10s.; with brass bracket holding glass, spittoon, and table, £4 10s.; N.O. gas apparatus; a number of new nickel-plated forceps, 4s. each; send stamp for list; might exchange for good balance or microscope.—A. Peake, Queen Street, Earlestown.

A Bargain.—Large Triple Optical Lantern, by Steward, Strand; good condition; cash price £20.—Adams, Chemist, Market Harboro'.

Surplus Stock.—5 doz. Imperial Hand Fire Grenades, in 1 doz. cases, unopened; what offers for whole or portion?—Adams, Chemist, Market Harboro'.

No. 2 Frena. $\frac{1}{4}$ plate, with set of four magnifiers, bamboo stand, waterproof case, complete, good as new, cost £10, price £5; also Lancaster's $\frac{1}{4}$ -plate instantograph stand camera with case, price 30s.—Chambers, 82, Cambridge Gardens, Notting Hill, London. W.

Shop-soiled only, 12s. 6d., Tylar's Titbit camera, with extra slide, 11s. 6d. New $\frac{1}{2}$ -plate camera, rectilinear lens, stand, 3 dark slides, 3 carriers, £3 12s. 6d., for £3.—Cocker, Luton.

For Sale.—Pereira's 'Materia Medica,' 3 vols., 7s. 6d., paid; Wills' 'Materia Medica,' 2s., post paid. Cassell's 'Family Physician,' last edition, 4 vols. in 2, 16s., paid.—W. Pemberton, 34, Church Street, Preston.

A Handsome globe-lamp and bracket for sale, ruby flashed glass, richly gilded, perfectly new, splendid advertisement for any chemist, £3 10s., worth double.—Humphrey, 121, Charing Cross Road, London.

Erasmic Herb Soap, and Premier Vinolia Soap, and Daisy Powders. Carriage paid. State quantity and price.—Eastman, Forest Lane, Stratford.

WANTED.

Old Electric Lamps and Scrap Platinum for prompt cash.—P. Rowsoll, 9, Derwent Grove, East Dulwich, London, S.E.

A good Optician's Trial Case.—Jellings, 70, High Street, Stockton-on-Tees.

Camwal Shares.—Any number from one to a hundred. Say lowest price.—Thornley, Chemist, Ilfracombe.

'Pharmaceutical Journal,' January 15, 1898. Full price will be paid for clean and complete copies by the Publishers, 5, Serle Street, London, W.C.

COMMUNICATIONS, LETTERS, NEWSPAPERS, etc., have been received from Messrs. Atkinson, Bailey, Bainbridge, Breeze, Brisby, Buhner, Burroughs, Campkin, Cherry, Clarke, Cowley, Critchley, Currie, Daniel, Dent, Dyer, Dulau, Evans, Floyd, Fothergill, Gair, Gillard, Graham, Green, Hill, Hogg, Idris, Jameson, Jones, Keen, Lewis, Ling, Macleod, Marriott, Mason, Mitchell, Morgan, Morley, Park, Penty, Pitt, Roberts, Robins, Scott, Sellock, Slinn, Smith, Snell, Spitta, Stead, Tayler, Thompson, Thorp, Turner, Turney, Waites, Wall, Williamson, Wood, Woolley.

SCHOOL OF PHARMACY NEWS.

AS THE YEARS ROLL BY the list of "old Squarmen" steadily swells, until it is not too much to say that no county or large town is without a pharmacist who was trained in the Bloomsbury Square School. In this column it is proposed not only to chronicle the more important events of each session, but also personal notes of general interest concerning the alumni of past sessions. It is thought that the interest which is yearly taken in the Old Boys' football match will be extended to the endeavour to keep fresh in the mind of each past student the memory of his *alma mater*, and bring back to all, whether at home or abroad, pleasant recollections of student days when life, if no less real and earnest, was certainly less serious. Communications for this column will therefore be welcomed, whether from present or past students of the School. They should be sent in by Wednesday in each week.

MEMBERS OF THE FOOTBALL TEAM are looking forward to the match on Saturday with Muter's College on P.F.C. ground at Wormholt Farm, Shepherd's Bush. Old "Squarmen" are invited to be present. Kick-off at 2.30.

THE ANNUAL SMOKING CONCERT, held under the auspices of the Pharmaceutical Football and Cricket Club, was well attended on Thursday, December 1, when chemists, wholesale and retail, principals and assistants, together with students past and present, to the number of about 200, assembled in the Crown Room, Holborn Restaurant. Professor H. G. Greenish, F.I.C., F.L.S., occupied the chair, and amongst those present were Messrs. W. Hills (President of the Pharmaceutical Society), M. Carteighe, T. Edward Greenish, E. W. Lucas, E. N. Butt, E. J. Eastes, J. O. Braithwaite, R. Bremridge (Secretary of the Pharmaceutical Society), Professor J. Norman Collie, Dr. Lapworth, and many others. There was an excellent programme, all the items in which were well rendered, and everything passed off most pleasantly, thanks to the endeavours of Messrs. John Evans, D. P. Gray and T. J. Wild, who were responsible for the arrangements. It included songs, recitations, a pianoforte solo, and ventriloquial sketches by many well-known artistes, among whom were Harry Hall, Fred Russell, W. Cheeseman, Will Edwards, etc.

PROFESSOR GREENISH, who was supported by Mr. E. J. Eastes, in taking the chair, remarked that there was little chance of the doom in store "for those who have no music in their soul" falling on pharmaceutical students. A little before the interval the Chairman proposed the health of the Captain of the Football and Cricket Club. This toast was drunk with musical honours. In his reply, the Captain, Mr. Will, thanked the Chairman and the assembled company for their good wishes, and briefly referred to the team of the present session. They had had some tough fights, and one of their best games ended in a draw with the London Hospital. There was every prospect of a good season, and one of the coming events, a match with the Honourable Artillery Company, should prove interesting, since twice last year the game ended in a draw. Later in the evening, Mr. J. Edward Lescher gave the toast of "The Smoking Concert Committee," and complimented Messrs. Evans, Gray, and Wild on the conspicuous success that had attended their efforts. Mr. John Evans' reply took the form of thanks to those present for contributing to the success of the undertaking, and especially to the members of the Pharmacy Club and the wholesale trade for their support and interest. At the conclusion of the programme, Mr. Herbert Payne proposed the health of the Chairman, Professor Greenish. This was drunk with musical honours, and, after suitably responding, the Professor terminated the meeting by calling for "Auld Lang Syne" and "God Save the Queen."

FRIDAY DECEMBER 9, is to be a field-day at the Students' Association, as the oratorical ability of present students will be tested at a discussion on "The Proposed Division of the Minor Examination." Mr. P. B. Gray is expected to move in favour of the division, and the opposition is in the able hands of Mr. Herbert Payne. A full meeting is anticipated, but room will be found for all old students who can find it convenient to attend. It will be held in the lecture theatre at 5.30 p.m.

MR. H. E. MATTHEWS, who took such an interest in all work connected with his fellow-students during the last two sessions, has gone into business at Clifton. It is hoped that Mr. Matthews will be as successful in the future as he has been in the past.

SCOTTISH NEWS.

DEATH FROM LAUDANUM POISONING.—On Saturday afternoon, December 3, a man, having the appearance of belonging to the labouring class, was found lying in a helpless condition by two constables on duty in Regent Road, Edinburgh. He was removed in a cab to the Royal Infirmary, and on examination he was found to be suffering from an overdose of laudanum, from which he died on the 4th inst. The deceased has been identified as Thomas Beveridge, residing in Shoemakers' Lane, Canongate, Edinburgh.

THE EDINBURGH PHARMACY ATHLETIC CLUB held its seventh annual smoking concert in the West End Café, Princes Street, Edinburgh, on Tuesday evening, December 6. Mr. J. Rutherford Hill, Honorary President, occupied the chair, and among those present were Councillor Richard Clark, J.P., Chairman of the Edinburgh Parish Council; Parish Councillor David McLaren, President of the Edinburgh District Chemists' Trade Association. D. B. Dott; F.I.C., G. Coull, B.Sc., etc.; Councillor Clark proposed the toast of "The Edinburgh Pharmacy Athletic Club," coupled with the names of Mr. Rutherford Hill and Mr. George Somerville, President of the Club, who suitably replied. Mr. Hill expressed the deep gratitude of the club to Mr. A. S. Birnie, who retires from the Honorary Treasurership after six years' service. An excellent programme of vocal and instrumental music and recitations made the evening pass very pleasantly, and much credit is due to the Honorary Secretary, Mr. J. P. Gibb, who had charge of the arrangements. Parish Councillor McLaren moved a vote of thanks to the Chairman, which was cordially awarded.

FRENCH NEWS.

MONUMENT CHARCOT.—The inauguration of the monument raised to the memory of Professor Charcot was held on Sunday, December 4, and presided at by M. Leygues, Minister of Public Instruction.

ONE OF THE RESULTS of the Franco-Italian Treaty of Commerce, which has just recently been ratified, is the revision of the Customs Tariffs relative to the entry of Pharmaceutical products into each of these countries. Compound medicaments, non-denominated, such as pilules, granules, pastilles, and capsules pay a duty of 100 francs per 100 kilos; wines, syrups, and elixirs, 40 francs per 100 kilos; other medicaments (not specified) 60 francs per 100 kilos. Preparations inscribed in the French Pharmacopœia, or such as are approved by the Académie de Médecine, will be admitted under the same conditions as those appearing in the Italian Pharmacopœia. Hitherto much annoyance and inconvenience has been experienced by pharmacists in both countries, on account of the whimsical interpretation of the former and inefficient tariffs by the Customs authorities. In consequence, this new and definite order of things will be highly appreciated by pharmaciens on both sides of the Alps.

CHAMBRE SYNDICALE DES PHARMACIENS DE PARIS.—At a meeting of the Tariff Commission, presided over by M. Collin, it was proposed to introduce the following modification in the existing tariff. Upon the proposition of M. Mazurier, of Boulogne, the Council decided that the new tariff should bear the announcement of a sur-tax of 1 franc 50 centimes for night duty, and that cardboard boxes for pills and powders should be charged for at a uniform rate of 10 centimes each. In reference to a letter received by M. Collin from the President of the Commission of Customs, as to the advisability of taxing the importation of powdered pyrethrum, the Council unanimously voted for the suppression of such a tax and requested M. Collin to reply to that effect.

HIGH PRICE FOR A FREE CONSULTATION.—That the facilities afforded to the poor and needy for free consultations at either hospitals or private clinics are taken advantage of by the well-to-do classes is a well-known fact, notwithstanding the opposition of the medical officers and their endeavour to impress upon this latter class that their place is not amongst their less fortunate fellow-creatures. The following incident, which occurred a few days ago, is, happily, rare, but will no doubt have a deterrent effect upon the gentry who continually hanker after all they can get for nothing. A lady known to be in exceedingly good

circumstances drove up to the Quinze-Vingt Clinique to have a *consultation gratuite*, but, before entering, took care to remove the outward sign of wealth in the shape of a pair of diamond earrings, valued at 4000 francs, and stow them away in her pocket. Having obtained her consultation "pass" she placed this also in her pocket and betook herself to the "salle d'attente" to await her turn. Whether someone had seen her remove her earrings or not is hard to say. The fact, nevertheless, remains that on putting her hand in her pocket to withdraw her consultation card she discovered that her earrings had disappeared. Her chagrin can be more easily imagined than described, especially when one considers she had indirectly paid 4000 francs for advice she had hoped to obtain for nothing. Her handsome reward of 20 francs (price of a consultation) has failed to bring to justice the wrong-doer. No doubt however, remains that her pocket had been picked by a patient at the Clinique.

THE OLD OLD STORY.—The Parisian police are looking for an ingenious gang of swindlers, who have just victimised a number of chemists by means of a trick not lacking originality. The gang hired an apartment at 140, Rue St. Martin, and started the firm of "Ceguïn and Company, Chemical Agents." Several well-dressed ladies were then employed to visit all the important Parisian chemists and asked for a bottle of Dr. Baumont's specific elixir. If the chemist stated that he did not stock the article, the lady would invariably express her surprise. She would then inform the chemist of the address of the agent of the elixir and ask that a bottle might be procured for her and delivered at her hotel. Full of confidence, the chemist sent to Ceguïn and Company, and purchased at wholesale price sufficient to fill their order. Others, in order to meet future commands, took several bottles, and in this way the gang made a big haul, as the bottles in question apparently contained nothing but water. The gang managed to decamp before the police were put on their tract.

PARIS BRITISH CHAMBER OF COMMERCE.—A meeting of the British Chamber of Commerce was held on Friday, December 2. The following gentlemen attended:—Messrs. G. D. Sturrock in the chair, J. L. Pollock, T. Longhurst, F. W. F. Clark, John Manby, John G. Pilter, W. H. Hewson, and J. G. Colclough, secretary. Among the subjects under consideration were Customs difficulties, consular fees for *visa* on certificates of origin, and resolutions to be proposed at the annual meeting of the Association of Chambers of Commerce of the United Kingdom. A letter was received from the Board of Trade stating that the suggestions made by the Chamber in October, 1897, in connection with the improvement of the method followed for the compilation of trade statistics, had been adopted by the committee for the revision of trade accounts. A notice to shippers has been issued by the Comptroller-General of Customs, giving instructions as to the way goods should be declared in order that the final destination of goods should be given instead of the intermediary port through which they are shipped. In so far as pharmaceutical products and specialties of British origin are concerned, all efforts to entice makers to adopt some method of uniformity in volume or weight respecting their specialties, to facilitate the declaration of the same, have hitherto failed; and signs are still wanting of their willingness to toe the line of consistency. That the result of this apparent apathy on their part will eventually recoil upon themselves goes without saying. Bovril, Limited, 30, Farringdon Street, London, and 4, Rue de la Tacherie, Paris, were elected members of the Chamber.

ENGLISH NEWS.

EVENING MEETING IN LONDON.—At an Evening Meeting of the Pharmaceutical Society on Tuesday next, at 8 p.m., Mr. W. Merton Holmes will lecture on "Deep Sea Deposits." The lecture will be illustrated by lantern slides.

IDRIS AND Co., LTD.—A general meeting of this company was held on Thursday, December 1, when the directors submitted the annual report and balance-sheet for the year ending September 30, 1898. All the directors were present, together with a large number of shareholders. The Chairman, Mr. T. H. W. Idris, J.P., L.C.C., presented the report, which stated that although the season this year had not proved a satisfactory one, still the total sales for the year show a considerable increase. Reference was made to the delay in the issuing of the balance-sheet, caused by the additional business done during the closing

months of the financial year, and the directors propose that in future the annual accounts and balance-sheet shall be made up a month later than has hitherto been the case, viz., to October 31; thus the accounts for the coming year will include thirteen months' trading. Since the last report Mr. James Bradford, of "Oaklands," Haywards Heath, has been appointed an additional director of the Company, and the then existing mortgage and 5 per cent. debentures have been paid off. To do this and to provide additional capital for the extension of the business an issue of £70,000 4 per cent. debenture stock has been made at par, for which the Stock Exchange has granted an official quotation, and also for 50,000 A preference shares issued in July, 1897. The profit for the year, after charging interest on the mortgage and debentures recently paid off, and on debenture stock recently issued, and also after writing off depreciations, is £14,013 18s., which, with £1168 16s 5d. brought forward from 1897, makes a total of £15,182 14s. 5d. This sum the directors recommended to be appropriated as follows:—To the payment of dividends and interest on the various classes of shares, £10,530 15s. 11d.—at the rate of 6 per cent. for the year on the original issue of A preference shares; 6 per cent. per annum on the 1897 issue on instalments accrued due from date of payment, and interest at 3 per cent. per annum on instalments paid in advance; 7 per cent. on the B preference; 10 per cent. on the A and B ordinary, and 5 per cent. on the founders'. The balance (4651 18s. 6d.) to be applied as follows:—Premium of conversion of debentures, £1488 11s. 7d.; Reserve Fund (which will then stand at £26,500), £1500; Profit-sharing and Benevolent Funds, £500; carried forward to next account, £1163 6s. 11d. The report went on to state that arrangements have been made for an extension of the leases at Camden Town on favourable terms for 999 years from September 29 last. The new factory at Southampton is now erected and in working order, while the Liverpool branch continues to make steady progress. The report and balance-sheet were unanimously adopted, and the auditors, Messrs. A. J. Hill, Vellacott & Co., having been thanked for their services and re-elected, a vote of thanks was accorded to the directors.

VALENTINE'S MEAT EXTRACT.—On Friday, December 2, the action of The Valentine Meat Juice Co. v. Valentine's Meat Extract Co., Limited, was before Mr. Justice Stirling in the Chancery Division of the High Court of Justice. The plaintiffs sought an injunction restraining defendants from carrying on business as manufacturers or vendors of any preparation of extract of meat, or meat juice, under any name or title of which "Valentine" or "Valentine's" formed part, without clearly distinguishing. It was stated that there was a good deal of evidence, and the hearing would occupy some time, and under these circumstances his Lordship was asked to accelerate the trial, so as to avoid a double hearing. The defendants, who said they had a perfectly good answer to the action, concurred in the application, and his Lordship, who was unable to fix a day for the trial then, directed that the parties should apply early in the next sittings, when he would see what could be done. Mr. Moulton, Q.C., M.P., Mr. Swinfen Eady, Q.C., and Mr. Sebastian appeared for the plaintiffs; Mr. Upjohn and Mr. Arthur Sims represented the defendants.

MR. J. W. T. MORRISON, A.P.S., has opened a first-class pharmacy opposite the Post Office, Tring, Herts.

MR. T. KNIGHT, A.P.S., has succeeded to the old-established business formerly carried on by the late Mr. F. Satchell at "The Pharmacy," Crowthorne, Berkshire. The shop and dispensing department and to be refitted and fully equipped with all the modern improvements. A complete darkroom will be available for the use of amateur photographers, and a full stock of photographic materials and chemicals kept.

MESSRS. JAS. WOOLLEY, SONS AND Co., LTD., MANCHESTER.—The staff of this firm recently held their twentieth annual dinner and smoking concert at the Mosley Hotel, Piccadilly, Mr. William Lane occupying the chair. The guests present were Mr. G. S. Woolley, (Managing Director), Mr. C. A. Johnstone (Director), Mr. E. Stanmore Bishop (Honorary Surgeon to the Ancoats Hospital), Dr. Webster and Dr. Booth. After dinner the chairman proposed the usual loyal toast, which was followed by a long list of toasts and an excellent musical programme arranged by the Committee, with Mr. Howard as Secretary, each item being listened to with enthusiastic appreciation.

MR. FRED REYNOLDS, of Leeds, the well-known pharmaceutical caricaturist, is the author of a sketch in the *Daily Graphic* of Monday, December 5, entitled "In Memory of Gordon." The picture refers to the proposed college at Khartoum, and represents a hansom cab driven by a native Soudanese, who is accosted by another native, presumably a student, carrying a book under his arm. "Where to?" asks the cabby. "To the Gordon College," is the reply.

PLYMOUTH, DEVONPORT, STONEHOUSE, AND DISTRICT CHEMISTS ASSOCIATION (TRADE SECTION).—At the annual meeting of the above, Mr. James Cocks was elected President and Mr. R. F. Roper Hon. Secretary. A satisfactory balance in hand was reported. Votes of thanks to the retiring officers (Messrs. Roper and Park) were passed.

FOOTBALL.—In a match on Saturday last at Homerton the Westminster College of Pharmacy beat South London College of Pharmacy by two goals to nil, after a most pleasant game.

CHEMISTS' ASSISTANTS' UNION.—The first smoking concert of the Chemists' Assistants' Union was held at the concert hall of the Horse Shoe Hotel, Tottenham Court Road, W.C., on Tuesday evening, the 6th inst. Notwithstanding the unpropitious state of the weather, a goodly company of close upon a hundred chemists' assistants and their friends assembled at this the inaugural concert. Dr. Dutch occupied the chair, and was ably supported by Mr. Carpenter, L.D.S., Dr. Henson, Mr. Salter, Mr. Chilwell, and other well-known gentlemen connected with the craft, amongst them Mr. Whineray, the Chairman of the Union. In opening the proceedings, the Chairman said that this gathering of chemists' assistants from all parts of the metropolis, with a liberal sprinkling from the provinces, was one essentially of pleasure, and it was not his wish or intention to bore the company by any lengthy speech. He then called upon Mr. Cyril Davis to open the proceedings with an overture. This Mr. Davis executed in an able and business-like manner, and the company settled down to a thoroughly enjoyable evening. Mr. Bewsher raised uproarious laughter and considerable enthusiasm by his ventriloquial and imitative entertainment, an additional flavour being given by his allusions by means of his figure to a few of the current topics of pharmacy, e.g., Mr. Glyn-Jones of the P.A.T.A., and Mr. Beecham, of pill fame, etc. Mr. Sydney Bryant gave an exceptionally fine rendering of his "one man" pantomime rehearsal; this with his laughable "Gipsy Countess" duet completely brought down the house. The respective efforts of Mr. J. O. Evans, Mr. Wilkinson, Mr. Martin, Dr. C. Taylor, and Mr. Mortimer were thoroughly appreciated, the choruses going with considerable *verve*. During the evening the Chairman of the C.A.U., in a short speech, touched superficially on the policy of the Union, the respective points of which, published in the *Pharmaceutical Journal* of the 12th ult., were received with great enthusiasm. Many new members were enrolled, so that the Union has now assumed considerable proportions, and bids fair to take its place as a power in the world of pharmacy. Dr. Carpenter, in a pithy, well-turned speech, compared the C.A.U. to the Medical Defence Association, and wished the Union every success. He said that only by unanimity and perseverance could the status of the chemists' assistant be raised to that point which his scholastic expenditure, and intellectual ability, fitted him for. A vote of thanks to the Chairman was given with acclamation. Dr. Dutch briefly responded, and a most enjoyable evening's entertainment terminated on the stroke of midnight with the singing of the National Anthem.

SUNDERLAND CHEMISTS' ASSOCIATION.—The annual dinner of this Association was held on Wednesday, November 30, in the Grand Hall, Bridge Street. The President, Councillor L. Thompson, in the chair. Mr. G. P. Fairman (Vice-President) and Mr. R. H. Bell (Secretary) filled the vice chairs. A large company was present, including Messrs. G. F. Merson (Secretary Newcastle Association), W. Kerse, Gilderdale, J. Harrison, Dr. Scurfield, etc. A telegram was received from Mr. Schofield, President of the Newcastle Association, regretting he had lost the train. After the removal of the cloth the Royal toasts were given, then followed the Pharmaceutical Society by Mr. W.

Kerse, responded to by Alderman Harrison; the Sunderland Chemists' and Newcastle and District Association, given by Alderman Burns, responded to by the President and Mr. Merson; the Visitors, proposed by Mr. Robinson, responded to by Dr. Scurfield and Mr. Gilderdale. The musical part was given by the Bevan Quartette, Messrs. Purse, Percival, Craig, Harry White, and Hurley (of the People's Palace), and C. Donkin. Eleven o'clock brought a most enjoyable evening to a close.

MANCHESTER PHARMACEUTICAL ASSOCIATION.—The Council of the above Association offers for competition among the apprentices and assistants of Manchester two prizes of a guinea each, the gifts of Mr. G. S. Woolley and Mr. J. Rymer Young, and two prizes of half-a-guinea each, given by the Association. Two examinations will be held in the first week in March, 1899—one for apprentices and assistants under 21 years of age, and one for assistants over 21 years of age, who have not passed the Minor examination. Intending competitors must send their names to Mr. J. Woodruff Walton, 427, Higher Broughton, not later than February 20 next.

MR. JOHN BILLINGTON, of Manchester, has disposed of his business at 230, Cheetham Hill Road, to Mr. Samuel Taylor, of Bradford, Yorks. The transfer was effected by Messrs. Thos. Tomlinson and Son, Manchester.

CAMBRIDGE PHARMACEUTICAL ASSOCIATION.—The members of this Association held a most enjoyable smoking concert at the Alexandra Assembly Rooms, Cambridge, on Friday evening, December 2. Mr. Alderman Deck, F.C.S., presided, and there was a fairly large attendance. This was the first concert of the season, and the success which attended it augurs well for the future gatherings which it is proposed to hold. Mr. B. S. Campkin who had the task of organising the concert did the work entrusted to him well. An excellent array of talent sustained the programme, and there was not a dull moment from the commencement to the time of singing "Auld Lang Syne."

FOOD AND DRUGS ACT PROSECUTION.—At the Burnley Borough Police Court, on Thursday, December 1, Nehemiah Tomlinson, chemist and druggist, was summoned for selling milk of sulphur containing 7 per cent. of calcium sulphate.—The defendant pleaded that he had sold the article in the condition in which he had received it, and in consideration of the fact of the recent issue of the new Pharmacopœia, the Bench dismissed the case on payment of costs.

Partnerships Dissolved.

(From the London Gazette.)

Joseph J. Clarke and F. A. Baldwin, Surgeons, Physicians, etc., Connaught House, Markhouse Road, Walthamstow. So far as regards F. A. Baldwin.

Arthur Elliot and Stanley W. Marshall, Manufacturers of Dental and Surgical Requisites, 2, Vere Street, London, W. Debts will be received and paid by Stanley W. Marshall, who will continue the business.

John Copeland and Geo. Wilson, Mineral and Aerated Water Manufacturers, Portland Works, Jasper Street, Hanley.

Publications Received.

THE TWENTY-NINTH ANNUAL REPORT (1897) OF THE STATE BOARD OF HEALTH OF MASSACHUSETTS. Pp. lx. + 714. Boston: Wright and Potter Printing Co. 1898. From the Publishers.

THE TUTORIAL ALGEBRA. Part II., ADVANCED COURSE. By WILLIAM BRIGGS, M.A., and G. H. BRYAN, Sc.D., F.R.S. Pp. 596. Price 6s. 6d. London: W. B. Clive.

PLYMOUTH AS A TOURIST AND HEALTH RESORT. By F. M. WILLIAMS, M.R.C.S., D.P.H. Pp. 68. Plymouth: Incorporated Mercantile Association. 1898. From the Publishers.

Trade Notes.

UROTOPINE is the name given to the white crystalline solid which is formed by the inter-action of formic aldehyde and ammonia, namely, hexamethylene tetramine, $C_6H_{12}N_4$. It was first introduced to the medical profession by Professor Nicolaier as a solvent of uric acid concretions, and for preventing the development of bacteria in the urine. In the hands of Dr Gordon Kelly urotropine has been found the most thoroughly reliable urinary antiseptic and astringent, and the one nearest approaching to a specific for cystitis and allied affections. Urotropine is non-toxic and non irritating, and dissolves in 1 to 2 parts of water to a faintly alkaline solution. The dosage is 0.5 gramme in one-quarter litre of water or aerated water. In prescribing urotropine the reaction of the urine should be noted, and if acid a little citrate or acetate of potash or, if very alkaline, a small quantity of mineral acid should be given in addition. It can be obtained from Messrs. A. and M. Zimmerman, 9 and 10, St. Mary-at-Hill, the agents for the manufacturers, Chemische Fabrik auf Actien (Vorm. E. Schering), of Berlin.

CREOSOTAL, DUOTAL, HEROIN.—Creosotal is a mixture of the phenol carbonates of creosote in the form of a transparent viscous liquid of a slightly bitter taste and nearly inodorous. It is not soluble in water, but can be mixed with ether and with alcohol, and is soluble in fatty oils. It is administered in doses of half a drachm in wine, brandy, or cod-liver oil in the treatment of tuberculosis. Duotal (guaiacolum carbonas puriss) has the formula $(C_6H_4OCH_3)_2CO_2$. It is in the form of a white crystalline powder, which is inodorous, tasteless, and insoluble in water. It has the advantage over creosote or guaiacol of having no irritating action on the mucous membrane. Both creosotal and duotal are said to have given good results in the treatment of tuberculosis and of other affections of the respiratory organs. Heroin, the di-aesthetic ester of morphine, is suggested as a substitute for morphine salts, as being free from secondary effects peculiar to morphine and some other narcotics. Heroin does not cause constipation and can be tolerated by a patient with a weak heart, in addition to which it has the advantage over codeine in being less toxic. It is a white crystalline powder, melting at $171-172^\circ C.$, almost insoluble in water, but easily soluble in alcohol. Creosotal, duotal, and heroin are the products of the Elberfeld Farben-Fabriken Co., Ltd., 19, St. Dunstan's Hill, E.C.

MESSRS. CHARLES SOUTHWELL AND Co., Jacob Street, Dockhead, London, S.E., are large importers of oranges and in a particularly favourable position for supplying the rind of the Seville orange, either dried or in a fresh condition, for making Tinct. Aurant. B. P. 1898. They ask us to state that they will be in a position to supply the fresh peel, in either small or large quantities during December, January and February. The peel will be cut by a special process in small shreds, 1 in. by $\frac{1}{2}$ in., as free as possible from pith, and will answer in every respect the requirements of the new B. P. The peel will be despatched a few hours after it has been cut, and with the present facilities for rapid delivery by parcels post, it can be supplied in a fresh condition ready for treatment in the spirit immediately on delivery. Small quantities will be sent out in 1 lb. parchment lined bags, and larger quantities of 5 lb. or 10 lb. in parchment-lined boxes—packages free. A sample of the peel submitted for examination was found to be in excellent condition.

MESSRS. F. NEWBERRY AND SONS, King Edward Street, London, intimate that they have arranged to close their establishments on Monday and Tuesday, 26th and 27th inst., as well as on Friday and Saturday, 30th and 31st inst. (for stocktaking).

MESSRS B. G. LENNON AND Co., LTD., 75, Leadenhall Street, London, E.C., having branches in Cape Colony, Orange Free State, South African Republic, Rhodesia, and Natal, are about to refloat the company with a share capital of £600,000, it being thought desirable to acquire more capital to provide for the growth and extension of the business. A prospectus has been issued, offering an issue of 15,000 five per cent. cumulative preference shares of £10 each and 30,000 ordinary shares of £10 each. There will be no alteration in the management of the business, the old shareholders taking shares in the new company in exchange for their holdings.

MESSRS. SOUTHALL BROS. AND BARCLAY, LTD., Birmingham, have prepared sample boxes of "sanitary towels," intended for chemists to keep by them, in order that they may be able readily to show physicians the various sizes of towels made by the firm. Each box contains all the varieties manufactured, and inside the lid are full particulars of each size. It often happens in a retail business that a customer or doctor requires to see the "towels" before ordering, and the case now offered will render it unnecessary for chemists to break open a packet on such occasions. Among other samples is one of the latest variety, the "Blue" towel, specially intended for accouchement purposes. It is faced with a layer of alembroth wool, the use of which, when the towels are applied to lacerated or abraded surfaces, reduces the risk of septic absorption to a minimum. The boxes of samples are offered free to all registered chemists in business who may apply for them.

THE SANITAS COMPANY, LTD., Letchford's Buildings, Three Colt Lane, Bethnal Green, London, E., announce that its offices and factory will be closed from Saturday, the 24th inst., until Wednesday morning, the 28th inst.

PRACTICAL PHOTOGRAPHIC NOTES.

MARION AND Co., of 22, Soho Square, have introduced a little novelty which ought to be a good line for amateurs and ladies in particular. It is called Panak, and is a single solution which may be applied to any paper or card with a brush, and can then be dried in the dark in about twenty minutes, and on exposure under a negative an image is obtained. Printing should be carried rather deeper than the finished print is required to be, and the card or paper is then washed in water and immersed for a minute or two in a ten per cent. solution of hyposulphite of soda and then thoroughly washed and dried. The colour of the finished print is a very pretty sepia, and it may be toned with gold or platinum, although this is unnecessary. If a hot flat iron be passed over the print deep black tones are obtained.

FOR THE LAST TWO YEARS the photographic world has been on the tenterhooks of curiosity as to a process of photography in natural colours, which, it was stated, had been invented by Mr. Wallace Bennetto, of Newquay, Cornwall. Several enigmatical statements have been made about this, and the only definite information obtainable was that a syndicate of American financiers had purchased all rights for £50,000. It now appears from the published patent specification that it is nothing more than the three colour process and the superimposition of three colour transparencies, which, as we have already pointed out, has been known for nearly thirty years.

MESSRS. PENROSE AND Co., of 8A, Upper Baker Street, W.C., have just introduced a washed collodion emulsion in the form of a dry powder, which merely requires dissolving in equal quantities of absolute alcohol and 0.720 ether, in the proportion of 1 to 20, to form the emulsion. For many years collodion emulsion was considered the *non plus ultra* for lantern-slide making, but it has been now replaced by the gelatin dry plates. Collodion transparencies, when properly made, however, have a sparkle and brilliancy, combined with a transparency in the shadows, which is hard to excel.

AN EASY METHOD OF WRITING ON GLASS which has been used in photographic circles, may be useful for labelling bottles. Fluor spar or calcium fluoride in a powder is made into a stiff paste with strong sulphuric acid in a dish or vessel coated with paraffin wax or a leaden vessel, and then applied to the glass with a piece of lead pointed like a pencil; after about fifteen minutes the paste should be washed off with dilute solution of caustic potash, and the bottle thoroughly washed. The etched letters may easily be filled in if required with a little Brunswick black.

A NEW PHOTOGRAPHIC DEVELOPING DISH has just been introduced by Taylor, Tunnicliffe and Co., Ltd., of Eastwood, Hanley. The material is their well-known acid-proof granitine with a very hard porcelain glaze, and the novelty is the protrusion from the base of the dish of two ledges, on which the dish readily rocks. This should find favour with amateurs, and it is worth while stocking.

MARKET REPORT

The quotations here are given in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

London Report.

DECEMBER 8.

Business has been somewhat quieter during past week, while the advances in value of any importance have been limited to two small rises in price of Quicksilver, which took place on two successive days. Citric very quiet. Tartaric and Cream of Tartar steady. Glycerin and Cod-liver Oil weak. Borax and Acid Boracic firm. Mercurials unchanged, in spite of the two advances in price of Quicksilver. Acetanilide weak. Sulphonal and Phenacetin steady. Cocaine very firm and expected to be dearer. The report just in of result of to-day's Bark auction in Amsterdam does not appear to have caused any great surprise, in fact, many people appear to have expected what has actually happened; it now remains to be seen what the further developments in the Quinine market will be. Camphor remains very firm both for crude and for refined in spite of the fact that price of the latter it reported somewhat lower from Hamburg. The following are particulars of prices actually ruling for articles of chief interest:—

ACETANILIDE—Is quiet at 11d. to 1s. 1d. per lb., according to quantity and make.

ACID BORACIC—Is firm at 24s. 6d. per cwt. for crystals and 26s. 6d. per cwt. for powder.

ACID CARBOLIC—Is quiet but steady at prices quoted in our last.

ACID CITRIC—Remains dull of sale, nominal value 1s. 1¼d. per lb.

ACID OXALIC—Steady at 3½d. to 3¾d. per lb., delivered free London.

ACID TARTARIC—Very slow of sale, English crystals are quoted 12½d. per lb. on the spot; Foreign 12d. to 12¼d. per lb.

ALUM—Loose lump is firm at £5 7s. 6d. per ton, ground in bags £6 5s. per ton.

AMMONIA COMPOUNDS—Quiet and unchanged at £9 18s. 9d. to £10 per ton for grey prompt, 24 per cent., London. *Carbonate*, 3d. to 4d. per lb., according to packing. *Bromide*, 2s. 2d. per lb. *Iodide*, 13s. 10d. per lb. *Muriate*, 30s. to 32s. 6d. for chemically pure in small crystals, and 26s. to 28s. per cwt. for the white, free from metals quality. *Oxalate*, 5½d. per lb. *Sal Ammoniac* steady at 35s. and 33s. per cwt. for sublimed firsts and seconds, and 35s. and 37s. respectively for same qualities crushed for batteries. *Solphocyanide*, 1s. 1d. per lb.

ARSENIC—Is unchanged at 18s. per cwt. for powder, and 34s. per cwt. for lump.

ASAFETIDA—Fair sales have been made privately since the auctions at 45s. to 50s. per cwt. for good, and 37s. per cwt. for medium.

BLEACHING POWDER—Is unchanged at £6 per cwt. for English.

BORAX—Supplies are scarce and market is very strong. *Crystals* are quoted 15s. 6d. to 15s. 9d. per cwt.; *powder*, 16s. to 16s. 3d. per cwt.

BROMIDES—Are steady and without change.

CAMPHOR—The market for *crude* whilst quiet is very firm, holders keeping ahead of buyers' ideas of value. *China* nominally 105s. and *Japan* 110s. per cwt., *c.i.f.* terms. *Refined* is unchanged but very firm.

CLOVES—Privately the market for *Zanzibar* is depressed, only small business passing, October to December at 3½d. to 3¾d., January to March at 3¾d. to 3¼d., and March to May at 3¾d. At auction of 160 bales *Zanzibar* 60 bales middling sold at 3¾d. 11 bags *Amboyna* sold at 5d.

COCOA BUTTER.—At the monthly auctions, on Tuesday, 55 tons Cadbury's sold at an average price of 1s. 1d. per lb., as against 1s. 1½d. per lb. in November.

COAL TAR DISTILLATION PRODUCTS.—There are practically no changes in value to report.

COCAINE—Is very firm, makers quote 10s. 9d. per oz. for the *Hydrochlorate* in 100-oz. lots, they state, however, that they will probably have to advance their price still further before very long.

CODEIA.—Makers quote 12s. 6d. per oz. for the *pure*, and 1s. per oz. less for the *salts*.

COD LIVER OIL—Is quiet and weak, prices being nominally unchanged at 80s. per barrel for this year's non-congealing *Norwegian* oil.

GALLS.—This market is very strong, and quotations from abroad come higher. *Blues* are held for 57s. 6d. per cwt.; *Green* are scarce at 50s. per cwt.; *White* 45s. per cwt., and in demand, but supply is practically exhausted.

GINGER.—*Cochin* dull: Of 220 bags rough only 65 bags D lean rough small and ends sold at 19s.: of 141 cases cut kinds, only 10 cases medium limed native chiefly cut sold at 52s., and case bold A cut at 80s.; the remainder bought in, B at 62s. 6d. to 65s., C at 40s.; of *Jamaica* only 12 barrels offered and bought in at 88s.

GLYCERIN—Is rather weaker at 50s. to 52s. 6d. for *English*, and 52s. 6d. to 60s. per cwt. for *German*, according to brand, etc.

GUM MASTIC.—There has been good enquiry, but no business has resulted. Clean pale tear is held for 2s per lb.

GUM TRAGACANTH.—Supplies are falling off and stocks are diminishing. "Firsts" are quoted £14 10s. per cwt.; "seconds," £12 10s. per cwt.; "thirds," £11 10s. per cwt., and other qualities down to £6 per cwt.

IODIDES—Are steady at late advance of 3d. per lb., as reported last week.

JAPAN WAX—Quiet at 32s. 6d. per cwt. for good squares.

MERCURIALS.—In spite of two successive rises of 2s. 6d. per flask each in price of *Quicksilver*, makers of *Mercurials* have not been able to agree upon an advance in same. Prices, therefore, remain unchanged from last week.

MORPHIA—Quiet at 5s. per oz. for the *Hydrochlorate powder*.

OILS (ESSENTIAL).—*Star Aniseed* is firm on the spot at 6s. 2d. per lb. *Cassia* steady at 4s. 3d. to 5s. per lb., according to quality. *Peppermint*, American *H.G.H.* quiet, 5s. 6d. per lb.; Wayne county, 3s. 3d. to 3s. 10d. per lb. *Citronelle*, 1s. 1d. per lb. *Wintergreen*, 6s. 3d. to 7s. per lb. *Eucalyptus*, 1s. to 2s. 6d. per lb., according to quality. *Cajaput* firm at 4s. per bottle. *Lemon-grass* steady at 3¼d. per oz.

OILS (FIXED) AND SPIRITS.—*Linseed*: The market is again lower; on the spot, pipes, London, £16, barrels, £16 10s. *Rape*: slightly easier, with but little doing; ordinary brown on the spot, £21 5s. to £21 10s.; refined, spot, £23. *Cotton*: very quiet, but unchanged in value; London crude, spot, £12 7s. 6d.; refined, spot, £13 17s. 6d. to £14 10s., according to make. *Olive*: green oils steady at £29 to £32 per tun. *Coconut* in active demand; Ceylon, on the spot, £26 10s.; *Cochin*, spot, nominally £31. *Turpentine* again dearer, with a strong feeling; American, on the spot, 28s. 9d. to 29s. per cwt. *Petroleum* dearer; Russian, spot, 5¼d. per gallon; American, spot, 6¾d. gallon; water white, 7½d. per gallon. *Petroleum Spirit*: American, 7¾d. gallon; deodorised, 8d. per gallon.

OPIUM—Is quiet and practically without change in prices, which are, however, if anything, a trifle weaker.

PHENACETIN—Is quiet at 3s. 9d. to 4s. 3d. per lb. for best makes, either *crystals* or *powder*.

POTASH COMPOUNDS.—*Bichromate*: 3½d. per lb. *Bicarbonate*: 30s. to 35s. per cwt., according to quantity, for crystals or powder. *Bromide*: 1s. 10½d. per lb. *Chlorate*: 3¾d. to 4d. per lb. *Oxalate*: Neutral, 5d. per lb. *Iodide*: 10s. 6d. per lb. *Permanganate*: Large crystals, 55s. per cwt., small crystals being quoted 5s. per cwt. less.

QUICKSILVER.—There have been two successive advances of 2s. 6d. per bottle in this article during the week. Importers' price is now £7 15s., while second hand as usual offers at a slightly lower figure.

QUININE.—It is reported that the bark sales held to-day in Amsterdam went at about 5 per cent. higher prices, and it is stated that some of the German makers quote *Sulphate of Quinine* 10½d. per oz. for 1000-oz. lots, without engagement, however.

SCAMMONY.—*Virgin*: stocks increasing, but demand is slow. "Firsts" are held for 30s. per lb. *Resin* in fair demand, 6s. 6d.

to 6s. 9d. per lb. *Roots*: holders are firm and decline reasonable bids.

SENNA (ALEXANDRIAN).—The new crop which is now coming in slowly sells readily at 4½d. to 7d. per lb. for broken to fair leaf. The large stocks of old crop cannot be moved, although holders are very pressing for bids.

SODA COMPOUNDS.—*Crystals* are steady at 55s. per ton, ex-ship "Thames." *Ash*. £5 to £5 10s. per ton here, according to strength and packages. *Bicarbonate* quiet at £7 5s. per ton for the 97 per cent., and 18s. 6d. per cwt. for the fully bicarbonated quality. *Bromide* steady at 2s. 1½d. per lb. *Bichromate* 2¾d. per lb.; *Caustic*, 70 per cent., £7 10s.; 60 per cent., £6 10s. per ton. *Hyposulphite*, 6s. 6d. to 8s. per cwt. *Iodide* unchanged at 11s. 10d. per lb. *Nitrate* commercial £7 12s. 6d., *refined* £8 per ton.

SPICES (VARIOUS). *Black Pepper*: All bought in; Singapore at 4¾d.; Aleppy, 4½d. *White Pepper* mostly bought in; 10 bags Penang sold at 7¾d.; Siam bought in at 8d., and Singapore at 8d. to 9d. *Chillies* lower; 220 bags Zanzibar sold at 33s.; 9 cases Japan sold at 36s. *Capsicums*: 1 bale Natal sold without reserve at 60s.; 40 bales West Coast African bought in at 29s. *Cassia Lignea*: 414 boxes bought in at 51s. to 56s.; also 476 bales broken at 35s. to 40s. *Mace*: Penang bought in at 1s. 7d. to 2s. 3d.; 31 packages West India sold at 1s. 4d. to 1s. 6d. *Pimento* dull and bought in at 4¾d.

SUGAR OF LEAD.—*English* is still quoted 31s. per cwt., whilst *foreign* is firm at 26s. 6d. per cwt.

SULPHATE OF COPPER.—Is very firm at £18 5s. to £19 5s. per ton, according to brand.

SULPHONAL.—Makers' price is 17s. per lb., there bring still some sellers from second-hand at a lower figure.

SULPHUR.—*Firm*. *English*: Roll 7s. 6d. to 8s. per cwt., flowers 10s. per cwt. *Foreign*: Roll 6s. 6d. per cwt., flowers 7s. per cwt.

To-day's drug sales passed off very quietly, a considerable number of the lots offered being bought in. The following are particulars of prices ruling and obtained. Next drug auctions will not take place until January 19.

ALOES.—5 cases of very low quality and very heavy sold at 10s. per cwt. 4 cases fair *Cape* taken out at 23s. per cwt. 18 kegs fair *Socotrine* at 75s. per cwt.

AMMONIACUM.—28 cases all sold at 45s. per cwt. for good clean block, some loose; 32s. to 33s. for fair block, slightly dark, and 23s. to 24s. per cwt. for dark.

ANATTO SEEDS.—3 bags dullish were held for 2¾d. per lb.

ANTIMONY.—50 cases *Japan* crude bought in at £23 per ton.

ARECA NUTS.—5 bags of medium quality, slightly wormy, were taken out at nominally 35s. per cwt.; a bid of 26s. would, however, probably have been accepted.

BALSAM COPAIBÆ.—Of 5 cases 2 cases sold at 1s. 7d. per lb., balance being taken out at 1s. 9d. per lb.

CANELLA ALBA.—3 bales were bought in at 65s. per cwt.

CARDAMOMS.—Good pale *Malabar* part sold at 2s. 5d. per lb., subject to approval. 2 cases fair *wild* were bought in, a bid of 1s. 6d. per lb. not being entertained. 2 cases fair seed sold at 2s. 11d. per lb., subject to approval.

CASCARA SAGRADA.—118 bags thick bark were taken out at 30s. per cwt.

CASTOR OIL.—25 cases medium seconds East Indian were held for 3¾d. per lb.

CASTOREUM.—1 tin nett 4 lbs. 2 oz., held for 65s. per lb.

CINCHONA BARK.—80 bales thick *Yellow Bark* partly sold at 8d. per lb., hard flat ditto being taken out at 1s. 1d. per lb. 37 bales *Carthagena* were held for 5½d. per lb.; 5 bales *Maracaiho* for 5d. per lb.

COCA LEAVES.—28 bales *Ceylon Huanoco* were held for 1s. 3d. per lb. *Truxillo* for 10d. per lb.

COD LIVER OIL.—2 casks *Norwegian*, per "land carriage," 1898, were bought in at 70s. per barrel.

COLOCYNTH.—6 cases dark *Turkey*, partly broken, were held for 1s. per lb.

COLOMBO ROOT.—60 bags were bought in at 40s. per cwt. for fair washed down to 20s. for pickings.

CROTON SEEDS.—12 bags were bought in, 80s. per cwt. for good.

ESSENTIAL OILS.—4 tins *Essence Neroli Portugal* sold at 3½d. to 4d. per oz. *Eucalyptus*: 11 case, commercial, held for 1s. 2d. per lb. 4 cases *Globulus* bought in at 2s. 2d. Dodge and Olcott's *Clove*, at 2s. 9d. per lb. Dodge and Olcott's *Sassafras*, at 1s. 8d. per lb. 4 cases *Cedarwood* held for 1s. 1d. per lb. 20 coppers,

each 25 lb., *Oil of Lemon*, good fair quality, sold cheaply at 2s. per lb. nett. 11 cases *Cassia* (50 to 55 per cent. *Cinnamic Aldehyde*), sold at 3s. 11d. per lb., with exception of last case, which fetched 4s. per lb.

CUTTLE FISH BONE.—9 boxes small, partly broken, were held at 2d. per lb.

DAMIANA LEAVES.—5 bales rather yellow were bought in at 7½d. per lb.

DILL SEEDS.—20 bags were taken out at 15s. per cwt.

DRAGONS' BLOOD.—2 cases from the Continent, of which ¼ dull seedy, ¾ fair bright lump, were bought in at £10 per cwt.

ERGOT OF RYE.—10 cases fair sound Spanish were taken out at 2s. 9d. per lb.; rather less, however, would probably have been accepted; 4 bags good bold ditto, slightly weevily, sold at 2s. 10d. per lb., small ditto being held for 1s. 8d., while 20 bags weevily (sifted June 6, 1897), sold without reserve at 1s. per lb.

GAMBOGE.—Of 10 cases only 4 cases sold at £6 to £6 10s. per cwt. for fair part dull.

GENTIAN.—25 bales fair dry root, part sold previously, balance held for 17s. 6d. per cwt.

GUINEA GRAINS.—Of 10 bags of fair quality part sold prior to auction, balance being held for 65s. per cwt.

GUM ARABIC.—4 cases pale grain *Turkish* were held for £6 15s. per cwt.; 2 cases picked gum for £6; 10 serons good sorts selling for 80s. per cwt., 10 bags siftings held for 30s. per cwt.

GUM BENJAMIN.—Medium to low seconds *Sumatra* sold at £5 17s. 6d. down to £5 2s. 6d. Two cases *Siam*, part dust, part bold, and part blocky bought in at £15 per cwt.

GUM OLIBANUM.—15 bags were taken out at 20s. per cwt.

GUM THUS.—13 barrels of fair quality bought in at 16s. per cwt.

HONEY.—21 cases *Californian* were held for 37s. per cwt.; 32 packages *Jamaica* part sold at 19s. 6d. to 20s.

IPECACUANHA.—Of the quantity offered practically none was sold, *Rio* being bought in at 9s. 9d. per lb. up to 10s. 3d., while *Carthagena* was variously held for 6s. 10d. up to 7s. 6d., and even for 8s. per lb. for fine bold picked. The market appears to be somewhat weak, and the advent of 50 bales just arrived has not tended to strengthen prices.

JALAP.—3 bales, sample of which was not available, were held for 7d. per lb.

KAMALA.—6 cases good bright were bought in at 7d. per lb.

KOLA NUTS.—14 bags good bold nuts, but slightly mouldy, were bought in at 6d. per lb.; 15 bags also bought in at 5d. per lb. for good bold, and 3d. per lb. for cut.

MUSK.—7 caddies *Tonquin* were bought in at 72s. 6d. per oz.

ORANGE PEEL.—Fair thin cut was held for 7d. per lb.; thick for 3d.

ORRIS ROOT.—7 bags medium *Verona* sold without reserve at 23s. per cwt.; 13 bags fair *Florentine* being held for 39s.

OTTO OF ROSES.—2 vases, each about 25 oz nett, sold without reserve at 15s. per oz. (*Turkish*).

QUININE SULPHATE.—1 case containing 10 cases, each 100 ozs., *Taillander* brand, were bought in at 10d. per oz.

PEACH KERNELS.—7 bags, which were offered as *Bitter Almonds*, were held for 40s. per cwt.

RHATANIA ROOT.—6 bales were held for 6½d. per lb.

RHUBARB.—Good medium flat high dried was held for 1s. per lb., small ditto for 10d. Small trimming root round *Canton*, grey and pinky fracture, for 1s. 4d., small pickings of rather better colour selling at 1s. per lb. Good flat held for 1s. 8d., medium round fair colour part dull for 1s. 1d. to 1s. 3d. per lb. Very rough and slightly wormy round *Shensi* sold at 1s. 1d. per lb., good bold round trimming root held for 3s., ditto flat rather rough for 1s. 9d. per lb.

SARSAPARILLA.—16 bales good *Jamaica* all sold readily at 1s. 7d. per lb. for sound, down to 1s. 5d. per lb. for 2CSD. 10 bales *Lima* part sold at 1s. per lb. for 1 and 2CCD. 1 bale *Guayaquil* sold at 1s. 1d. per lb. for 2CCD.

SENEKA ROOT.—5 bales of fair quality were held for 1s. 3d. per lb.

SENNA.—About 150 bales *Tinnevelly* offered, quality being very inferior on the whole. Common dark small leaf sold 1½d. per lb.; small spotty ditto, 2d. to 2½d. per lb.; medium leaf, 3d. to 3½d. per lb. Arrivals are coming in very slowly, but probably by the next auctions on January 19 an accumulation will have taken place. No sales of *Alexandrian* leaf were effected in the auctions. 27 bales *Mecca* were bought in at ¾d. per lb.

SQUILLS.—61 bags of fair quality held for 3d. per lb.

THYME SEED.—2 bags sold at 6s. per cwt.

TONQUIN BEANS.—5 cases *Paras* were bought in at 1s. 3d. per lb.

TURMERIC.—1 bag sold very cheaply at 8s. per cwt. 48 bags *China* were taken out at 22s. per cwt.; 26 bags *Madras* finger at 33s. per cwt.

VERMILION.—5 cases *China* were bought in at 2s. 1d. per lb.

WAX.—73 packets *Madagascar*, part sold, at £5 15s. to £6 per cwt. 13 bales *Spanish* bought in at £6 12s. 6d. 16 cases fair *East Indian*, part sold at £6 12s. 6d. per cwt.

Newcastle Chemical Report.

DECEMBER 7, 1898.

This market continues quiet and shipments of heavy goods decreased, owing to the higher Baltic navigation being now about closed. Quotations are:—Bleaching Powder, according to market, £5 to £5 10s. Soda Crystals, basis price, 45s. Caustic Soda, 70 per cent., £7. Soda Ash, 52 per cent., £4 5s. Alkali, 52 per cent., £5 5s. Sulphur, £4 15s. to £5 per ton.

Liverpool Market Report.

DECEMBER 7, 1898.

AMMONIA SALTS.—Carbonate, 3d. per lb. Sal Ammoniac, 33s. to 35s. per cwt. Sulphate, £10 2s. 6d. per ton. All ammonia salts are very firm.

BEEWAX.—32 packages *Gambia* sold at £6 11s. 3d. per cwt. and 46 packages *Sierra Leone* at £5 12s. 6d. to £6 per cwt.

CANARYSEED.—Enjoys a fair inquiry, but sales are small. 500 bags of *Turkish* sold at 28s. per 464 lbs. The price is from 28s. to 29s. 6d.

COPPERAS.—Is quiet but firm at 37s. to 39s. per ton.

COPPER SULPHATE.—Remains firm at £18 per ton; £19 spring delivery.

KOLA NUTS.—183 packages of good dried were disposed of at 2d. per lb. ex store.

LINSEED.—Is dull, prices are high, and crushers well supplied, so that sales are small; 150 bags of *Turkish* "feeding" sold at 41s. to 41s. 6d. per 416 lbs. ex store, and small sales of *Bombay* from the quay at 40s. 6d. per 416 lbs.

OILS (FIXED) AND SPIRITS.—*Castor* is easier and quiet. *Calcutta* "good seconds," 2½d. per lb., at which price some 1000 cases to arrive during the first quarter of next year have been sold. *French*, 1st pressure, 2¼d. to 2½d.; and *Madras*, 2¾d. per lb. *Olive* is steady, but business done does not amount to much; *Spanish* oil is £29 to £30 per tun. *Linseed*, of *Liverpool* make in export casks, is quiet at 17s. 9d. to 18s. 6d. per cwt. *Cottonseed*: *Liverpool* refined sell slowly at 15s. to 15s. 6d. per cwt. *Spirits of Turpentine* is firm at 29s. 9d. per cwt., with a fair to moderate demand.

SODA SALTS.—*Bicarbonate*: £6 15s. per ton. *Borax*: £15 to £15 10s. per ton. *Caustic Alkali*: 76 to 77 per cent., £7 12s. 6d. per ton; 70 per cent., £6 18s. 9d. *Crystals*: £3 per ton. *Nitrate* continues quiet at 7s. 6d. to 7s. 7½d. per cwt.

POTASH SALTS.—*Chlorate*: 3¾d. to 4d. per lb. *Cream of Tartar*: Sales of *Spanish* at 72s. per cwt.; *French* offered at 73s. *Pearl-ashes* slack at 34s. 6d. to 35s. per cwt. *Potashes* offering at 25s. to 25s. 6d. per cwt. *Saltpetre*: 22s. per cwt.; 20 bags of *Karachi* sold at 17s. per cwt.

Manchester Chemical Report.

DECEMBER 6, 1898.

The course of affairs locally is in the direction of some activity, although Caustic Soda is still a doubtful quantity. In regard to heavy chemicals there is no change generally, though in miscellaneous articles there is still an upward tendency. Sulphate of Copper is unchanged, and there is no change in Brown Acetate, which closes steady at £5 5s. to £5 10s. Yellow Prussiate of Lancashire make is scarce, and varies from 6¾d. to 7½d. Green Copperas is in demand for export, but without change in price. Acids are dull. During the past week no less than 2,500,000 gallons of Petroleum have been received at this port of Manchester. This is a record consigned to one company at Manchester;

ITEMS OF INTEREST.

COLOURING ANTISEPTIC SOLUTIONS.—In order to minimise, as far as possible, the risk of misadventure the *Zeitschrift für Krankenpflege* proposes that poisonous antiseptic solutions should be thus coloured:—Sublimate solution, with methyl violet, malachite green, Nicholson's blue or with indigo carmine. Phenol, with fuchsin, eosin or safranin. Mercury oxycyanide, with the same colours as with sublimate or with helianthine acid, or aniline orange. Silver nitrate with fluorescin.—*Pharm. Post*, xxi., 320.

PRUSSIC ACID IN CHERRY LAUREL LEAVES.—Ven has experimented on the amount of prussic acid contained in *Folia lauro-cerasi* during the different stages of development. In the month of March, when the new buds have not yet developed, the last year's leaves contained 0.01 to 1.17 per cent., the twigs 0.49 to 0.53 per cent. In May the last year's leaves gave only 0.27 per cent., while shortly before the new leaf-buds developed they indicated 0.9 per cent. The new leaves were found correspondingly richer in prussic acid shortly before they unfolded. The leaf-buds contain 1.98 per cent. and the new unfolded leaves in May 1.9, and in the beginning of June even 2.4 per cent. of prussic acid.—*Pharm. Zeit.*, xlii., 562.

URETHANE AS A SOLVENT FOR QUININE.—The presence of urethane greatly increases the solubility of salts of quinine. Thus 1 gramme of either quinine hydrobromide or hydrochloride may be dissolved in 1 C.c. of hot water by adding half a gramme of urethane. The solution is permanent, neutral, and perfectly non-irritant. As urethane does not influence the action of quinine in any way, concentrated solutions of quinine salts may be prepared by its aid.—*Bull. Com.*, xxvi., 374, after *Répert.*

DECOMPOSITION OF IODOFORM SOLUTION.—It is generally considered that the decomposition of iodoform is due solely to the actinic rays. J. Bougault states, however, that it is a simple process of oxidation. If an ethereal solution of iodoform be hermetically sealed in a flask containing some air and a dilute solution of sodium thiosulphate, iodine will be liberated, which may be washed out from the ethereal layer by agitation as it is formed. At last, however, a point is reached (when all the oxygen in the confined air has been used up) when no further decomposition of the iodoform takes place. If mercury be substituted for the thiosulphate the ethereal solution of iodoform may be removed from contact with the metal as soon as the iodoform ceases to decompose, and it then remains perfectly stable as long as contact with air is avoided. It is found that on washing with water an ethereal solution of iodoform which has undergone decomposition, and removing the free iodine from these washings by agitation with mercury, the presence of formic acid in considerable quantity may be demonstrated.—*Journ. Pharm. Chem.* [6], viii., 213.

IODINE ABSORPTION NUMBER OF OILS.—In order to shorten the process of iodine absorption by the well-known Hubl-Waller method, J. Nijs substitutes a chloroiodine solution in acetic acid for the reagent generally employed. This is prepared as follows: Thirteen grammes of iodine are dissolved and 1 litre of 95 per cent. acetic acid. This solution is standardised against thiosulphate in the ordinary way, and then pure chlorine gas is passed through it until its titre is just doubled. The method employed in determining the iodine absorption is similar to that of Hubl, but the reaction is complete in a much shorter time, from five to ten minutes, contact giving results which, when checked on pure substances of known composition, give an iodine figure nearer to the theoretical requirements than the more prolonged standing in the original Hubl's process.—*Pharm. Cent.*, xxxix., 571.

Receiving Order in Bankruptcy.

(From the London Gazette.)

William S. Adamson, Chemist and Druggist, High Street, Burford, Oxford.

Calendar for Next Week.

Sunday, December 11. 3rd in Advt. Sun rises 7.58; sets 3.49.

Monday, December 12. Sun rises 7.59; sets 3.49.
PHARMACEUTICAL SOCIETY OF IRELAND, 67, Lower Mount Street, Dublin.—Illustrated lecture on "The Chemistry of Incompatibility and Some of its Lessons," by Professor Walter G. Smith.

Tuesday, December 13. Sun rises 8; sets 3.49.
BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION, County Restaurant.—Children's evening, 7 to 9.30.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION, 94, West Regent Street, at 9 p.m.—The discussion on the Pharmacopœia, opened by Mr. T. Dunlop on November 10, will be continued.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN, 17, Bloomsbury Square, W.C., at 12 noon. Meeting for the election of four Annuitants on the Benevolent Fund. An illustrated lecture on "Deep Sea Deposits" will be given by Mr. W. Murton Holmes, at 8 p.m.

Wednesday, Dec. 14. ● 11.43 M. Sun rises 8.1, sets 3.49.
EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION, 36, York Place, at 9.15 p.m.—Mr. George Coull will deal with "The Latinity of the New Pharmacopœia."

FORFARSHIRE CHEMISTS' ASSOCIATION, Queen's Hotel, Dundee, at 4 p.m.—Important meeting.

MANCHESTER PHARMACEUTICAL ASSOCIATION, Chemical Club, Victoria Hotel, at 7.30 p.m.—"The Pharmacy Act and its Literal Interpretation" is the title of a paper to be read by Mr. J. Rymer Young, member of the Council of the Pharmaceutical Society,

NEWCASTLE-ON-TYNE AND DISTRICT CHEMISTS' ASSOCIATION, Métropole Hotel, at 8 p.m. Annual smoking concert, the President, Mr. F. E. Schofield, in the chair.

NOTTINGHAM AND NOTTS CHEMISTS' ASSOCIATION, Albert Hotel, at 9 p.m. Paper by Mr. Eberlin, entitled, "Some Brief Notes on the More Important Preparations of the New B.P., more especially in their Relationship to the Food and Drugs Act."

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION. Meeting to discuss the present condition of the craft or trade and the proposed reforms.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY, New Surrey Street. "Company Pharmacy" will be dealt with by Mr. George Squire (President).

Thursday, December 15. Sun rises 8.2; sets 3.49.

BRISTOL PHARMACEUTICAL ASSOCIATION, Grand Hotel, Broad Street, at 9 p.m.—Meeting to consider the position and prospects of the retail trade.

CHEMICAL SOCIETY, Burlington House, Piccadilly, London, W., at 8 p.m. Papers to be read on "The Interaction of Ethylic Sodiomalonnate and Mesityl Oxide," by A. W. Crossley; on "Derivatives of Camphoric Acid, Part III.," by F. S. Kipping; and on the "Synthesis of a $\beta\beta$ Trimethylglutaric Acid," by W. H. Perkin, jun., and J. F. Thorpe.

CHEMISTS' ASSISTANTS' ASSOCIATION, 73, Newman Street, London, W., at 9 p.m. Musical and Social Evening.

Friday, December 16. Sun rises 8.2; sets 3.49.

CAMBRIDGE PHARMACEUTICAL ASSOCIATION, Dale's Assembly Rooms, Alexandra Street, at 9.15 p.m. Mr. A. Sidney Campkin will deliver an address on "Pharmaceutical Politics."

Saturday, December 17. Sun rises 8.3; sets 3.49.

Obituary.

LESLIE.—On November 28, Joseph Blackburn Leslie, Chemist and Druggist, Leeds. Aged 52.

PLUMBLY.—On November 29, Walter Plumbly, Chemist and Druggist, Beccles. Aged 46. Mr. Plumbly, who was an Associate of the Pharmaceutical Society, had carried on business in the town as a Chemist and Druggist for nearly ten years, and was highly respected. The funeral took place on Friday, December 2, amid general marks of sympathy and esteem. He was followed to the grave by members of the "Apollo" Lodge of Freemasons, of which he was elected Worshipful Master last July.

WARD.—On November 29, David Ward, Chemist and Druggist, Chipping Ongar. Aged 77.

Advertisements.

(Received too late for Classification)

ASSISTANT wanted, early in January, 1899, qualified, as Dispenser. Apply, stating full particulars of previous experience and stating height to ROBERTS & Co., 76, New Bond St., W.

ENGAGEMENT wanted as Qualified MANAGER or ASSISTANT. Age 50. Married. Out-door or management of branch, J. S., 15, Cherson Ter., Wood Green.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

OFFERED.

Magic Lanterns, second-hand; triples and binials; oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s. —Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Wholesale and Retail Druggists: Advertiser is overstocked with superfine oil of lemon in 10-lb. coppers, and solicits offers; 1-lb. sample delivered free 2s. 9d. —Moss, 34, Avondale Road, Chorley.

For Sale.—Overstocked: 3 doz. 2-oz., 12s. 9d., 2 doz. 4-oz. 16s. 6d. Helm Cocoa; 10 2-oz. 6s. 3d., 9 4-oz. 10s. 6d. Altermarkt Cologne; unsoiled.—7, Church Hill, Walthamstow.

All New, unsoiled, bought before advance, hot water bottles, best quality. Maroon plush covers (detachable) included, 10 by 6, 4s.; 12 by 8, 5s. 10d.; 12 by 10, 6s. 6d.; 14 by 10, 7s. Sponge bags, best quality, silk cords and bindings, full sizes, as Maw's, eight dozen, assorted, Nos. 2, 4s. 6d.; 3, 6s.; 4, 7s. 6d.; 5, 9s.; 6, 10s. 6d. Tooth stopping wrapped pink paper, as Stevens', gross box, 2s. 6d.; 3 dozen 3d. sticks, 2s. 6d. Hypodermic syringe, complete, 'cased', 1s. 6d. Post free 10s. lots. Cash returned if sold.—Warnes, Chemist, 333, Gray's Inn Road, W.C.

Manufacturer's Stock.—Hospital clinicals, English guaranteed, in cases, 1s. each, post free; 30-second ditto, 2s. each; approval.—Howard, 3, Church Road, Wimbledon, Surrey.

4 doz. 1s. 1½d. Nurse Powell's pills, 6s. 6d. doz.; also several doz. 1s. Hay's infants' food, Oppenheimers' palatinoids, ovaline soap 1s. syrup of figs, 3s. 6d. doz.; new stock and in good condition. What offers?—Bailey, Chemist, Lichfield.

One Barr's Ear Trumpet, see Bailey's list, never used, cost 21s., will take 12s. 6d.—Meyler, Chemist, Milford Haven.

Artificial Pin Leg, India-rubber Female Urinal, and Spinal Jacket, 10s. the lot.—Chemicus, 88, Sussex Road, Holloway, N.

Wills' 'Mat. Med.' (new), 3s. 8d.; Attfield's 'Chemistry' (1893), 8s.; Vines 'Botany' (4th edition), 4s.; Roscoe's 'Chemistry' (1892), 2s. Also various matriculation books, good condition. Post free.—Beeny, 47, Ashchurch Grove, W.

Valuable herbarium for sale, containing 200 typical British plants, all correctly named, mounted on stiff cardboard, in excellent preservation, price £2 5s. carriage paid.—Exell, 27, High Street, Sheffield.

Quantity of chemicals for laboratory, all in bottles, for sale, half price; also Fletcher's furnaces, gas generator, etc.—Holden, 69, Avenell Road, Highbury.

Nelson's Aplanatic Bull's-Eye, cost 30s., will sell for £1; also Microscopic Lamp, cost 10s., will sell for 5s., both in good condition.—W., Lynton House, Redruth.

Robert H. Clarke's Specialties.—Lantern, with 4 in. condensers and 3 wick lamps, 17s. 6d.; with 4 wick lamps, 18s. 6d. Slides, sale or hire, Conquest of Soudan, Spanish American War. Catalogue free.—Robt. H. Clark, Royston, Herts.

50,000 Choicest Microscopical Objects, bargains. Catalogue free. New and second-hand Microscopes, Cabinets, Mounting Materials, etc. Microscopes and collections purchased.—Richard Suter, 10, Highweek Road, South Tottenham, Middlesex.

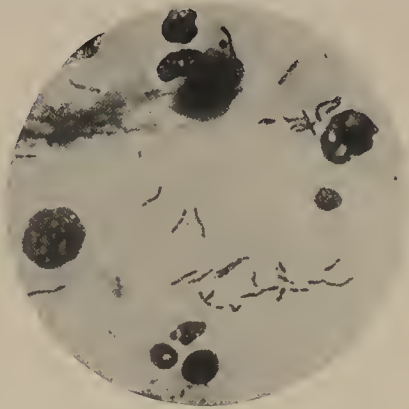
WANTED.

Old Electric Lamps and Scrap Platinum for prompt cash.—P. Rowsell, 9, Derwent Grove, East Dulwich, London, S.E.

Erasmic Herb Soap, and Premier Violina Soap, and Daisy Powders Carriage paid. State quantity and price.—Eastman, Forest Lane, Stratford.

Oxygen cylinders, subject to examination, by Manchester Oxygen Co.—Whitfield, Chemist, Scarborough.

COMMUNICATIONS, LETTERS, NEWSPAPERS, etc., have been received from Messrs. Adams, Allen, Attfield, Batley, Bell, Boyd, Burnett, Clague, Clay, Cornwell, Cowley, Cross, Davies, Delves, Donnan, Dunstan, Floyd, Gamble, Gifford, Glaisher, Green, Harley, Barrison, Howitt, Jones, Keen, Kesterton, Lee, Letch, Lennon, McAllister, McWalter, Merson, Metcalf, Minchin, Pickard, Proctor, Reynolds, Saunders, Sharman, Sharp, Shaw, Spottiswoode, Thomson, Toone, Walker, Wheeler, White, Williams, Wokes, Young.



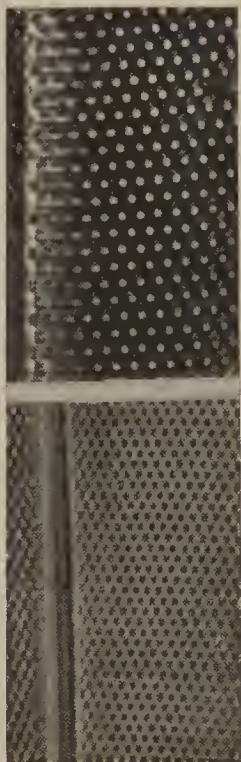
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Sputum X 1000.



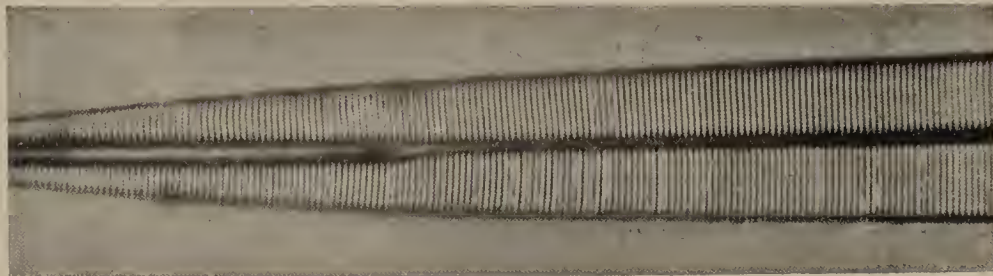
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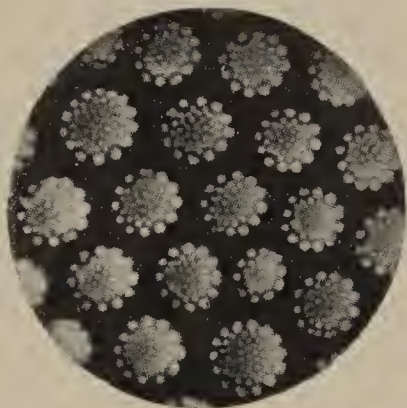
3. STREPTOCOCCUS PYOGENES X 1000



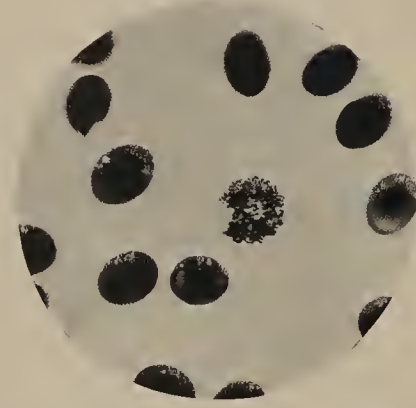
5. PLEUROSIGMA ANGU-
LATUM X 1000.
"White pearl dot" and
"Black dot."



4. AMPHIPLEURA PELLUCIDA KÜTZ X 3365. Taken direct.



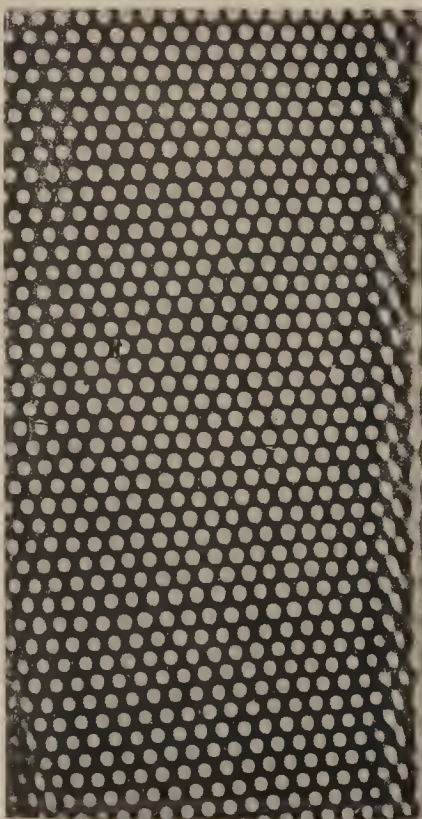
6. COSCINODISCUS ASTEROMPHALUS
X 1000. Secondary markings.



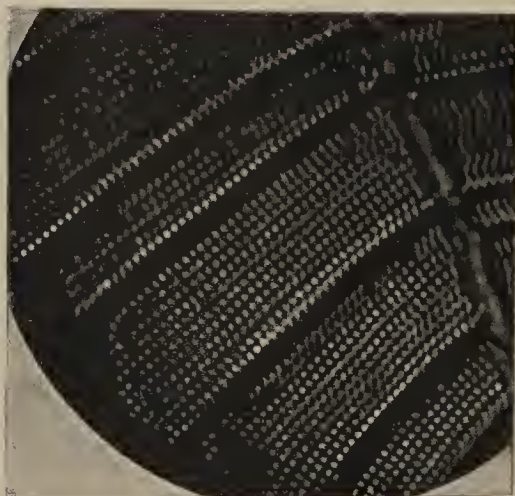
7. EOSINOPHYLL CELL (Frog's Blood)
X 850.



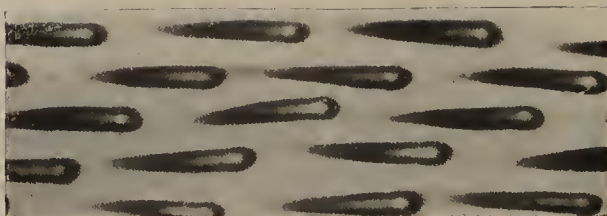
8. NAVICULA RHOMBOIDES X 1200.
Enlarged from 1000 diameters.



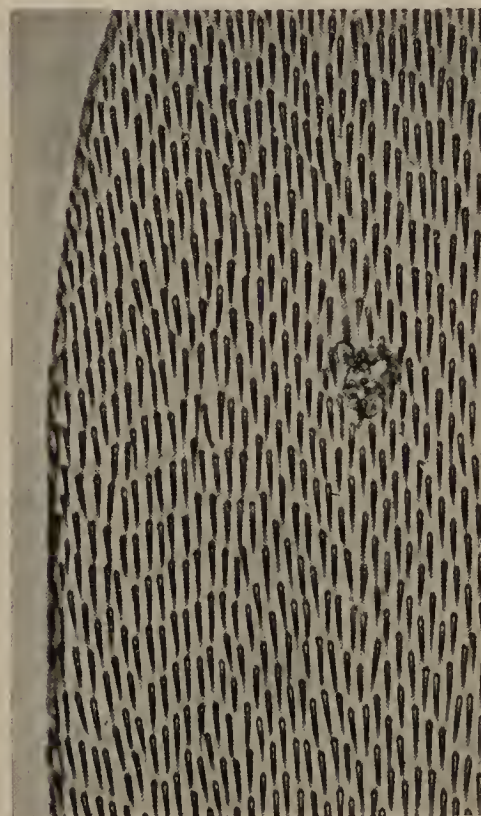
10. PLEUROSIGMA ANGULATUM X 2000.
Enlarged from 1200 diameters.



9. SURIRELLA GEMMA X 2000. Taken direct.



11. A PORTION OF FIG. 12 ENLARGED TO SHOW DETAILS
OF "NOTE" X 2500.



12. PODURA SCALE X 1000.

SCHOOL OF PHARMACY NEWS.

THE STUDENTS' ASSOCIATION cannot be altogether congratulated on the result of the meeting on Friday week (see p. 654). As ably pointed out by Mr. Payne, division of the Minor examination would be disastrous to the best interests of pharmacy. It would entail increased expense, and it is very certain that chemists cannot afford to pay their assistants more than they do to-day; for if they paid better salaries they must extract this increase from the pockets of the public, and they would by such means only drive the public to the stores, or to the grocers, who, having smaller expenses, would be able to sell miscellaneous articles at lower prices than the chemist. Since the business of a chemist consists, at the present time, in dealing in many articles which any tradesman might sell, there is good reason to think that anything tending to increase expenses would be inimical to the welfare of the trade at large throughout the country.

THE ASSOCIATION is now numerically strong; the increasing number of students in the Society's School, year by year, has resulted in an increased membership, and there are now over seventy names on the books, including a dozen ladies.

THE NEXT MEETING will be after the vacation, on Friday, January 14, when Mr. T. E. Wallis will read a paper on "A Materia Medica Cabinet." Mr. Chapman, the holder of the Burroughs' Research Scholarship, will read a communication on January 28, entitled "Photography and the Chemistry Relating to the Principal Processes connected therewith."

THE ADDRESSES of all the members are not in the books, and any members who do not receive notices of meetings are invited to send their addresses to the Secretaries.

IT IS UNDERSTOOD that one of the students is engaged in experiments on the emulsification of lard. His fellow students heartily wish him success, and hope he will embody his results in a practical paper for the benefit of the Association.

THE FIRST INTER-PHARMACEUTICAL MATCH of the season was played at Shepherd's Bush, on Saturday, when a strong team from the Square was opposed by one from the South London School of Pharmacy. The first half of the game was very keenly contested, resulting in a goal for the Square, from a very good shot by Lloyd. Shortly after crossing over this was equalised by a rush of Muter's men, now reinforced by the arrival of a missing player, but from this point to the end of the game the Square had decidedly the best of it, three more goals being scored, of which one was disallowed by the referee, Lloyd and Warren being responsible for the two additions. Several alterations were made with regard to the positions of the men in the team, which seem to have worked out with good results, and augur well for the future. Next Saturday the Royal Artillery Company's ground at Finsbury will be the scene of what promises to be one of the most interesting matches of the season, since both games last year were drawn. It is therefore hoped that Squaremen will turn up in great force.

THE FOOTBALL CLUB's re-arrangement of the field may interest some readers. Padwick remains in goal, and Gray keeps at back; the latter is joined by Stokoe, whose weight should be of more service in that part of the field. Durbin, Evans, and Collenette should prove a useful trio as "halves." Garsed is the new centre forward, Wild (Captain) and Wilkinson play right forward, Lloyd and Warren on the left.

LAST SATURDAY there was something wrong about the ground. The usual plot had been allotted to others, consequently the accommodation available as a dressing-room for visitors was little better than a cowshed. Sincere apologies are offered.

"A MERRY CHRISTMAS" will shortly be the correct form of greeting, and the opportunity may be taken to advise students not to work too hard during the vacation, even though they may not have done so well as they could have wished at the Christmas revisions, which, from a student's point of view, are a great hindrance to the enjoyment of the coming festive season.

SCOTTISH NEWS.

EDINBURGH ROYAL DISPENSARY SCHOOL.—The eleventh annual supper of the students attending this school took place at the Imperial Hotel on Friday, December 9. Mr. William Duncan, Principal, occupied the chair, and Messrs. W. G. Mackenzie and C. M. German, Demonstrators, acted as principal croupiers. Among others present were J. Laidlaw Ewing, J.P., Peter Boa, C. A. Macpherson, George Coull, B.Sc., J. Rutherford Hill, etc. The Chairman, in proposing "The Pharmaceutical Society and Boards of Examiners," said students were naturally ready to air grievances against the Board of Examiners, and those grievances, real or imaginary, were usually charged against the Pharmaceutical Society, but that was an entire mistake. He thought they should all support the Society. Loyalty to the Society did not necessarily mean support of the present Council any more than loyalty to one's country meant support of the present Government. They were quite entitled to join the Society, and if they thought necessary to turn out the present Council and fill their places with men who were in sympathy with their wishes.—Mr. J. Laidlaw Ewing in acknowledging the toast, said they might take it from him that examiners were anxious to be fair and just to every candidate, and he would much rather give a man the handshake of congratulation on his success than send him away. He was glad Mr. Duncan had spoken as he did of the Pharmaceutical Society. It was the only body they could join with any prospect of benefiting their craft. He would direct their attention very specially to the recent extension of the pharmaceutical franchise, which opened up all the privileges of full membership to every registered chemist, and he would strongly urge them all to join the ranks so as to make the Society a large and powerful body that would be thoroughly representative of the whole craft of pharmacy.—Mr. Rutherford Hill, in proposing "The Pharmacy Students," said the arrival of the Gay Gordons in the city that night reminded them of what could be done by resolute and determined men in carrying to success a difficult task. The military exploits of the Sirdar were also fresh in every mind, and much might be learned from that campaign that was of value to the pharmacy student. Lord Kitchener had a definite purpose, and in the desert of Dongola, as in the pharmacy school, he diligently made complete preparation. In the battle of Atbara, as in the Minor examination, he proved his fitness to command the crowning victory of Omdurman, which symbolised the battle of life. Many made the fatal mistake of regarding the Minor examination as the goal; it was only Atbara, and the battle of life was the pharmacist's Omdurman.—Mr. Hird replied.—Other toasts were "The Ladies," by Mr. Petrie, reply by Mr. Hird; and "The Chairman and Croupiers," by Mr. A. Anderson. Several members of the Carl Rosa Opera Company were present, and took part in the musical programme. There was a large attendance, and the proceedings were carried through with great enthusiasm.

MASONIC.—Brother John Strachan, chemist, Jedburgh, was last week installed R. W. M. of Lodge St. John, No. 164.

GLASGOW SCHOOL OF PHARMACY.—On Monday, December 12, the students of this school, under the guidance of Mr. John Lothian, Principal, visited the City Glass Works of Messrs. Couper and Co. Flint glass is exclusively used in those works, the ingredients being silver sand (from Fontainebleau), red lead, sodium carbonate, and a small proportion of potassium nitrate. These are fused up with "cullet" in fire clay "pots." The furnaces in which twelve "pots" are heated are fired from underneath and go on continuously for about ten years. The ruby glass is coloured with purple of Cassius. Great care has to be taken to keep the pots from the direct action of the flame, and some interesting effects of the oxidation and reduction of coloured glass were shown by the manager. The party was treated to an interesting demonstration in glass-blowing, glass flasks, fancy lamp shades of different colours and designs, all made by hand. On Tuesday the St. Rollox Chemical Works of the United Alkali Company were visited. The manufacture of vitriol, muriatic acid, bleaching powder, and soda crystals was practically demonstrated in a terse and fascinating manner by one of the chemical staff. A commencement was made at the vitriol plant, which comprises about thirty condensing chambers and eight each Gay Lussac and Glover towers, an enormous amount of vitriol being turned out there. After

precipitating the arsenic from the crude acid, it is concentrated in platinum vessels, the total value of which is about £40,000. The manufacture of hydrochloric acid was next witnessed by the action of vitriol on rock salt and the gas condensed in towers. The hydrochloric acid is treated with pyrolusite in the chlorine stills and the chlorine passed into slaked lime to form bleaching powder. The manganese dioxide is regenerated from the still liquor by the "Dunlop" process. Chalk is ground into a thin cream with water and mixed in large cylinders by means of mechanical stirrers. The mixture is subjected to a steam pressure of 40 lbs. The manganous carbonate resulting from the double decomposition is placed on trays and heated to a temperature between 600° and 700°, when the CO₂ is driven off and it is oxidised into manganese dioxide. This is in the form of a very fine powder, and is of more than double the value of the original pyrolusite. The company manufacture their own gas, and the proceedings terminated by an inspection of the gasworks and the famous "stalk."

FRENCH NEWS.

CONGRESS.—Amongst the many congresses for the Exposition of 1900 relative to medicine and the allied sciences, our homœopathic *confrères* have apparently no intention to be outdone, for a homœopathic congress has recently been authorised.

HIS CONFRÈRES THE GROCERS.—A somewhat amusing though withal troublesome incident occurred a few days ago, in which a Nice pharmacien figured. A parcel post expedition of medicated bougies being addressed to him, he was notified by the Nice Octroi or Town Customs authorities of its arrival, at the same time requesting him to furnish a declaration of its contents. This he accordingly did, declaring them as "bougies." But, unfortunately for him, these minions of the law were only acquainted with one kind of "bougie," which, in French, means "candle" (the duty upon which, whether they be wax or stearine, is outrageously high), and in consequence assessed the lot as candles and presented him with the toll bill. On remarking to the officer that he had never paid such a rate of duty upon previous consignments of bougies, he was almost floored by the observation "that he must pay the same duty as the rest of his *confrères* the grocers." To be reduced to the level of a grocer was indeed too much for the dignified pharmacien, and explanations followed, as a result of which the officer learned that there were "bougies" and "bougies," and accordingly fixed a price agreeable to our *confrère*.

A CASE which, in the near future, may prove of no little importance to the pharmacien, *vis-à-vis* the doctor, has recently been brought to the notice of the Minister of the Interior for advice, in consequence of the blank refusal of certain pharmaciens to supply drugs, etc., at prices in accordance with the laws relative to the "Assistance Medicale Gratuite."

AS THE LAW at present stands, any impecunious French citizen requiring medical aid may obtain the same free, and such medicines as the doctor may deem appropriate to the case are prescribed, and the prescriptions taken to and dispensed by a pharmacien in the quarter, who, according to the laws for such special cases, must charge to the Local Government Board prices according to the tariff. The system is analogous to the English "parish relief." Since it is expressly stipulated by the law that "pure drugs, etc.," shall be dispensed and "full weight and measure given," several pharmaciens have kicked over the traces, and declared that the conditions of the tariff cannot be conscientiously complied with except at a loss to the pharmacien, and seeing that no man could be honestly expected to work at a loss to himself, they consider themselves justified in resisting the enforcement of the law in so far as it applies to them. Here the doctors intervene with the assurance that such an important office as public dispenser must be filled, and where the pharmaciens refuse to fill it they offer to replace them, and supply both advice and medicine, and charge same according to tariff. This news has the effect of a thunderbolt amongst the rebellious pharmaciens, who foresee the possibility of doctors extending their good (?) offices in dispensing their own prescriptions for patients who do not visit them under the auspices of the "Assistance Medicale Gratuite."

IN THIS, AS IN MANY OTHER CASES in France at present, a little light is needed, and possibly the kind doctors who seldom do something for nothing, will be requested to explain how, in the face of the pharmaciens' arguments to the contrary, they can conscientiously supply drugs, carefully dispensed, at prices in accordance with the tariff. The Council in their own defence say the pharmaciens should have lodged their complaints long ago, and not have fulfilled the offices of dispensers to the poor since 1893, if, to do so conscientiously, were to work at a loss to themselves. If, however, as Dr. Jeanne points out, these pharmaciens oppose the law for no other motive than that of endeavouring to grab more than a reasonable profit, then they should be severely dealt with. Otherwise he considers that they have every right to refuse to perform that public office, and "the doctor who proffers to solve the problem by supplanting the pharmacien should be regarded with suspicion." Dr. Jeanne has hit the nail right on the head.

ENGLISH NEWS.

CARBOLIC ACID POISONING.—On Sunday, December 4, a silk winder, named Margaret Heaver, died at Macclesfield from the effects of drinking carbolic acid, under the belief that it was vinegar, which she had been taking for bronchitis.

C.A.M.W.A.L.—A general meeting of the shareholders of the Chemists' Aerated Mineral Waters Association, Limited, will be held at Anderton's Hotel, 162, Fleet Street, London, E.C., on Tuesday, December 20, at 3 p.m., when the balance sheet will be presented. The report states that, considering the very unfavourable weather experienced from the beginning of the past summer up to August, the shareholders have every reason to be congratulated on the results shown in the 20th annual balance sheet. Manchester shows a fair profit on the fifteen months' trading, while the nine months' trading at Birmingham shows a small loss, but it is confidently expected that better results will be shown at both centres in future years. Mention is made of the fact that the Sanitary Institution, at the Birmingham Congress, awarded a medal for the "Camwal" Waters in syphons and bottles. To meet the demands from the two new factories, in February last the directors issued £5000 five per cent. debentures, being the balance of the issue of £25,000. They also raised temporary loans amounting to £5500. In accordance with an arrangement made some years since with the managers, 1000 shares at par have been allotted to them in consideration of their services. The directors have also handed the £50 voted to them at the last meeting to the Benevolent Fund of the Pharmaceutical Society. There has been an increase of 287 shareholders during the past year, making the total number of members 4555. It is proposed to pay the dividends on December 31, the amounts of which will be placed to the credit of open accounts, unless applied for before December 16. It is proposed to give the employés a liberal bonus, as hitherto. A dividend of 10 per cent. is recommended, and a bonus of 2½ per cent., free of Income Tax. This absorbs £5100, with a balance carried forward of £954 7s. 2d., making a total net profit of £6054 7s. 2d. Messrs. J. H. Wilson and H. Kemp, who retire from office, will offer themselves for re-election at this meeting.—In view of the contemplated amalgamation of Idris, Limited, with the Chemists' Aerated and Mineral Waters Association, Limited, the *Westminster Gazette* thinks the new report of the latter company is of interest. "Camwal has completed its twentieth year. It has a share capital of £50,000, of which £40,396 has been issued, and the debentures have been brought up to £25,000 by the recent issue of a balance of £5000. This year also temporary loans have been raised, amounting to £5500. The membership now numbers 4555. The gross profits are £17,310, and the net profits £6054. Out of the latter a dividend of 10 per cent. and a bonus of 2½ per cent. is declared on the ordinary shares, carrying forward £954."

MANCHESTER COLLEGE OF PHARMACY.—Through the kindness of Messrs. Evans, Sons and Co., of Liverpool, the students of the M. C. P. had the pleasure of seeing their warehouses and works. On Thursday afternoon, December 8, a saloon carriage reserved for the party left Manchester at 1.30. About three hours were most enjoyably and instructively spent in the premises at Hanover

Street and Fleet Street. The large specimens of ambergris, musk, and other expensive drugs were of much interest, and the cellars stored with almost numberless casks of cod-liver oil afforded a sight most of the visitors had not before seen. The party was then conducted upstairs, and spent much time in inspecting the "materia medica" in original packages, and the preparation of seidlitz powders, etc., for home consumption and export trade attracted much attention. Perhaps the works in Fleet Street excited the most admiration. Six large stills of the newest pattern were at work preparing various volatile oils. The manager in charge of this department most courteously described the construction of these and other pharmaceutical apparatus. The manufacture of coated pills was most interesting, and the drug mills, filtration of oils, preparation of thyroid extract, mercurial ointment, etc., were seen to perfection. After leaving the works the visitors were provided with a splendid tea by the firm, and then visited the docks and looked round the city. The return journey was brightened by the recitations given by Messrs. Stowells and Boothroyd. The former describing the effect of the cataplasmata of the 1885 B.P., and the latter giving an account of a botanical excursion. Votes of thanks to Messrs. Evans, Son and Co., and to Mr. Charles Turner concluded a most enjoyable day.

DEATH FROM A SLEEPING DRAUGHT.—An inquest was held at Keighley on Thursday, December 8, touching the death of Frank Sharpe, illegitimate son of Eva Sharpe, of Worth village. The evidence showed that a doctor sent three bottles of medicine for the child's mother. The grandmother, thinking that a small bottle, which contained a sleeping draught, was for the child, gave it half a teaspoonful, death being the result. The jury found that the child died from the effects of the draught administered in mistake.

FOOTBALL.—A match was played on Saturday, December 10, at Wormholt Farm, Shepherd's Bush, between the Metropolitan College of Pharmacy and Westminster College, the game resulting in a draw—1 all.

LAUDANUM POISONING.—An inquest was held at Leicester, on Saturday, December 3, with respect to the death of Lionel H. M. C. Chambers (22), a commercial traveller. From the evidence it appeared that deceased had been in the habit of taking laudanum to produce sleep, and on the previous Thursday had taken an overdose. A verdict was returned that death was due to an overdose of poison taken by misadventure.

AT THE SMOKING CONCERT which followed the reading of Mr. Young's paper at Manchester, on Wednesday last, there was a host of talent, including a pianoforte selection by Mr. Pontefract, humorous songs by Mr. Garry, Mr. Wingfield, Mr. E. Hastings, songs by Mr. Hankinson, Mr. Franklin, Mr. Woodruff, Mr. Rawsthorne, Mr. Crowe, and a recitation by Mr. Stanley Greenwood. Those gentlemen were also enthusiastically thanked for their valuable services in the passing of a pleasant as well as an instructive evening. The proceedings closed with a hearty vote of thanks to the Chairman, which was received with "For He's a Jolly Good Fellow." This concluded a splendid evening's enjoyment.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.—The Council of the above gave a very pleasant children's party to the younger members of the families connected with the Association, at the County Restaurant, on Tuesday evening, December 13. There was a gathering of between thirty and forty children, who, through the efforts of their seniors to amuse them, were enabled to spend a very enjoyable evening with games, magic lantern exhibition, and other amusements. Mr. A. H. Waddington (President), Mr. J. A. Mitchell (Secretary), and other of the officials, as well as their wives and other lady relatives, devoted themselves assiduously to the work of keeping the little ones busy. Mr. R. W. Tilson acted in full costume as Santa Claus for the distribution of toys. The President and his wife gave each child a picture book. A flash-light photograph of Santa Claus surrounded by the children was taken. After a hearty supper the children gave three cheers for the President and for Santa Claus.

ABERDEEN PHARMACEUTICAL ASSOCIATION.—A meeting of this Association was held in Gordon's College on Tuesday evening, the 13th inst., Mr. Jas. Clark, President, in the chair. Some discussion arose anent a circular from the Western Chemists' Association

(of London), and one from the Federation of Local Associations, suggesting consideration of the proposed new Pharmacy Bill. Ultimately it was resolved to call a special meeting at an early date, and a committee was appointed to draw resolutions embodying suggestions suitable for a new Pharmacy Bill. After the ordinary business of the evening was transacted, Mr. Ellis, pharmacy teacher, conducted the members through the new pharmaceutical department. The laboratory looked very bright under the electric light, and the new recess-labelled reagent bottles contributed to enhance the appearance of the room. The dispensing department is also fitted up with recess-labelled bottles and jars. Branching off from the laboratory is the balance room, which is well stocked with Sartorius and other balances. On the floor above is the large lecture room and museum, also lighted with electricity, and containing a very complete collection of materia medica specimens. The members were also pleased to hear that so far the classes were being well attended; the numbers are already considerably in excess of what was anticipated.

OWENS COLLEGE, PHARMACY DEPARTMENT.—On Wednesday afternoon a large number of chemists journeyed from Wigan in response to an invitation to Manchester, for the purpose of inspecting the pharmaceutical department at Owens College. They were met by Messrs. Woolley and Kemp, representing the Manchester Pharmaceutical Association, and under the guidance of Messrs. Kirkby and Grier, they at once commenced a tour of the buildings. After completing the inspection of the laboratories, lecture theatres, etc., they were then conducted over the rest of the college buildings, including the medical and anatomical museums, physical and engineering laboratories, the natural history museum, and Christie library, finishing with the materia medica museum, where the visitors, at the invitation of Professor Leech, partook of afternoon tea. When all had been refreshed, Dr. Leech expressed his pleasure at seeing the visitors, and trusted the inspection of the college had been both interesting and instructive to them. He briefly narrated the changes which had occurred in the institution since he was first connected with the professorial staff, and especially referred to the desire which he and others had that the education of the pharmacists should be advanced, and that all education should be thorough. Mr. Phillips and Mr. Dawson briefly thanked Professor Leech for his hospitality, and Messrs. Kirkby and Grier for their kind offices as conductors.

THE WORSHIPFUL COMPANY OF SPECTACLE MAKERS' DIPLOMA, copies of which will be received by successful candidates at the Company's examinations, is printed from an etched and engraved copper plate on straw-coloured paper in brown ink, and framed in a moulded oak and gold frame, surmounted with the arms of the Company in gold. The border is of bold ornamental scroll work with the City arms and supporters at the top and the arms of the Company at the bottom. The top corners of the design encompass two scrolls on each side. That on the left illustrates the microscope, past and present; for the past a Hooke's minocular (date 1665), and the present by a Powell and Leyland binocular. On the right the scrolls illustrate physics by J. Browning's spectroscope, Crookes' radiometer, and a Röntgen rays tube; and navigation by Captain Cook's sextant and a "Davis" quadrant. Astronomy, past and present, is represented by quaint shields right and left, bearing the Great Pyramid and Oxford University Observatory. Medallions are introduced left and right of the Company's arms, at the bottom with a view of a Huyghen's aerial telescope, seventeenth century, in a field with Ursa Major pictorially represented in the heavens, whilst the opposite corner shows the great strides made in the telescope—a modern equatorial telescope, and showing the interior of an observatory of modern date. The diploma has been designed and carried out by James B. Sly, engraver, of 9, Rathbone Place, London. Should a copy of this be required, application should be made to the above graver.

SHEFFIELD COLLEGE OF PHARMACY.—The students of the College had for their practical outdoor object lesson this week a visit to the Sheffield Oxide Works; one of the partners, Mr. T. Dobb, Ph.C., kindly acted as guide. The varnishhouse was first visited, where copal and oak varnish and terebene were being manufactured by the heat of closed fires. The gum room was very interesting, samples of kauri, animi, dammar resins being compared, also the differences between the better varieties of Sumatra benzoin and Palembang. The colour house next occupied attention. Precipi

tation, filtration, pressing, drying of chromes, greens, and blues were seen in their various stages. The paint mill was interesting, showing the use of horizontal burr stones, edge runners, rollers, and steel mills for grinding the white lead, ochres, etc., also for manganese ore, reducing it to different degrees of fineness by grinding and sifting for the local steel trade. The drug department concluded a very interesting practical lesson.

CHEMISTS' ASSISTANTS' ASSOCIATION.—The second of the fourth series of Cinderella dances in connection with this Association, held in the Dorset Hall, Portman Rooms, Baker Street, W., on Thursday, December 8, was a decided success. There were about one hundred persons present, Mr. and Mrs. J. C. Umney being amongst the number, together with all the members of the Committee: Messrs F. W. Gamble (President), E. W. Hill, Geo. Pearson, C. E. Robinson, C. J. Strother, T. M. Taylor, and the Hon. Secretaries (Messrs. C. Morley and H. H. Robins). The duties of M.C.'s were efficiently performed by Messrs. C. W. Martin and A. H. Solomon. The next dance will be held on Wednesday, January 4, 1899, when a full attendance is expected, and, to avoid disappointment, applications for tickets should be made at once.

THE SALE OF POISON BY STORES.—In the course of an inquest held on Wednesday, at Shoreditch, on the body of an old woman who had died from a shock arising from a fractured hip, a little girl said that she went to a drug store, and asked for something for "an old lady who has pains in her limbs and can't walk across the room." The "chemist" gave her a bottle wrapped in paper for which she paid a shilling.—John Hill, who admitted that he was not a registered chemist, said he remembered the child coming into his shop and asking for some medicine for an old lady. He did not know either the little girl or the deceased. Witness quickly made up a six-ounce bottle, which contained bicarbonate of potash, chloroform water, and a little burnt sugar colouring matter. The mixture was perfectly harmless, and there was no possible fear that an overdose could have caused death.—The Coroner: By the regulations you ought to have had a qualified man in the shop.—Witness: Only for dispensing poison, and we never sell them because there is no sale for such things in the neighbourhood. Continuing, witness said that in nearly all the large drug stores scattered about London the same rule was observed. A properly qualified man served poison, and other things were sold by ordinary assistants.—The jury requested the Coroner to report the matter to the Pharmaceutical Society, Apothecaries' Hall, and the General Medical Council.

AN OVERDOSE OF CHLORAL.—At Ebury Bridge, on Wednesday, Mr. John Troutbeck inquired into the circumstances surrounding the death of Mrs. Maud Sabara Lawrence, of Stafford Street, Old Bond Street, who on Monday was found dead in her bedroom.—John Robert Lawrence, deceased's son, said that on Monday afternoon his mother, not having come down as was her custom at 11 o'clock, he became suspicious. He forced open her bedroom door, and found her on the floor dead. On the washstand was a bottle partially filled with chloral. His mother had been in the habit of taking this drug, although she had denied it, and quarrelled with them on that account. She had obtained it at the Junior Army and Navy Stores, on a prescription given her husband, who died five years ago.—John Fuller, chemist at the Junior Army and Navy Stores, said deceased had a 12 oz. bottle a month.—Dr. Finsey said death was due to an overdose of chloral.—The Coroner commented upon the fact that the assistants at the Junior Army and Navy Stores had not made more inquiries.—One juror thought the Stores ought to be censured, but the jury were divided in opinion, and finally returned a verdict of accidental death.

THE DEATH OF SIR WILLIAM JENNER, Her Majesty's Physician for upwards of thirty years, took place on Sunday, December 11, at Greenwood, Bishop's Waltham, Hampshire, at the age of 83 years. He was born in 1815 at Chatham, his father being an inn-keeper in a small way of business. He was educated at University College, obtained the licence of the Society of Apothecaries in 1837, graduated as M.D. in the University of London in 1844, and in 1848 became a member of the Royal College of Physicians, when he was appointed Professor of Pathological Anatomy to University College and Assistant-Physician to University College Hospital. From that time onward his rise in the profession was very rapid,

and in 1861 he was selected by Sir James Clarke to fill the office of Physician Extraordinary to Her Majesty, subsequently as Physician-in-Ordinary to Her Majesty and to the Prince of Wales. He was created a baronet in 1868, K.C.B. in January, 1872, and G.C.B. in 1889. He held many other prominent appointments, including that of President of the Royal College of Physicians from 1881 to 1888.

IRISH NEWS.

AT NEWRY, on Friday morning last, a very destructive fire broke out on the premises owned by the Ulster Chemists' Company, Limited, The Mall and Hill Street, and resulted in the total destruction of the stores and their valuable contents. The fire raged for over four hours, consuming all before it, notwithstanding the efforts of the brigade. At one time the fire threatened to extend to the whole block of buildings surrounding the stores, where it originated, but the firemen managed to prevent it spreading, and about 11 o'clock all danger was past.

AN EXHIBITION AT THE ROYAL COLLEGE OF SCIENCE, Dublin, worth £50 per annum, has become vacant within the last few days. Any past student who has taken his diploma as Associate of the College, and who desires to pursue a course of scientific research, may apply for the vacant exhibition.

THE PHARMACEUTICAL SOCIETY OF IRELAND—JANUARY EXAMINATIONS.—The last days for lodging applications will be:—For the Preliminary examination, Tuesday, December 20; for the Pharmaceutical Assistants' and Registered Druggists' examinations, Tuesday, December 27; Pharmaceutical Licence examinations, Wednesday, December 28.

THE PHARMACEUTICAL SOCIETY OF IRELAND was privileged at its evening meeting on Monday last to hear a lecture by Professor Walter G. Smith, M.D., King's Lecturer in Materia Medica, Dublin University, on "The Chemistry of Incompatibility, and Some of its Lessons." The lecturer said that most of the inconvenience caused to dispensers by the prescribing of incompatible substances was due to the fact that prescribers had no intimate acquaintance with pharmacy. The subject of incompatibilities was one which was slurred over in most text books of materia medica or pharmacy. The matter could, however, be reduced to simple general principles. In the language of the British Pharmacopœia, incompatibility was any change which affected the elegance, safety, or usefulness of a prescription. The subject was practically endless, the number of possible combinations being infinite, and no rules could be made that would provide against all possible ones. Moreover, new drugs brought with them new problems, and some of the recent synthetic preparations did not readily lend themselves to general rules. The simple fundamental rule to be observed by prescribers was that there should be the least possible chemical action amongst the ingredients of a prescription, unless the contrary was intended.

Partnerships Dissolved.

(From the London Gazette.)

O. G. Dixey, A. G. Gray, and J. M. P. Furlonge (trading as Gray and Dixey), Mineral Water Manufacturers, 21A, Pemells Place, Peckham, S.E. Debts will be received and paid by J. M. P. Furlonge, who will carry on the business.

F. R. Cresswell, E. J. J. Cresswell, A. G. Cresswell, and Theodore Schmitz (trading as Cresswell Brothers and Schmitz), Sponge Importers, Red Lion Square, W.C. So far as regards F. R. Cresswell.

Frank Holmes and H. A. Holmes, Physicians and Surgeons, practising at Hardwick, West Gorton and Gorton, Manchester.

E. H. Swete and Raymond St. George Ross, Analytical and Consulting Chemists, Worcester.

Obituary.

FARR.—On December 7, James Farr, Chemist and Druggist, Halifax. Aged 70.

BIRD.—On December 8, William Bird, Chemist and Druggist, Monkswearmouth. Aged 84.

MARKET REPORT

London Report.

DECEMBER 15.

Business in drugs and chemicals has been extremely restricted during past week, and people appear to have made up their minds that we must not now expect any renewed activity until the turn of the year. The only changes have been an advance in price of Borax and Acid Boracic and in value of Cinchona Bark, which latter at Tuesday's auctions sold at a further advance of 15 per cent., this should mean dearer quinine, but so far there has been no movement on part of makers. Iodides and Bromides are steady and without change. Same applies to Quicksilver and Mercurials. Cascara Sagrada very quiet. Acid Citric, Acid Tartaric, and Cream of Tartar remain without animation. Sulphate of Ammonia is steady. Cod-Liver Oil weak and declining, owing no doubt chiefly to decreased consumption in consequence of the continued mildness of the season, which has probably also had a depressing influence upon Glycerin. Acid Carbolic steady. The following are particulars of values ruling for articles of chief interest:—

ACETANILIDE.—The lowest price ruling for a really reliable article is 11d. per lb. for 5-cwt. lots. There are cheaper offers in the market, but most buyers prefer a good article even at a somewhat higher price.

ACID ACETIC.—Continues firm at Convention rates, which are as follows:—30 per cent., or 1.7, 14s. 3d. per cwt.; 33 per cent., which is the B.P. strength, 15s. 6d.; 40 per cent., 18s.; 50 per cent., 21s. 6d.; 60 per cent., 25s.; 70 per cent., 28s. 9d.; 74 per cent., 30s.; 80 per cent., 32s. 3d.; 85 per cent., 34s.; 90 per cent., 35s. 9d.; 95 per cent., 37s. 9d.; 98-100 per cent., or *glacial*, 39s. 6d. per cwt., all in carboys of 132 lbs.

ACID CARBOLIC.—Is quiet and unchanged at 6½d. per lb. for best 35-36° C., *ice crystal*, in 2½-cwt. drums and overcasks, other packing being charged in proportion; 30-40° C., *ice crystal*, 7½d. to 7½d. per lb.; and 39-40° C., *detached crystals*, 8½d. to 8½d. per lb. *Crude*: 60° F., 1s. 11d. per gallon; 75° F., 2s. 3d. *Liquid*: 95 to 97 per cent. of pale straw colour, 1s. 1d. to 1s. 2d. per gallon in 40-gallon casks.

ACID CITRIC.—Is very quiet, makers asking 1s. 1¼d. to 1s. 1½d. per lb.

ACID OXALIC.—Quiet at 3d. to 3½d. per lb. delivered free London.

ACID TARTARIC.—*English* on the spot is quoted 1s. 0½d. per lb., while *Foreign* is nominally worth 12d. to 12¼d. per lb.

AMMONIA COMPOUNDS.—*Sulphate* is steady. Grey, prompt, London, Hull, Leith, and Beckton, £9 18s. 9d. to £10 per ton; Beckton terms, £9 15s. *Carbonate* unchanged at 3d. to 4d. per lb. *Bromide*: 2s. 2d. *Iodide*: 13s. 10d. per lb. *Sal ammoniac* steady at 33s. to 35s. per cwt. for sublimed; crushed, for batteries, costing 2s. per cwt. more. *Muriate*: 25s. to 27s. 6d. per cwt. for white, free from metals, and 30s. to 32s. 6d. for chemically pure small crystals. *Oxalate*: 5½d. *Sulphocyanide*: 1s. 1d. per lb.

ANTIMONY.—*Regulus* is quoted £36 15s. to £37 5s. per ton. *Crude (Black oxide)* being worth £22 10s. to £23 per ton, landed terms.

ANTIPYRINE "KNORR"—Is unchanged. Same can be also said of the "Star" brand of *Phenazone*, which is now most in favour with buyers of the cheaper article.

BELLADONNA ROOT.—38s. to 40s. per cwt. *c.i.f.* is now the price of good to fine root.

BLEACHING POWDER.—Is quoted £6 per ton for *English*.

BORACIC ACID.—Firm at the higher prices, viz., *crystals* 26s., *powder* 28s. per cwt.

BORAX.—Firm at the advance, *crystals* being now quoted 16s. and *powder* 16s. 6d. per cwt.

BROMIDES.—Are firm at the late advance. Makers' quotations are: *Potassii bromid.*, 1s. 10½d.; *Sodii bromid.*, 2s. 1½d.; *Ammon. bromid.*, 2s. 2d. per lb.; *Bromine* is steady at 2s. 1d. per lb., in 60-lb. cases.

CANTHARIDES.—*Russian*, are steady at 1s. 7½d. to 1s. 9d. per lb., but *Chinese* are scarce and wanted.

CASCARA SAGRADA.—The market is quiet and unchanged at £25 and £30 per ton for old and new bark respectively.

CASTOR OIL.—Quiet; *Belgian* first pressing, spot, £26; January to December, 1899, £24; second pressing, spot, £24 10s., ex-wharf. Hull manufactured, 25s. to 26s. per cwt., in barrels, 3½d. to 3½d. per lb. in cases, *f.o.r.* or *f.o.b.*, steamer, Hull. London manufactured 26s. per cwt. in barrels.

CINCHONA BARK.—In auction on Tuesday there was a good demand, prices realised showing an advance of 15 per cent. on the figures of late sale in Amsterdam, the price of the unit being fully 1d. per lb. The following are the particulars:—*Calisaya*: 381 bales offered and sold; medium to bold quill, 4½d. to 7d. *African*: 218 bales offered and sold; fair quill, 4½d. to 4½d.; chips, 4½d. to 4½d. *Ceylon*: 138 bales offered and sold, red broken quill and chips 2½d. to 2½d., chips 2½d. *East Indian*: 762 bales offered and 587 sold. Crown, stem and chips 2½d. to 3½d., shaving 2½d. to 3d.; red, chips renewed 4½d. to 6½d., stem and chips 3½d. to 4½d., chips 2½d. to 5½d., shavings 4d., fair quill 4d.; *Ledgeriana*, stem and chips 3½d., chips 2½d. *Java*: 352 bales offered and 217 sold, dusty chips 2½d. to 4d. *Red*: 10 packages offered and sold, dull trunk quill, mixed quills, 1s. 11d., more quilly 1s. 3d. It now remains to be seen what the effect will be on price of *Quinine*.

CLOVES.—Privately the market for *Zanzibar* shows a somewhat downward tendency owing to free offers for arrival; business done comprises March to May delivery at 3½d. down to 3½d., with further sellers. At auction of 242 bales *Zanibar*, 31 bales middling, sold at 3½d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*: Commercial, 1s. 1d.; pure, 1s. 6d. per gallon. *Benzole*: 50 per cent., 9d.; 90 per cent., 8½d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C., 4d. *Solvent Naphtha*: 95 per cent. at 160° C., 1s. 7d.; 90 per cent. at 160° C., 1s. 3d.; 90 per cent. at 190° C., 1s. 3d. per gallon. *Pitch*, 25s. per ton, *f.o.b.* *Tar*: Refined and crude, 12s. per barrel, 1½d. per gallon.

COCAINE.—One of the makers, who lately stated that his price was 10s. 9d. per oz., and that he had none to sell, is reported to have been offering 100 oz. lots to favoured (?) friends at 10s. 3d. per oz., without, however, finding a buyer. Makers of the brands most in favour are firm at 10s. 9d., it being stated that prospects of both *crude* and *leaves* are decidedly in favour of higher prices prevailing for same in the near future.

CODEIA.—Makers are firm at 12s. 6d. per oz. for the pure, and 1s. per oz. less for the salts.

COD-LIVER OIL.—The market appears to be in a somewhat unsettled condition, and it would probably be possible to buy good non-freezing *Norwegian* oil of 1898 import at 75s. to 80s. per barrel of 25 gallons.

CREAM OF TARTAR.—Unchanged at 73s. 6d. per cwt. for first *white crystals* and 75s. 6d. to 77s. per cwt. for *powder*, on the spot.

GENTIAN ROOT.—Fair quality is quoted from Marseilles, 14s. per cwt., *c.i.f.*, for 5 ton lots.

GINGER.—*Cochin* is quiet and rather easier; of 334 bags rough 190 bags sold, washed rough 21s. to 22s., brown rough 23s. to 23s. 6d.; 40 bales cuttings sold at 13s.; of 195 cases cut kinds, 55 cases sold, chiefly without reserve, C at 35s., B at 58s. 6d. to 59s. 6d., A at 83s.

GLYCERIN.—*Crude* is quiet, but without any particular change. Refined *English* is quoted 50s. to 52s. 6d.; *German*, 52s. 6d. to 60s., according to brands, for best white chemically pure double-distilled 1260° quality, in tins and cases.

GUM TRAGACANTH.—Business in this article has been rather quiet lately, prices remain, however, nominally unchanged at £13 15s. to £14 10s. per cwt. for firsts, £12 15s. to £13 for seconds, and £11 to £11 10s. for thirds, down to £4 15s. to £5 per cwt. for lower quality.

IODIDES AND IODINE.—Are in fair demand at 10s. 6d. per lb. for *Potassii Iodid.*; 11s. 10d. for *Sodii Iodid.*; 13s. 10d. for *Ammon. Iodid.*; 13s. 7d. for *Iodoform Cryst.*, *Powd.*, and *Precip.*; and 12s. per lb. for *Iodine Resubl.* Price of *Crude Iodine* remaining unchanged at 7½d. per oz.

IPECACUANHA.—No business has been reported in the article during the past week. Quotations for *Rio* are nominally easier at 9s. 7d. to 9s. 9d. per lb., *Carthageria* appears to be in better supply, and could probably be bought at 7s. per lb.

LYCOPodium.—Is somewhat cheaper at 1s. 1d. per lb., *f.o.b.*, Hamburg, for sifted in 5 case lots.

MENTHOL.—Is firmer at 7s. 6d. to 7s. 9d. per lb. for best dry *White*

Monthly Statement of Drugs, etc., Warehoused in London.—December 1, 1898.

Articles.		Nov., 1898.		Stocks, Nov. 30.		Articles.		Nov., 1898.		Stocks, Nov. 30.	
		Arrivals.	Deliveries.	1898.	1897.			Arrivals.	Deliveries.	1898.	1897.
Aloes (all kinds).....	packages	85	2,171	4,541	4,526	Gum, Mastic	packages	15	2	21	—
Balsams	"	96	209	433	424	Myrrh	"	33	41	449	583
Cinchona Bark	"	931	1,449	20,216	17,517	Olibanum	"	60	403	2,742	1,048
Quinine Sulphate	ounces	74,448	68,176	1,725,904	1,477,952	Tragacanth	"	113	489	816	2,880
Beeswax	packages	266	951	2,027	2,962	Ipecacuanha	"	78	61	164	238
Camphor	"	67	1,757	7,563	11,363	Jalap	"	—	28	296	347
Cardamoms	"	152	361	1,187	462	Nux Vomica	"	557	230	687	149
Cochineal	"	315	137	2,737	2,162	Oils, Castor	"	249	103	655	562
Calumba Root	"	212	141	562	15	Olive	"	23	157	695	779
Cubebs	"	—	11	1,858	467	Aniseed	"	20	19	253	147
Dragon's Blood	"	20	12	29	67	Cassia	"	—	—	78	116
Galls (all kinds)	"	105	739	3,989	3,950	Rhubarb	"	316	137	1,726	941
Gum, Ammoniacum.....	"	—	7	67	32	Saltpetre	tons	608	1,116	1,385	2,325
Arabic, all kinds..	"	1,825	1,780	9,895	12,551	Sarsaparilla	packages	143	90	384	254
Asafoetida.....	"	—	97	351	528	Senna	"	542	702	1,475	1,210
Benjamin	"	129	353	2,342	2,596	Shellac	"	2,983	3,644	48,192	49,533
Galbanum	"	—	—	15	15	Terra Japonica, Gambier	tons	290	222	816	1,143
Gamboge	"	64	20	402	302	Cutch ..	"	50	45	1,120	1,434
Guaiacum.....	"	—	—	85	126	Turmeric	"	9	47	29	400
Kino	"	29	2	64	19						

The stocks of camphor, oils of aniseed and cassia are incomplete, some warehouses not making returns.

Crystals on the spot, while the *c.i.f.* price comes even higher from the other side.

MERCURIALS.—Notwithstanding late two advances of 2s. 6d. per bottle each in price of *Quicksilver*, makers' prices remain unchanged at 2s. 8d. per lb. for *Mercury Chloride B. P. (Calomel)*; 2s. 4d. for *Mercury bichloride (corrosive sublimate)*; 3s. per lb. for *Mercury red oxide B. P. (red precipitate)*; and 3s. 1d. per lb. for *Mercury ammoniated B. P. (white precipitate)*, and for *Mercury yellow oxide B. P.* It is stated that some of the makers are desirous of advancing the price of these preparations somewhat in proportion to the rise in *Quicksilver*, but so far they have not been able to come to an understanding on the subject.

MORPHIA.—Makers' price is unchanged at 5s. per oz. for the *Hydrochlorate powder*.

NITRATE OF SODA.—Is quiet and unchanged at £7 15s. per ton for ordinary and £8 per ton for refined, on the spot.

NUX VOMICA.—There has been fair inquiry for these, and small rather dull have been sold at 6s. per cwt.

OILS (ESSENTIAL).—*Cinnamon*: There is a good steady demand for genuine oil and good quality has been sold privately at 1s. 6d. to 1s. 8d. per oz. *Cajeputa* steady at 4s. per bottle. *Cassia*: There is more inquiry for the lower grades. Quotations range from 4s. 3d. to 5s. per lb., according to quality. *Citronelle*: Slow of sale at 1s. 1d. per lb. *Lemongrass*, dull, value being nominally 3d. to 3½d. per oz. *Peppermint*, American H.G.H. is dull at 5s. 4½d. to 5s. 6d. per lb. *Wayne County* being quoted 3s. 3d. to 4s. per lb., according to quality. *Japanese*, 40 per cent., 4s. 10½d. to 5s. per lb. *Dementholised*, 3s. 6d. per lb. *Star Aniseed* is steady at 6s. 2d. per lb. on the spot.

OILS (FIXED) AND SPIRITS.—*Linseed*: a steadier feeling prevails. On the spot, London pipes are quoted £16 to £16 2s. 6d., barrels, £16 10s. to £16 12s. 6d.; January-April, £16 10s. to £16 12s. 6d.; May-August, £16 7s. 6d.; Hull, spot, naked, £15; January-April and May-August, £15 *Rape* quiet; ordinary brown, spot, and January-April, £21 5s.; refined, spot, £22 10s.; Ravison, naked, spot, £17; January-April, £17 5s. *Cotton*: dearer, and very firm. London, *crude*, spot, £12 12s. 6d. to £12 15s.; December-April, £12 12s. 6d.; refined, spot, £14 5s. to £15, according to make; Hull, naked refined, spot, £12 12s. 6d. to £12 15s.; January-April, £12 15s.; May-August, £13 10s., *crude*, spot; and January-April, £11 12s. 6d., May-August, £12 5s. *Olive*: Spanish, £29; Levant and Mogador, £29 to £32. *Coconut*: Ckylon firm, spot, £26 10s.; near at hand, £24 15s. January-March shipment, £24 10s. *c.i.f.* Cochin spot, £31; just arrived, £30 *c.i.f.*; December shipment, £27 to £27 10s.; January-March, £26 10s. to £26 15s. *Palm*: Lagos spot, £22. *Lubricating oil*, pale American spot, 5s. 6d. to 7s.; black, 4s. 9d. to 5s. 6d.; pale Russian, 7s. to 8s.; black, 4s. 6d. to 5s. *Turpentine* firmer. American spot, 29s.; January-April, 29s. 6d.; July-December, 24s. per cwt. *Petroleum Oil* firm. Russian spot, 5½d. to 5¾d.; American spot, 6¼d. to 6¾d. per gallon; water white, 7¾d. to 7½d. *Petroleum Spirit* dearer: American, 8d.; deodorised, 8½d. per gallon.

OPIUM.—Prices are nominally unchanged. The business passing

has been of most unimportant character. A few retail sales have taken place of both *druggists'* and *manufacturing* kinds, as also of a few cases of *soft shipping*, while there has also been a small business done in *Persian*. Present values are as follows: Fine *druggists'* 11s. 3d. to 11s. 9d. per lb., good seconds and manufacturing kinds 10s. 6d. to 11s., good to fine *soft shipping* 13s. to 14s., seconds 10s. 6d. to 11s. 6d., *Persian* 11s. to 12s. per lb., according to quality.

PERMANGANATE OF POTASH.—There is pressure to sell on part of the makers at 47s. 6d. per cwt. for 5-10 ton lots of small crystals, deliverable in equal proportion during next year. In view, however, of past experience they are not finding buyers so anxious to again run the risk of burning their fingers as they have done with their purchases during past twelve months. Until the present excessive competition on part of makers comes to an end there would appear to be but little hope of an improvement in the value of this article.

PHENACETIN.—Is quiet at 3s. 9d. to 4s. 3d. per lb., according to quantity and packing, for *crystals* or *powder*. Bayer's make is still quoted 5s. 6d. and Riedel's 5s. 5d. per lb., in 1 lb. bottles.

POTASH COMPOUNDS.—*Chlorate* crystals 3¾d., powder 4d. per lb. spot, London. *Bichromate*, 3¾d. per lb. *Prussiate*, yellow, English, 6¼d.; red, 1s. 1d. to 1s. 2d. per lb. *Bicarbonate*, 30s. to 35s. per cwt. for crystals or powder, according to quantity and brand. *Oxalate* neutral, 5½d. per lb. *Permanganate* quiet at 50s. per cwt. for small crystals, and 55s. per cwt. for large crystals in 1 cwt. kegs.

QUICKSILVER.—The importers quote £7 15s. per bottle, the second hand offering at 1s. per bottle less money.

QUININE.—Position of this article remains unchanged in spite of the further considerable advance in bark prices. The general opinion is that makers will certainly advance their price, but when and to what extent is a point on which opinions vary considerably. We think buyers who have not already secured a supply should do so before the expected advance takes place.

ROSIN.—Strained; on the spot, 4s. 4½d. per cwt.; January to March and March to May shipment, per sailing vessel, 4s. 0½d. per cwt., *c.i.f.*

SAFFRON.—Is in good demand, and prices close firm at 35s. to 37s. 6d. for good to best genuine *Valencia*, and 25s. to 28s. per lb. for *Alicante*.

SENNA.—There is some little demand for *Tinnivelly*, but holders are so stiff in their ideas as to price, that little or no business has resulted. *Alexandrian* leaf remains dull of sale.

SODA COMPOUNDS. *Crystals*: barrels, 55s.; bags, 52s. 6d. per cwt., ex ship, Thames. *Ash*: £5 to £5 10s. per ton, according to strength, quantity and packing. *Bicarbonate*: £7 10s. to £8 for the 97 per cent, and 18s. 6d. per cwt. for fully bicarbonated. *Caustic*: 70 per cent., white, £7 10s.; 60 per cent., £6 10s. per ton. *Nitrate*: commercial, £7 15s.; refined, £8. *Bichromate*, 2¾d. per lb. *Bromide*, 2s. 1½d. per lb. *Iodide*, 11s. 10d. per lb. *Hyphosulphite*, 6s. 6d. to 8s. per cwt., according to make, quantity and packing.

SODA CRYSTALS.—Makers quote 55s. and 52s. 6d. per cwt. for barrels and bags respectively, ex-ship Thames.

SPICES (VARIOUS).—*Black Pepper*: Only 49 bags, offered without reserve, sold as follows:—Singapore at 4½d.; Aleppy, 4½d.; Penang, 3¾d. *White Pepper*: 151 bags Singapore bought in at 8½d. *Chillies*: 10 cases good Japan bought in at 47s. *Capsicums*: 30 bags West Coast African bought in. *Cassia Lignea*: 91 bales chips bought in. *Mace* is dull. Of 41 cases Penang only 6 cases sold, without reserve; pickings, 1s. 1½d.; ordinary, 1s. 5d.; fine bold pale, 2s. 4d. 8 packages West India sold at 1s. 8d. to 1s. 9d.; good and fine pale, 2s. and 2s. 4d. *Nutmegs* dull. Of 35 cases Penang only 5 cases sold, without reserve, 110's at 1s. 2d. *Pimento*: Of 140 bags only 16 bags fair sold at 4¾d.

SULPHATE OF COPPER.—Is firm at £18 to £19 10s. per ton, on the spot, according to quantity and make.

SULPHONAL.—Makers' price is 17s. per lb., there is, however, still a little obtainable from second hands at somewhat below above figure.

Newcastle Chemical Report.

DECEMBER 14, 1898.

This market remains on the quiet side. Shipments are light, except parcels of Soda Crystals for the English Channel ports. Sulphur keeps scarce. General prices are: Bleaching Powder, according to market, £5 to £5 10s.; Soda Crystals, basis price, 45s.; Caustic Soda, 70 per cent., basis price, £7; Soda Ash, 52 per cent., £4 5s.; Alkali, 52 per cent., £5; Sulphur, £4 15s. to £5 per ton.

Manchester Chemical Report.

DECEMBER 14, 1898.

The past week's business has been characterised by quietude, both on home and export account. The Board of Trade returns for the past month are again far from encouraging, especially to the United States, which, so far as Alkali is concerned, shows a diminution of nearly 50 per cent. as compared with last year, although Bleaching Materials are not quite so marked, being about 20 per cent. of a decrease. Generally speaking, in Alkali the decrease in November over the corresponding month last year is 29.6 per cent. in quantity and 27.7 in value, and in Bleaching Materials 15.8 per cent. in quantity and 26.6 in value. The exports of chemicals and medicinal preparations amount to £690,973, as against £753,840 in 1897, a decrease of 8.3 per cent. The imports of chemicals, dye stuffs, etc., on the other hand, show an increase of 5.9. In this market prices are well maintained. Ammonia Alkali, 58 per cent., may be quoted at £3 17s. 6d. per ton in bags on rails, but Caustic Soda is again ruling lower, owing to the competition amongst makers. Soda Crystals and Bicarbonate of Soda are without change. Chlorate of Potash and Glycerine are both easier. Brown Acetate of Lime is steady at £5 7s. 6d. to £5 10s., Welsh and American, delivered Manchester. White Sugar of Lead is dull at £25 per ton, Manchester. Acetate of Soda is firm at £12 5s to £12 10s. per ton, spot. Arsenic is quiet at £16 to £16 10s. per ton, ex ship Garston. Sulphate of Copper is unchanged on last week, but Green Copperas is dull locally, although shipments continue fair. Aniline Oil is quoted 3d., and Salt 4½d. Benzols are firmer, and liquid Carbolic rather dearer. Yellow Prussiate remains firm at 6¾d. to 7½d. for best Lancashire make.

Liverpool Market Report.

DECEMBER 14, 1898.

AMMONIA SALTS.—*Carbonate* is firm at 3d. per lb. *Sal ammoniac*: 33s. and 35s. per cwt. *Sulphate*: £10 to £10 2s. 6d. per ton. BEESWAX.—73 packages Bissao at £6 7s. 6d. per cwt., and Chilian, about 30 bags, at £6 12s. 6d. to £6 15s. per cwt.

CANARYSEED.—Turkish is quiet, and about 200 bags have been sold at 28s. per 464 lbs. 100 bags of Spanish found buyers at 31s. per 464 lbs., as well as a considerable amount sold privately.

CARNAUBA WAX.—23 bags of good grey sold for 35s. per cwt.

CHILLIES.—64 bags of medium Sierra Leone sold at 25s. to 30s. cwt.

COCHINEAL.—Good black Teneriffe is in fair demand, and stocks are held for 9d. to 9½d. per lb.

COPPER SULPHATE.—Easier at £18 5s. to £18 10s. spot, forward £18 10s. to £19 per ton.

(GINGER.—140 bags of fair washed rough Cochin sold at 25s. 6d. per cwt. ex store.

HONEY.—Chilian Pile X has changed hands at 29s. per cwt.; Pile 1 at 25s. and Pile 2 at 23s. per cwt.

OILS (FIXED) AND SPIRITS.—*Castor* is showing more life. Calcutta, good seconds, has been cleared from the quay at 2½d., and 2½d. per lb. is now asked for the little in store; for forward delivery prices are very firm; French 1st pressure, 2¾d. to 2½d.; Madras, 2½d. *Olive* is steady, but without any alteration in the spot quotation, 30 tons have been sold at recent rates. The price for shipment has advanced. *Linseed* is quiet at the easier rate of 17s. 3d. to 18s. 6d. per cwt. *Cottonseed* is firm at an advance of 3d. per cwt., and now sells at 15s. 3d. to 15s. 9d. per cwt. *Spirits of Turpentine* enjoys a moderate inquiry at the firm and slightly dearer rate of 30s. per cwt.

Trade Notes.

CHRISTMAS HOLIDAYS.—The Publishing Offices of the *Pharmaceutical Journal* will be closed from Saturday afternoon, the 24th inst., to Wednesday morning, the 28th inst.

MESSRS. JEWsbury AND BROWN, Ardwick Green, Manchester, send a specimen showcard, advertising their Oriental Tooth Paste. If to attract attention is the chief duty of a showcard, this production of Messrs. Jewsbury and Brown does its duty well. It depicts the face of a beautiful English girl, with a background of growing primroses and dark foliage. Chemists will be supplied with a copy of the proof on application to the firm.

MESSRS. EVANS, SONS AND Co., of Liverpool, have acquired the sole right to manufacture thyroglandin by the process patented by Mr. E. C. C. Stanford, and are now able to supply thyroglandin in powder. The special advantages of the article produced by Stanford's process is that it does not putrefy, but retains the whole of the active principles of the thyroid gland in an unaltered and changeable uncondition. Dr. William MacLennan, of Glasgow, has made many experiments with thyroglandin in the treatment of obesity with remarkable success. It is administered in capsules or in tablets and in doses of 3 to 5 grains, equal to half a gland of average size and weight.

MR. PEDER DEVOLD, of Aalesund, Norway, has appointed Messrs. Linton, Hubbard and Co., of 27, Leadenhall Street, E.C., sole agents for the sale of his cod-liver oil.

MR. LIONEL LAURANCE, of 1, Vernon Place, Bloomsbury, W.C., is about to commence a postal course of instruction for the modified examination of the Spectacle Makers' Company.

MOST CHEMISTS ARE AWARE that in future the Local Government Board will furnish their vaccination officers throughout the country with glycerinated calf lymph prepared in accordance with the method devised by Dr. Copeman. For those medical men who require for their private practice lymph prepared with similar precautions, Messrs. Maw, Son, and Thompson are able to supply the "pure culture" brand, which is guaranteed to be active and free from disease germs. Special precautions are taken in the first instance to ensure that the animal is free from disease, any extraneous germs are killed in the subsequent culture process, which in itself increases the strength of the vaccine.

MESSRS. BURROUGHS, WELLCOME AND Co., Snow Hill Buildings, London, E.C., intimate that their offices, warehouses, and laboratories will be closed from the afternoon of Saturday, December 24, until the morning of Wednesday, December 28.

MESSRS. TAYLOR, TAYLOR AND HOBSON, of Leicester, send particulars of a recent development of the Cooke lens—the Cooke portrait lens. The instruments in the new series work at F/4.5 and are designed more especially for the use of professional photographers. At this aperture they give either that needle-like definition, which is one characteristic of all Cooke lenses; or by means of a simple adjustment, spherical aberration may be introduced evenly over the plate.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

OFFERED.

Magic Lanterns, second-hand; triples and binoculars; oxyhydrogen microscope; marvellous pampengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Fallowfield's Facile ¼-plate Hand Camera, 5 by 4, R. R. lens, rotating stops, thorough working condition, cost £5 5s., price 45s.—Thorp, Chichester.

Good Student's Microscope, ½, ¾, and 1-inch dividing objective, rack-work adjustment, excellent definition, complete in mahogany case, drawer for slides, etc., bargain, 30s.—Reade, 7, R.N. Hospital, Plymouth.

Four doz. 1s. 1½d. Nurse Powell's pills, at 6s. 6d.; 3 doz. 2s. 9d. ditto, at 18s.; 33 doz. 1s. Barrow-Evans' hair restorer, at 5s. 9d.; 20 doz. 1s. 1½d. Dr. Weir's plasters, at 6s.; carriage not paid.—Thompson, 192, Manchester Street, Oldham.

50,000 Choicest Microscopical Objects, bargains. Catalogue free. New and second-hand Microscopes, Cabinets, Mounting Materials, etc. Microscopes and collections purchased.—Richard Suter, 10, Highweek Road, South Tottenham, Middlesex.

For Sale.—Pereira's 'Materia Medica,' 3 vols., 7s. 6d., paid; Wills' 'Materia Medica,' 2s., post paid.—W. Pemberton, 34, Church Street, Preston.

Robert H. Clarke's Specialties.—Lantern, with 4 in. condensers and 3 wick lamps, 17s. 6d.; with 4 wick lamps, 18s. 6d. Slides, sale or hire, Conquest of Soudan, Spanish American War. Catalogue free.—Robt. H. Clarke, Royston, Herts.

What Offers for 5½ gross No. 4 X and 5 gross No. 2 X Este's Patent Wooden Bottles; also 1 gross 2 dr., 1 gross ¼ oz., 15 doz. 1 oz., 9 doz. 2 oz., Este's Almada Boxes; also for ½ gall. displacement apparatus, as Maw's Fig. 53 minus tap; also shop rounds, gold labels, good condition, and 10 lbs. Eucalyptus Oil (Wyley's).—Priestley, Newark.

All New, unsoiled, bought before advance, hot water bottles, best quality. Maroon plush covers (detachable) included, 10 by 6, 4s.; 12 by 8, 5s. 10d.; 12 by 10, 6s. 6d.; 14 by 10, 7s. Sponge bags, best quality, silk cords and bindings, full sizes, as Maw's, eight dozen, assorted, Nos. 2, 4s. 6d.; 3, 6s.; 4, 7s. 6d.; 5, 9s.; 6, 10s. 6d. Tooth stopping wrapped pink paper, as Stevens', gross box, 2s. 6d.; 3 dozen 3d. sticks, 2s. 6d. Hypodermic syringe, complete, cased, 1s. 6d. Post free 10s. lots. Cash returned if sold.—Warnes, Chemist, 333, Gray's Inn Road, W.C.

Two "Camwal" Debentures for sale, £55 each net.—Davy, Witney, Oxon.

Complete Mineral-Water Plant, including 2-h.p. Stockport gas-engine and all accessories; can be seen at work any time; great bargain. Engine can be had separately.—Smith, Chemist, Fareham.

Wholesale and Retail Druggists: Advertiser is overstocked with superfine oil of lemon in 10-lb. coppers, and solicits offers; 1-lb. sample delivered free 2s. 9d.—Moss, 34, Avondale Road, Chorley.

Surplus Stock.—Sprinklers, various sizes, white metal, best make and finish, assorted lots to clear, 10 gross at 5s. 6d. gross, cash with order, samples free on application.—Davis, 411, Mare Street, N.E.

Honey.—56 lbs. best English Honey for sale, 1898 crop, good colour and quality, 30s. cash.—F. C., 19, St. Andrew's Street, Cambridge.

WANTED.

Old Electric Lamps and Scrap Platinum for prompt cash.—P. Rowsell, 9, Derwent Grove, East Dulwich, London, S.E.

Marriage.

GORDON—ALEXANDER.—At the Imperial Hotel, Edinburgh, on the 8th inst., by the Rev. Dr. Hastings, Palmerston Place U.P. Church, John Alexander Gordon, Chemist, Stirling, to Marion Alexander or Brydon, daughter of John Alexander, Burnside, Skirling Biggar.

Advertisement.

(Received too late for Classification).

SOUTHAMPTON.—A steady and reliable Junior ASSISTANT required in dispensing and light retail business. State experience, age, height, reference, salary required, enclosing photo if possible, to H. JEWELL, 55, Above Bar, Southampton.

"SANITAS" EMBROCATION

In Bottles to Retail at **8d., 1s., and 2s. 6d.**

"SANITAS"

AND OTHER

DISINFECTANTS

SULPHUR FUMIGATING CANDLES (Kingzett's Patents), 6d., 9d., and 1s. each.

PRESERVED PEROXIDE OF HYDROGEN (Kingzett's Patent).

MOTH PAPER, BLOCKS AND CRYSTALS.

WEED DESTROYER, &c., &c.

THE "SANITAS" CO., Ltd., BETHNAL GREEN, LONDON,
AND 636—642, W. 55 STREET, NEW YORK.

Calendar for the Week.

Sunday, December 18, 4th in Adv. Sun rises 8.4; sun sets 3.50.

Monday, December 19. Sun rises 8.5; sun sets 3.50.

Tuesday, December 20. 3.22 M. Sun rises 8.5; sun sets 3.50.

CHEMISTS' AERATED MINERAL WATERS ASSOCIATION, LIMITED, Anderton's Hotel, 162, Fleet Street, E.C., at 3 p.m.—General meeting of shareholders for the passing of the balance sheet and other business.

ROYAL PHOTOGRAPHIC SOCIETY, 12, Hanover Square, W., at 8 p.m.—Paper on "Some Colloid Printing Methods," by E. Sanger Shepherd.

Wednesday, December 21. Sun rises 8.6; sets 3.50.

BRITISH PHARMACEUTICAL CONFERENCE, 17, Bloomsbury Square, W.C., at 4.30 p.m. Meeting of the Executive Committee.

PHARMACEUTICAL SOCIETY (North British Branch), 36, York Place, Edinburgh, at 8.30 p.m. Evening meeting, when the following papers will be read: "Notes on Lime as a Preservative for Chloroform," by David Brown; "Criticism of Some Chemical Matters in the New Pharmacopœia," by Leonard Dobbin; "Volumetric Operations of the New Pharmacopœia," by John Lothian.

ROYAL MICROSCOPICAL SOCIETY, 20, Hanover Square, W., at 7.30 p.m.—Exhibition of Binocular Microscopes.

WESTERN CHEMISTS' ASSOCIATION (of London), Westbourne Restaurant, Craven Road, Paddington, W., at 9 p.m.—Inaugural address by the President, Mr. J. F. Harrington, followed by a discussion of the Federation proposals.

Thursday, December 22. Sun rises 8.6, sets 3.51.

Friday, December 23. Sun rises 8.7, sets 3.51.

GLASGOW SCHOOL OF PHARMACY, North British Station Hotel, at 9 p.m.—Annual supper, Mr. J. Lothian in the chair.

Saturday, December 24. Sun rises 8.7, sets 3.52.

COMMUNICATIONS, LETTERS, NEWSPAPERS, etc. have been received from Messrs. Bailey, Barrett, Bartlett, Bayley Bellamy, Branch, Brierley, Burroughs, Butler, Buttershaw, Cowley, Cracknell, Cummings, Elsdon, Ewell, Fairley, Ferrall, Goodess, Griffiths, Hinde, Horner, Hulme, Lothian, Maitland, Marsden, Milns, Perkins, Reid, Reiss, Reynolds, Robins, Rouse, Saunders, Shaw, Smith, Snell, Stratton, Tankard, Taylor, Thompson, Turner, Warren.

FRENCH NEWS.

ANNUAL DINNER.—On Friday last, the 16th inst., the Rev. J. Frère Langford, the popular vicar of the English Church, gave his annual dinner to all the English employés of Nice. The idea is a most excellent and praiseworthy one, for it brings together all the young English pharmacists having employment on the Riviera, and enables them to make acquaintance with their fellow-countrymen. Moreover, Mr. Langford always seizes the occasion to make a thoroughly homely little speech, in which he does his best to identify himself with his guests and make them feel that he is a friend to whom they can go for advice in case of need. The dinner took place at the National Restaurant, Avenue de la Gare, covers being laid for thirty-five guests, and all the expense being borne by the good vicar. After the dinner the usual speeches were indulged in; then the guests were free to amuse themselves. This event, like all the preceding ones, was quite a success.

BUVEURS DE PETROLE.—Truly there is no accounting for taste. We are aware of the fact that individuals do exist who "to keep their spirits up" do so "by pouring spirits (rectified and methylated) down," also that others have a partiality for ether to "pick-'em-up," but it is to Paris we must grant the palm for the vilest "taste" in the choice of a stimulant. A Parisian journal informs us on good authority that there exist in this gay capital what are called "Buveurs de Petrole" or "petroleum drinkers." True the baneful and disgusting habit is only peculiar to the Bastille quarter as yet, still it is spreading with alarming rapidity, and is an additional and unforeseen monster to the list which the temperance societies will have to deal with. When the discovery was made it was thought the habit was the direct result of the increased tariff on alcohol which had lately been imposed, and which, of course, in proportion affected the price of even the labourer's cheap and nasty "petit-verre," but it transpires that such is not the case, inasmuch as the habit existed long before the sur-tax on alcohol was thought of. Moreover, it appears that these "petrolics" have a marked preference for this illuminating medium, possibly because, as it is asserted, "There is no headache in the bottle," nevertheless it is an "acquired taste," like that for tomatoes. The species of intoxication produced by this new drink somewhat differs from that of ordinary alcoholic beverages, in that the "petrolic" is exceedingly morose, although less inclined to brutality. His sleep is calm and natural, and upon awakening he seems none the worse for his little tipple, apparently enjoying his usual health. As to its ultimate effects upon the system, doctors, in this as in all other cases, agree to differ. Some declare it to be harmless if used in moderation, it being a capital vermifuge and antispasmodic, whilst others say that in all proportions it is dangerous, for it is fatally conducive to derangements in the organism, and creates the germs of mortal maladies. This new problem is, however, sufficiently interesting to merit profound study.

ATTEMPTED ASSASSINATION OF A CHEMIST.—From Ostend comes the news of the attempted assassination of Monsieur Louis Maryssael, a well-known and exceedingly benevolent pharmacien, practising in the Chaussée du Thouront, Ostend. It appears that he had for some time been gratuitously treating a native for an affection of the eyes and rheumatism. But the patient, experiencing little good from the treatment, entered M. Maryssael's pharmacy the other day and roundly abused him for his incompetence to afford him much relief, and demanded a soporific, for he suffered also from insomnia. This the pharmacien refused to give him, explaining that the law forbade him to supply such without a prescription. "But," said he, "I will write you a note, which you will take to my benevolent friend, Dr. Pleyn, and whatever he may prescribe I will supply to you, as heretofore, gratuitously." Little affected by this kind utterance, the would-be assassin became more insolent and accused the pharmacien of wishing to poison him. Angered by the man's ungratefulness, M. Maryssael essayed to snatch the note from him, at the same time ejecting him from the pharmacy, whereupon the man drew his knife and plunged it deep into the poor pharmacien's thigh, severing an artery. M. Maryssael followed him a short distance crying "à l'assassin, à l'assassin," which was echoed by the crowd. In the meantime the poor pharmacien managed to drag himself as far as Dr. Pleyn's surgery, and fainted in this doorway, having lost almost all his blood. The doctor paid his friend every atten-

tion, and with the aid of another medical man succeeded in arresting the hemorrhage, and then, to save their patient, who was almost bloodless, resorted to injections of "liqueur physiologique." The dastardly assassin was subsequently captured, and awaits trial. The pharmacien lies in a critical state and is not expected to recover.

CHEMISTS v. GROCERS.—Apropos of an article appearing in a recent issue under the above heading, it might not be out of order to give the result of the petitioning of the Minister of the Interior, which the grocers threatened to do in the event of the pharmacists continuing to harass them. From all accounts, it would appear that the pharmaciens and the health societies had good reason to wage war, inasmuch as the majority of the grocers not only sold large quantities of cod-liver oil, quinine, boric acid, phosphorus paste, santonine lozenges, paregoric, spices, etc., but, wherever it was possible to do so, these goods were adulterated to an alarming extent. The public happily are beginning to find out that their interests are better served in patronising the pharmacien, so, between an angry public and a harassing health committee, let us wish the grocer the good time his shady practices merit. The result of the actions against the grocers, which came on for trial at the Tribunal Correctionnel of Guingamp, in the north, was a decided victory for the pharmaciens.

SCHOOL OF PHARMACY NEWS.

ON ACCOUNT OF THE INCREASED NUMBER of students now working at the Square, changes have been made this session in the arrangements of the various laboratories. The present Research Department has taken over the Upper Octagon Room, formerly used as the Pharmacy Laboratory, to provide bench accommodation for Major men. The Pharmacy Laboratory has been moved into the other building just above the Examination Hall. The new quarters for practical pharmacy are, from a student's point of view, considerably more commodious for work than the old ones. The room, although not much larger, is oblong in shape, and the bench, in the centre of the room, is not half so bulky as the corresponding bench in the old "lab," though it affords accommodation for as many students. The arrangements otherwise are pretty much the same as formerly. Another advantage that the new quarters possess is that it gives students who are would-be athletes an opportunity of training, the room being situated at the very top of the building.

FOOTBALL.—What has been referred to in this column as *the* match of the season took place last Saturday between the P.F.C. and the Honourable Artillery Company, on the ground of the latter, at Finsbury Pavement, E.C. Quite a large number of Square men, past and present, had assembled, and even some of the lady students had recognised the importance of the match, and were interested observers. It is to be regretted that our special commissioner lost his notes during the exciting game, so that we are unable to give as full an account as might be wished; it is understood, however, that the Square team lost the match, but our reporter does not take any responsibility for this statement, because the match was so exciting and the shouts of the pharmaceutical onlookers so distracting that, as he has since been telling everyone, it is a wonder he is alive to tell the tale. He seemed to be under the impression that the Square goal-keeper was busy. It has since been stated that a report of the match appeared in the *Referee*, but, as our reporter does not read Sunday papers, he cannot confirm this statement. Nevertheless, if his impressions are to be depended on, and the Square lost, all we can say is that we hope they will take their defeat philosophically, and endeavour in the return match to regain their former reputation.

LOOKERS-ON SEE MOST OF THE GAME—true, and if that looker-on is a player himself, many are the wrinkles he can learn by watching the play of others, and these he may put into practice himself when next appearing on the football field. He can see in what special tactics certain players are successful and even brilliant, or where others are lacking from various reasons which may not be known to the players themselves, but are immediately seen by a critical observer of the game. He sees especially in the forward rank a desire on the part of certain players for individual efforts, which occasionally prove successful, but the best results

are achieved when all the forwards combine their play with unselfishness. In the half-back line he sees that players require keen tackling powers and an unlimited amount of pluck and stamina, whether backing up their forwards or assisting in the defence. Too many players are apt to think that constant practice is the only way in which they can perfect themselves, but it is not too much to say that by watching one good game they might learn more than in many practices. In the coming vacation the members of the football team may have opportunities of watching the play of some of the best players in Britain. By imitating the masters of the game there will then be some prospect next term of raising the present team to a higher state of efficiency.

IRISH NEWS.

IRISH PHARMACISTS' ASSISTANTS' ASSOCIATION.—At Dublin, on December 14, the third annual concert of this Association was held in the Ancient Concert Hall. Upwards of 400 persons were present. The programme was a large one, and consisted of eighteen items, exclusive of encores. Solos, part songs, recitations, character sketches, etc., were rendered by the following artistes: Miss Patterson, Mrs. Watson, Miss Florrie Laird, and Messrs. McClelland, Dalgliesh, Farquhar, Tinsler, Dyas, Cochrane, and Doran. A feature of the entertainment was a conjuring demonstration by Mr. Dyas. Mr. Doran's extracts from Othello and Trilby evoked frequent outbursts of applause. Mr. Henry Hunt, President of the Association, had charge of the arrangements, and was ably assisted by Messrs. Savage, Jessop, Williams, Yoxall, and others. To Messrs. Turner and Williams is due the credit of bringing the entertainment to such a successful issue.

CHRISTMAS AMONGST THE CHEMISTS.—With the near approach of Christmas most of the Dublin pharmacies have invoked the aid of the window dresser, with the result that shop fronts are gaily decked with the thousand and one drug sundries which are luxuries as well as necessities. Chief amongst pretty windows may be mentioned that of Mr. W. F. Wells, 20, Upper Baggot Street. Amber-coloured silk forms the foreground, and scattered thereon in tasteful profusion are flagons of perfumery interspersed with sprays of holly, the red berries on which lend a warmth to the surroundings. Carboys of cut glass are placed at intervals, and on tiers of crystal are seen some of the choice products of this firm. Inside the establishment the same good taste is observed, strict order and neatness in every detail prevailing, but without stiffness of design. Next in the degree of merit may be mentioned Messrs. Boileau and Boyd's drug and chemical store in Mary Street, which is a triumph of good taste. Mr. Edmondson, of Rathmines, is not less deserving of notice, his pharmacy being very prettily laid out. The several medical halls owned by Dr. J. C. McWalter are well in keeping with the season, while Dr. J. A. Walsh's State pharmacy in Westmoreland Street reflects credit on the up-to-date ideas of its popular proprietor. Messrs. Hayes, Conyngham, and Robinson's city and suburban establishments are deserving of high commendation, their window displays being well up to the best in Dublin.

IRISH PHARMACISTS' ASSISTANTS' ASSOCIATION.—At the usual fortnightly meeting of this Association, held last week, Mr. F. Maxwell read a paper on "The Pricing of Prescriptions," in which he suggested the use of a private mark on prescriptions indicating the price charged when first dispensed. Subsequently, Mr. Beardwell, manager of the Edison Phonograph Company, gave an interesting demonstration of the powers of the phonograph, and reproduced from the instrument a high-class concert, which all present greatly enjoyed.

THE WINTER SHOW AT BALLS BRIDGE of the Royal Dublin Society has this year been well up to previous similar exhibitions. The drug and chemical trade was represented by the following firms:—Messrs. Paul and Vincent, linseed and cotton cakes, oil, etc.; Messrs. Day, Son, and Hewitt, London, stock-breeders' medicine chests, gaseous fluid, red drench, etc.; the Bovine Company, London, Messrs. J. Thorley, Limited, spices and powders; Messrs. H. M. Leask and Co., Dublin, linseed of all kinds; the Phoenix Dill Mill Company, Limited, ditto; Lawes' Chemical Company, Limited, fluid dip and cattle ointments; Messrs. J. Leonard and Co., pharmacists, North Earl Street, Dublin, perfumery and chemicals generally. The exhibition was well attended.

MESSRS. S. CONNOR AND SONS, pharmaceutical chemists, Newry, are opening a branch medical hall at the corner of Upper Mill Street and Hill Street, in the same town. Extensive internal structural alterations are in active progress.

PHARMACY IN AUSTRALASIA.

IT WILL NOT BE THE FAULT of Victorian pharmacists if the Government is not induced to considerably modify, in the direction suggested by the Pharmacy Board, the Poisons Bill Amendment Act, now before Parliament. At a meeting of chemists and druggists held at the College of Pharmacy on September 28, it was unanimously resolved that the chemists throughout the colony should be requested to place themselves in communication with the members of Parliament for their district, and to urge upon them the desirability of supporting the proposals of the Pharmacy Board, on the grounds that the section, as submitted by the latter, was framed directly in the interests of the public, and insured a minimum of risk by restricting the sale of poisons or dangerous preparations to qualified persons; whereas the Government measure was inimical to public safety, inasmuch as, if carried, patent and proprietary articles containing poison, such as chlorodyne, etc., might be sold by anyone, so long as the entry of such sale be made by the vendor in a book and labelled as the Act requires. These arguments have already been brought under the attention of a large number of the members of the House; provision has been made for the desired alterations to be moved when the proper moment arrives, and it is believed that a very satisfactory support for them may be confidently reckoned on. In addition to this, a deputation consisting of Messrs. Witt, Tompsitt, and Shillinglaw have explained the unsatisfactory nature of the Government proposals to the Attorney-General, who has promised to give the subject his best consideration.

THE DENTAL BOARD OF VICTORIA are also wooing the sympathies of our legislators in connection with their own "little bill," and a few days ago a considerable number of them, headed by the Chief Secretary, by invitation, paid a visit of inspection to the Melbourne Dental Hospital and Australian College of Dentistry, and expressed themselves as highly delighted with the skilfulness of the work they saw performed, and the valuable tuition afforded to the students. The opportunity was, of course, taken advantage of by the hosts to contrast the hospital methods with the injury and suffering caused by the unskilful operations of "quacks," who, under the present dental laws, were permitted to practise as dentists in the colony, and to urge the necessity of paving the long-delayed Dental Bill passed without further delay. The Chief Secretary expressed himself as highly pleased with what he had seen; said that he was greatly impressed with the importance of the Bill, and promised that he would use every effort in his power to further its progress—remarks which were heartily endorsed by his fellow visitors.

ACCORDING TO LATEST ADVICES from New Zealand, the Pharmacy Bill had passed through the Legislative Council, and had been read a second time in the Lower House. The Premier had further promised that the Bill would be brought finally before the House, as soon as one or two policy measures had been disposed of; so that there now appears every prospect of its becoming law this session.

THE VITALITY OF THE MELBOURNE COLLEGE of Pharmacy has been further illustrated by a very important suggestion which has recently been submitted by the Council to the Government in connection with the important dairying industry. Strange to say, although a very considerable amount of money is annually spent by the Department of Agriculture in disseminating scientific information among dairymen and butter and cheese manufacturers, by means of peripatetic lecturers and experts, publications, etc., it is only of late that the authorities have become impressed with the necessity of establishing a recognised school or college providing organised instruction and examination in the various subjects with which it is necessary that the successful dairyman of the future should make himself familiar. Recognising this want, the Council of the College have placed its resources at the command of the Government and offer to establish a comprehensive course of lectures and demonstrations, by lecturers and examiners to be approved of by the Department, without entailing one penny of expense to the Government. The

carrying out of such classes independently would naturally involve very considerable expense, as no facilities exist elsewhere than at the College for such work, and there is every prospect that the proposal will recommend itself for acceptance, and that the College will, ere long, enter upon a new era of usefulness. The following is the syllabus of twelve lectures and demonstrations, of two hours or more each, which has been submitted for the consideration of the Department:—

1. Composition of milk, cream, butter, and cheese. Fermentation of milk. Aeration. Pasteurising. Preparation of pure cultures. Condensing. Quick method of detecting beistings.
2. Preparing samples for testing. Composite samples. Composition of various preservatives for composite tests. Quick method of restoring curdled samples.
3. Errors in the estimation of butter fat values. Speed of tester. Strength of acid. Calibrating flasks.
4. How to obtain perfect fat tests with the Babcock. No black or white curds.
5. The lactometer—its proper use. Table for analysis of milk. The thermometer, creamometer and hydrometer. The hygrometer. The thermomter and temperature.
6. How to detect watered milk or skimmed milk.
7. Cream, skim milk and butter milk testing. Various flasks used.
8. How to estimate water and fat in cheese and butter.
9. How to estimate the amount of salt in butter and cheese.
10. Demonstration of the acid test. How to prove the value of preservatives.
11. Chemical methods of analysing milk. How to value butter colours. Payment by results.
12. Practical examination for certificate.

AT THE SEPTEMBER MEETING of the Pharmaceutical Society of New South Wales it was decided that the following circular should be sent to each pharmacist who had been registered under Clause 11, Section D:—"This Society, having adopted the rule that only those persons can become members of the Society who either have passed a qualifying examination or have been a member of the Society before January 1, 1898, it is evident that the membership of this Society is a guarantee towards the public that a person has passed either a qualifying examination or has been registered many years ago under the Poisons Act as a chemist in New South Wales. To be a member of the Society is, therefore, distinctly an advantage to a chemist of New South Wales. The Pharmacy Board of New South Wales had to register under the Pharmacy Act many chemists who have not passed an examination, and, as the Pharmacy Act does not supply an examination for these pharmacists, they have no chance to prove their efficiency by an examination. To remedy this, the Pharmaceutical Society of New South Wales is now prepared to supply this want by holding a modified examination (as was done in Great Britain and Victoria). The Council have been striving hard to get this into the Pharmacy Act. Those pharmacists who pass this examination are eligible for the membership of the Society. They will then have the right to call themselves M.P.S. by Exam., and the public will have the guarantee that in dealing with such members of the Society they are dealing with pharmacists who have proved their qualifications by examinations. The object of this circular is to draw your attention to the advantage of being a member of the Society and to suggest to you eventually to come up for examination."

AT THE SAME MEETING the report of the Sub-Committee appointed to draw up a synopsis of subjects for examination was read and approved of. The principal clause (8) runs as follows:—

The examination shall be a *viva-voce* one to extend over one day only. The candidate may be examined in the following subjects:—Reading prescriptions without abbreviations, and translating literally as well as appropriately; detecting unusual doses, incompatibilities, etc. Compounding mixtures, pills, plasters, emulsions, suppositories, etc. Weighing, measuring, labelling, handwriting and finishing off. Posology, poisons and antidotes. Incompatibles. Ordinary and metric weights and measures. Recognition and estimation of purity by taste, odour and appearance, etc., of drugs and chemicals having well-marked characteristics; description and proportions of active ingredients. Use, sources of, and best means of preserving drugs and chemicals. Composition of decoctions, extracts, infusions, liquors, compound powders, pill masses, solutions, tinctures, ointments and other mechanical mixtures of the Pharmacopœia and processes of manufacture.

AT A RECENT COMBINED MEETING of the Pharmacy Board and Council of the Pharmaceutical Association of South Australia it was resolved "that it be a recommendation to the Board that candidates for examination who present University certificates that they have passed in the subjects of inorganic chemistry, botany, and organic chemistry of the B.Sc. course be allowed a pass in these subjects at the qualifying examination." Practically this means that the students may devote the first year to certain subjects, the second to others, and in the event of their obtaining pass certifi-

cates in both years' courses they will present them at the final examination of the Board, and will be further examined only in practical pharmacy and dispensing. The tendency of this system, it is considered, will be to bring about a more thorough grasp of the knowledge imparted and to practically ensure a curriculum. It has been further resolved to do away with the present "pharmacy" special class, and substitute for it one in pharmaceutical chemistry.

ENGLISH NEWS.

CHEMISTS AS JURORS.—On behalf of the Three Towns and District Chemists' Association, Mr. T. W. Ginn applied to Judge Woodfall, at Plymouth County Court, last week, to strike the name of Mr. R. F. Roper, chemist, Tavistock Road, Plymouth, off the jury list—His Honour said undoubtedly chemists were entitled to exemption; but they must take steps to get their names removed from the list.—Mr. Ginn remarked that no lists of jurymen had been posted on the church doors, as required by Statute, for the last two years, and consequently chemists lost their opportunities of getting their names removed.—His Honour: I cannot give directions for the exhibition of the lists. They are not in my jurisdiction.—Mr. Ginn observed that the chemists had no one but his Honour to apply to.—His Honour said he could only express the opinion that the lists ought to be exhibited at the church doors, and that chemists should be exempt from serving on juries.—With that expression of opinion Mr. Ginn expressed himself satisfied.

LIVERPOOL SCHOOL OF PHARMACY.—On Thursday last the students of the School journeyed to Widnes to visit Muspratt's works of the United Alkali Company. On reaching the works, they were divided up into parties, and were shown the manufacturing processes for a number of chemicals, including sulphuric acid, sodium carbonate, caustic soda, potassium and sodium chlorate, etc., also Chance's recovery process and Weldon's process. Each process was shown from the beginning; sulphuric acid, being the starting-point for the formation of most chemicals, was shown first. The process was followed and minutely described by Mr. Hedley, the courteous manager, and his equally courteous assistant chemists, from the burning of the pyrites to the finished article. The salt-cake process for the manufacture of sodium carbonate was next shown. First, the decomposing pans and the HCl condensers, the special furnace used in Muspratt's works for finishing the reaction, and finally the extraction of the black ash by water and the evaporation of the solution. The emptying out of the molten contents of the revolvers into the bogies was a sight not likely to be forgotten by the visitors, and a peep into the inside of them when the furnace was in action excited many comments. The purification of the soda ash completed the product. Chance's recovery process excited considerable interest. The visitors were shown the decomposition of the "cream," formed by mixing the alkali waste with water, by CO_2 , pumped through it from the top of a lime-kiln by powerful engines. The H_2S was conducted along into reservoirs, from which it was drawn and mixed with the requisite amount of air to burn out the hydrogen, then passed into a Claus' kiln, where, on coming into contact with the lining of FeS_2 , kept hot by chemical action, was at once ignited, depositing sulphur in the liquid form. It was pointed out that the sulphur thus obtained was 99.99 per cent. pure, but was liable to smell of H_2S for some time. The formation of caustic soda was next shown; the mother liquor from the soda ash was largely used for this purpose, and decomposed by lime. In connection with the evaporation of this, the guides remarked that an experienced workman could tell closely the degree of concentration by spitting into it, a test that was promptly applied by several of the visitors. The special feature in the manufacture of chlorates in these works is the employment of magnesia instead of lime for absorbing the chlorine, the effect of which, in the formation of KClO_3 was to produce crystals resembling thin plates of mica and which crystallised on sticks in a very pretty way. The NaClO_3 crystals excited remark, because of their beautiful quadratic form and from the fact that they affected polarised light. The Weldon recovery process was also described, and the decomposing tanks examined. The visitors were extremely interested to be shown the almost entire absence of waste, how one substance was used up in the manufacture of others, and before the finished article was reached a remark was overheard inquiring, what did they sell;

After leaving the works the students were invited to a tea provided for them at the Central Hotel, and eventually returned to Liverpool, having thoroughly enjoyed the visit, and feeling they knew something more about alkali manufacture than when they set out.

BRITISH PHARMACEUTICAL CONFERENCE.—The meeting at Plymouth next year will be held during the last week in July, the reception being held on Monday, July 24, and the Sessions of Conference commencing on the following day. Further particulars will be published in due course.

FOOTBALL.—The South London School of Pharmacy met the Walton-on-Thames team on the latter's ground on Saturday last. Marchant scored the first goal for Muter's, the half-time score being one to none in favour of the Kennington team. Two more goals were added in the second half, and a very good game was won by three goals to *nil*.

CHEMISTS' ASSISTANTS' ASSOCIATION.—The last meeting of the C.A.A. this year took the form of a musical and social evening, on Thursday, December 15. The President (Mr. F. W. Gamble) was in the chair. An excellent programme was contributed by Messrs. Morley Taylor, Marcus, Latreille, Leconfield, Strother, Hymans, and others. The next meeting of members will be at the Portman Rooms, on Wednesday, January 4, for the third Cinderella of the season, when a large company is expected. The regular sessional work will recommence on January 27, of which due notice will be given.

CRICKET CHAMPIONSHIP IN THE DRUG TRADE.—The combined efforts of Mr. C. A. Hill, of Davy, Hill and Co., and Mr. G. R. Moxon, of Burgoyne, Burbidges and Co., to inaugurate a cricket championship in the drug trade have been attended with distinct success. Several firms who have cricket clubs have been unable to raise teams consisting entirely of their own men, but it is hoped that these may be able to enter the league in a year or two. The six firms competing this year are as follows:—Burgoyne, Burbidges; Burroughs, Wellcome; Davy, Hill and Co.; Hewlett and Son; Howards and Sons; Stevenson and Howell. The cup is provided by the generosity of several leading firms, who are subscribing in the interests of sport and cricket. In addition to those above enumerated, several firms who are unable at present to take an active part in the competition have promised a donation of two guineas, to which amount subscriptions are limited. The hon. secretaries (C. A. Hill and G. H. Moxon) will be glad to receive the donations of those firms willing to give their support in the course of the next fortnight. A general meeting was held at the offices of Messrs. Burgoyne, Burbidges and Co., on Tuesday last, 20th inst., Mr. C. A. Hill in the chair. The title of "Wholesale Chemists' and Druggists' Cricket Championship" was agreed upon, and the general rules relating to the league were arranged. A small annual entrance fee for each club will render the league self-supporting, and it is satisfactory to note that a committee of management has been appointed (consisting of one delegate from each club), to whom all questions that may arise shall be referred, and whose decision shall in all cases be final.

MR. E. E. EVANS, M.P.S., of Penrose House, Abergavenny, Monmouthshire, late senior with Messrs. Decastor, Watson and Richards, has bought the business till recently owned and carried on by Mr. Watkin J. Thomas, chemist and druggist, at Victoria Square, Aberdare.

SPECTACLE MAKERS COMPANY.—Over two hundred craftsmen are now members of this Guild, and more than thirty of them are also Liverymen.

NEWCASTLE-ON-TYNE AND DISTRICT CHEMISTS' ASSOCIATION.—The second annual smoking concert of this Association was held in the Metropole Hotel on Wednesday evening, December 14, at 8 o'clock. Mr. F. E. Schofield (Morpeth), President, occupied the chair. There was a large attendance and everything passed off with *éclat*. Contributors were: Accompanist, Mr. J. Bloor (Newburn); humorous address, Mr. T. Maltby Clague; recitations, Messrs. Geo. Duncan and A. Rathbone; violin, Mr. Swales (Leeds); violin and pianoforte, the Masters Duncan; songs, Messrs. L. Baff (comic) and Harbron (Gosforth), Gibson (Hexham), Gray (Gateshead), Moncrieff and Brand (Wallsend), Cole, Erring-

ton, and Harwood. Messrs. Biggins, piano, and Raine, mandoline (Blaydon), contributed an admirable duet. Mr. Gibson (Morpeth), a member of the international team in England *v.* Scotland Indian club competition, gave a first-rate exhibition of club exercises. At 11 p.m. there was sufficient talent in hand to repeat the performance. The singing of "Auld Lang Syne" ended a very enjoyable evening.

LIVERPOOL PHARMACISTS will be pleased to hear that Mr. Theodore H. Wardleworth, the well-known secretary of the Liverpool Chemists' Association, has just been elected a Fellow of the Linnean Society, an honour rightly bestowed, for the recipient is not only a good practical botanist, but also a pharmacologist of wide experience.

MR. O. A. READE, pharmaceutical chemist (Vice-President of the Plymouth, Devonport, Stonehouse, and District Chemists' Association), has also been elected a Fellow of the Linnean Society.

CHARGE OF ATTEMPTED POISONING.—A remarkable charge of attempted murder, heard before the Halesworth County Bench, is reported by the *Daily Telegraph*. A young woman, named Elizabeth Walford, a domestic servant, was accused of administering strychnine to her mistress, Elizabeth Sophia Marlar, wife of John Marlar, chemist, of Halstead. Mrs. Marlar could not appear, but her husband stated that prisoner took a cup of tea and some toast to her mistress in her bedroom, an unusual thing for her to do, but it was understood to have been done out of goodwill. Immediately Mrs. Marlar tasted the toast she called out that she was poisoned. Her husband examined the toast, and observed some white grains upon the toast, which he found to be strychnine. He asked accused what she had done, and she replied, "Nothing." He had, he explained, some strychnine laid about with flour to poison mice. Dr. Roberts, who examined the toast, said he found two pieces sprinkled over with strychnine, and on one, the piece that had been bitten, the powder was thickly laid. He could not say without further investigation whether there was sufficient of the poison to cause death. When prisoner was arrested she made no answer to the charge, and the magistrates remanded her pending an examination of the toast by an expert analytical chemist.

FOOD AND DRUGS ACT PROSECUTIONS.—The *Times* reports that at the Clerkenwell Police Court on Wednesday, December 21, Mr. Bros was engaged for some time in hearing a summons against Parkes' Drug Stores (Limited), of 1, Electric Avenue, Brixton, for having sold at premises in Holloway Road, on November 10, sweet spirits of nitre which was deficient in ethyl nitrite to the extent of 31 per cent. of the proper minimum amount prescribed by the British Pharmacopœia. Dr. White prosecuted on behalf of the Islington Vestry; and Mr. Hoddinott appeared for the defendant company. Three ounces of spirits of nitre were purchased by Inspector Cowling, appointed under the Sale of Food and Drugs Act. It was divided into three parts, each part being placed in a 3-oz. bottle. An analysis of one of the samples by Dr. Teed showed a deficiency in ethyl nitrite of 31 per cent. For the defence Mr. Hoddinott argued that ethyl nitrite was of an extremely volatile character, and the fact that 1 oz. was placed in a 3-oz. bottle encouraged evaporation. Evidence was given by Mr. Lorrimer, manufacturing chemist, that the spirits of nitre was supplied by him to the defendant company, and was made up to the maximum strength mentioned in the Pharmacopœia. It was extremely difficult to keep it up to the standard. A fine of £1 and £2 2s. costs was imposed.—Albert Honiatt, of 35, Junction Road, Holloway, was fined 20s. and 12s. 6d. costs for selling spirits of nitre deficient in 36 per cent. of ethyl nitrite.—William Blackburn, of 675, Holloway Road, was fined 40s. and 12s. 6d. costs for selling spirits of nitre deficient in 62 per cent. of ethyl nitrite.

POISONING BY CHLORAL.—Mr. Braxton Hicks held an inquest at Battersea, on Monday, December 19, on the body of Charles Leopold Field (43), an analytical chemist, of Hawthorne Road, Battersea, who died on Friday, December 16.—The evidence showed that deceased, who suffered recently from insomnia, had been in the habit of taking chloral, and that on the previous Friday he was found dead in bed, a bottle containing chloral being discovered on the dressing table.—Dr. Pollard, divisional surgeon, said he had frequently attended Mr. Field, and had pre-

scribed sleeping draughts for him. When he was called to see the deceased on Friday afternoon he found that he was dead, and showed symptoms of narcotic poisoning. The witness discovered a bottle containing chloral hydrate, the quantity being enough to poison twenty men. Evidently this had been administered in a reckless manner.—The jury returned a verdict of "Death from misadventure."—The Coroner: It is another warning against the reckless use of deadly drugs. It is a great pity people are not more careful.

BEECHAM'S PILLS.—In connection with the case of *Beecham v. Flintoff*, decided in the Chancery Court, on Saturday, December 10—when a perpetual injunction was granted to restrain James William Flintoff, described as a chemist, carrying on business as a druggist and patent medicine vendor at Blackburn, from selling or offering for sale as Beecham's pills any pills not manufactured by the plaintiff—the North-East Lancashire Chemists' Association has intimated to the local Press that the defendant Flintoff is not a chemist, his name not being on the Register of Chemists and Druggists.

THE LECTURES ON BOTANY at the Storey Institute Classes, Lancaster, delivered by Mr. William Wyatt, pharmaceutical chemist, have, according to the Principal's report at the annual distribution of prizes, been much appreciated, and freely taken advantage of by young pharmacists and others, to whom the subject is of great interest and importance.

SCOTTISH NEWS.

EXTENSION OF PREMISES AT GLASGOW.—Messrs. Fraser and Green, the well-known chemists and druggists, of Buchanan Street, Glasgow, have recently extended the aerated water manufactory in connection with their works, by the installation of an entirely new plant, supplied by Messrs. Bratby and Hunchliffe, Limited, Glasgow. The apparatus has been specially designed to meet the requirements of Messrs. Fraser and Green's large trade in mineral waters, and have extra large cylinders for the filling of large quantities of syphons. The apparatus is working most satisfactorily, and Messrs. Fraser and Green anticipate that through its agency they will be able to keep pace with the demand for their waters, which have a large sale in Glasgow. Great care, it may be stated, is exercised in the manufacture, Loch Katrine water, filtered by means of a Berkefeld filter, being used.

INVERNESS CHEMISTS' ASSOCIATION.—On the evening of Friday, December 16, in the Waverley Hotel, a lecture entitled "Ptomaines and Food Poisons" was delivered before the members of this Association, by Dr. Munro Moir. Mr. John Fraser, President, occupied the chair, and there was a good attendance. Dr. Moir treated his subject in a very able and interesting manner, and was followed with close attention by his audience. The various ways in which food becomes tainted with disease were explained thoroughly and illustrated by many graphic instances which had come under the notice of the lecturer. The discussion which followed was free and suggestive, the importance of the subject being recognised by all. Milk, tinned meats, water supplies, and sanitary matters generally received candid attention. Among the speakers were Messrs. Fraser, Ogston, Junor, Bethune, Mackenzie, Mitchell, Macleod, Mason, and Gair.—In the name of the Association, Mr. Fraser thanked Dr. Moir for his admirable lecture, and after coffee and smoking had been indulged in, the meeting terminated with a vote of thanks to the Chairman.

Partnerships Dissolved.

(From the London Gazette.)

Cornelius Robbins and William May, Dental Surgeons, 32, Oxford Road, Kilburn, N.W.

G. F. Underwood and F. Gillespie (trading as Underwood Brothers) Manufacturers of Grocers' and Chemists' Sundries, Fairford Works, Lower Kennington Lane, S.E.

T. and H. Smith and Co., Wholesale Druggists, Edinburgh, so far as regards John E. Bryant on his resignation of office as trustee and executor of the late Peter Shanklin Smith.

MARKET REPORT.

The quotations here are given in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

London Report.

DECEMBER 22.

Business in Drugs and Chemicals has been extremely restricted during the past week, and, in view of the fact that immediately after Christmas stock-taking will commence, there is no prospect of a revival of activity until after the commencement of the New Year. There are practically no changes of any importance to record. We take this opportunity of wishing our readers "A Merry Christmas and a Happy and Prosperous New Year." Below we give a few particulars which may prove of interest:—

ACETANILIDE.—Price for a really reliable quality is 1s. 3d. per lb. down to 11d. for 5 cwt. lots, in bulk packing.

ACID CARBOLIC.—There is no change to report from last week.

ACID CITRIC.—*English* is quoted 1s. 1d. per lb. for spot, while *foreign* makers ask the same price *c.i.f.*

ACID TARTARIC.—*English* is quoted 1s. 0 $\frac{3}{4}$ d. per lb., and *foreign*, 1s. 0 $\frac{1}{4}$ d.

AMMONIA COMPOUNDS.—Are without change, with the exception that the *Sulphate* is dearer at £10 2s. 6d. per ton for gray prompt 24 per cent., London, and at £10 5s. per ton, Beckton, January-June.

ANTIMONY.—*Regulus* is quoted 36s. 9d. to 37s. 3d. per cwt., while *Japan Crude* is rather easier at 22s. per cwt. on spot, landed terms, and 20s. 6d. per cwt. *c.i.f.*, to arrive.

ASAFETIDA.—Has been inquired for this week, but only retail sales are reported at 40s. per cwt. for medium quality. The first arrivals of the season from the Persian Gulf, consisting of 93 cases, will be offered in the next drug auctions, which take place on January 19.

BLEACHING POWDER (CHLORIDE OF LIME).—Is unchanged at £6 per ton for *English*.

BORAX.—Firm at late advance, *Crystals* being quoted 16s. 6d. and *Powder* 17s. per cwt.

BROMIDES AND BROMINE.—Are without change.

CAMPHOR.—Is quiet, *Crude* being quoted 99s. per cwt., *c.i.f.*, for China, and 106s. per cwt., *c.i.f.*, for Japan. *Refined* without change at 1s. 5 $\frac{1}{2}$ d. per cwt. for bells and flowers, squares being quoted in proportion, according to size.

CANNABIS INDICA.—17 packages just arrived will probably meet with good competition in next public sale, the article having lately been in very short supply.

CASCARA SAGRADA.—There continue to be many inquiries in this market from the United States, and various cheaper lots have found buyers. Further business has, however, been checked for the moment by the firmness of holders, who ask 30s. per cwt. for old bark and 26s. to 28s., according to quality, for new. It would appear more than probable that we shall see higher prices ruling for this article after the commencement of the New Year.

CASTOR OIL.—Is rather firmer at £26 for $\frac{3}{4}$ *Belgian* first pressing on the spot; Jan.-Dec. 1899, £25.

CHIRETTA.—20 bales of this article (which had become rather scarce) have just arrived, and will be offered in public sale on 19th prox.

CLOVES.—Privately *Zanzibar* are active at steady prices, sales comprising January to March at 3 $\frac{1}{4}$ d., March to May, 3 $\frac{1}{2}$ d. At auction only 110 bales *Zanzibar* were offered and bought in at 3 $\frac{1}{2}$ d.

COAL TAR DISTILLATION PRODUCTS.—Are without change in value, except that *Benzole* is a shade dearer at 9d. per gallon, for both the 50 per cent. and the 90 per cent.

COCAINE.—Makers of the best brands are very firm at 10s. 9d. per oz. for 100 oz. lots in 25-oz. tins.

CODEIA—Is in good demand at unchanged price, viz., 12s. 6d. per oz.

COD-LIVER OIL—Quiet and unchanged. Holders are hoping that the colder weather may bring an increased demand, and consequently better prices.

CREAM OF TARTAR—Is quiet and unchanged at 73s. 6d. per cwt. for first white crystals, on the spot, powder being quoted 75s. 6d. to 77s. per cwt.

GALLS—Continue to be a very strong market, while the quotations from abroad also come dearer. *Blues* have been done at 57s. 6d. per cwt. Stocks are small, and crop is reported to be short. *Green* are in small supply, and are held for extreme rates. Supply of *White* exhausted. There is no business to report in *China*, but the arrival price comes dearer at 55s. per cwt. *c.i.f.*

GINGER.—Only small supplies of *Cochin* offered, and all bought in, washed rough at 23s. 6d. 65 cases also bought in, native cut, small, 35s.; medium, 48s.

GLYCERIN.—Market is quiet at nominally unchanged prices for both the *crude* and the *refined* article.

GUM TRAGACANTH.—The new arrivals are now being offered and are meeting with a good demand, especially for the higher grades, in which a fair business has been done at very full rates, while a larger business could have been done had importers been willing to accept a little less than the shippers' limits; they, however, remain very firm in their ideas as to value. Quotations are: *Firsts*, £14 to £14 10s. per cwt.; *Seconds*, £12 10s.; and *Thirds*, £11 5s.

HYPOPHOSPHITES—Makers quote 3s. 6d. per lb. for the *Lime Soda*, and *Potash Salts*.

IODIDES AND IODINE—Are unchanged from last week.

MENTHOL.—There has been some buying on part of people who are generally well informed, and who have practically cleared the market of all really good brands offering at 7s. 6d. per lb. Very little is now obtainable at this price, and then not of best makes, while the *c.i.f.* price comes at a higher parity.

MERCURIALS—Are firm, but without change, at prices quoted last week, say 2s. 8d. per lb. for *Calomel*, and 2s. 4d. per lb. for *Corrosive Sublimite*.

MORPHIA—Is unchanged at 5s. per oz. for the *Hydrochlorate powder*.

OILS (ESSENTIAL).—Business in these is very quiet, and there are no changes of any importance to record. *Star Aniseed* is still quoted 6s. 2d. to 6s. 3d. per lb. on the spot. For *Cassia* there is some inquiry, prices ranging from 4s. 3d. to 5s. per lb., according to quality. *Citronelle* is very dull, and a shade easier in price at 1s. 0 $\frac{3}{4}$ d. per lb. in tins and $\frac{1}{4}$ d. per lb. less in drums. *Cinnamon*: A small business has been done in leaf oil at 2d. per oz. *Lemongrass* quiet at 3d. per oz. *Peppermint*, American H G H, is slow of sale at 5s. 6d. per lb. on the spot. Wayne County, 3s. 4d. to 4s. per lb., according to quality. *Japanese*, 40 per cent. is quoted 5s. per lb., while dementholised has been done at 3s. 6d. per lb. *Eucalyptus*: There has been some inquiry from America, in consequence of the influenza epidemic which is raging there; so far, however, prices remain unchanged at 2s. to 2s. 6d. per lb. for *Globulus*, and 1s. to 1s. 9d. per lb. for fair to good commercial quality.

OILS (FIXED) AND SPIRITS.—Prices are practically unchanged from last week, with the exception of *Turpentine*, which is again dearer at 31s. 3d. to 31s. 6d. per cwt. for spot, American, while Jan.-April is quoted 31s. 7 $\frac{1}{2}$ d., May-June 30s., July-Dec. 24s. 7 $\frac{1}{2}$ d. per cwt.

OPIUM.—There has been an improved demand, with some sales of both *manufacturing* and *druggists'* kinds at steady rates; there have been also one or two transactions in *soft shipping*, in which, however, business has been somewhat checked by the extreme prices required by holders. *Persian* quiet, with practically nothing doing, prices remaining nominally unchanged.

PERMANGANATE OF POTASH.—It is stated that one maker has stopped selling. Several others will have to do the same before we can hope to see any real improvement in the position of the article.

PHENACETIN—Is unchanged at 3s. 9d. to 4s. 3d. per lb., according to quantity and packing for a good commercial article, while *Bayer's* is quoted at 5s. 6d. and *Riedel's* 5s. 5d. per lb., in 1 lb. bottles.

POTASH COMPOUNDS. There are no changes to report, with the exception that *Yellow Prussiate* is slightly dearer at 6 $\frac{3}{4}$ d. to 7d. per lb.

QUICKSILVER—Is firm at £7 15s. per bottle from first hand, and £7 14s. from second hand.

QUININE—Has shared in the general dulness. The best German makes of *Sulphate* being quoted nominally 10 $\frac{1}{2}$ d. per oz. for 1000-oz. lots in 100-oz. tins. The manufacturers are, however, by no means free sellers at this figure.

ROSIN—Is quoted 4s. 4 $\frac{1}{2}$ d. per cwt. ex-wharf for strained on the spot, and 4s. 1d. per cwt. *c.i.f.* for January-March, and March-May sailer shipment.

SODA COMPOUNDS.—There are no changes to report.

SPICES (VARIOUS).—*Black Pepper*: 327 bags Singapore bought in at 4 $\frac{1}{4}$ d. to 4 $\frac{1}{2}$ d. *White Pepper* mostly bought in; Penang at 7 $\frac{1}{2}$ d. and Singapore at 8 $\frac{1}{2}$ d. to 9 $\frac{1}{2}$ d., except 40 bags which sold at 8 $\frac{1}{2}$ d. to 8 $\frac{3}{4}$ d. *Sweet Red Pepper*: 4 casks Spanish bought in at 70s. *Chillies*: 53 bales Zanzibar bought in at 38s.; 1 bag from Chinde sold at 31s. *Cinnamon*: 12 bales Ceylon sold, first sort 8 $\frac{1}{2}$ d., second 7 $\frac{1}{2}$ d., third 6d., fourth 5 $\frac{1}{4}$ d. *Mace*: 10 cases Penang sold, good heavy bold pale 2s. 4d., good middling red 1s. 9d., ordinary pickings 1s. 2d.; 6 packages West India sold at 1s. 3d. to 1s. 7d. *Pimento*: only 40 bags sold at 4 $\frac{1}{2}$ d., the rest being bought in at 4 $\frac{3}{4}$ d. to 4 $\frac{1}{2}$ d.

SULPHATE OF COPPER—Unchanged at £18 to £19 10s. per ton on the spot, according to make.

SULPHONAL.—Makers' price is 17s. per lb. for both *crystals* and *powder*. There are, however, sellers from second hand below this figure.

THYMOL—Is firm at 8s. to 8s. 9d. per lb., according to make, quantity, and packing.

TURMERIC.—Business in most descriptions has been on a small scale, but prices are very firm. *Bengal* is quoted 19s. per cwt. fair bright; *Madras* finger, 30s.; *Cochin* finger, 21s. to 21s. 6d.; split bulbs, 11s.; fair *China*, finger sold at 21s. per cwt.

Newcastle Chemical Report.

DECEMBER 21, 1898.

This market is not by any means animated with anything like a changed prospect. In fact, in view of the approaching Christmas holidays, business is if anything on the side of quietness. Prices, however, remain unchanged, and are quoted as follows:—Bleaching Powder, according to market, £5 to £5 10s. Soda Crystals, basis price, 45s. Caustic Soda, 70 per cent. basis price, £7. Soda Ash, 52 per cent., £4 5s. Alkali, 52 per cent., £5 5s. Sulphur: £4 15s. to £5 per ton.

Liverpool Market Report.

DECEMBER 21, 1898.

Exclusive of considerable sales of Castor Oil, both on the spot and forward, transactions do not offer much of interest. About 150 sacks of Chilian Beeswax changed hands during the week at good rates, and refined Chilian Spermaceiti also commanded a good figure. The rise in the price of Turpentine still continues, and it has now reached 31s. 6d. per cwt. In chemicals there had been but little doing, except in Borax, and that at slightly higher rates.

AMMONIA SALTS.—*Carbonate* continues very firm at 3d. per lb. *Sal ammoniac*: 35s. and 33s. per cwt. *Sulphate*: £10 2s. 6d. per ton.

BEESWAX.—Good business is reported, both for home and export in Chilian, of which 150 sacks have been sold at £6 12s. 6d. to £6 17s. 6d. per cwt.

CANARYSEED.—100 bags of Turkish have been disposed of at 28s. per 464 lbs.

COPPERAS—Is firm; 39s. and 37s. per ton.

COPPER SULPHATE—Is quiet at £18 7s. 6d. to £18 10s. per ton.

GUM.—Brazilian Arabic has been sold at 22s. per cwt., and Niger at 47s. 6d.

OILS (FIXED) AND SPIRITS.—*Castor* has been engaging some attention, and good amounts for both immediate and forward delivery have changed hands. Calcutta is 2 $\frac{1}{2}$ d. to 2 $\frac{3}{4}$ d. per lb., to arrive shortly; 100 cases sold at 2 $\frac{1}{2}$ d., and 1000 cases, deliverable February to June, at 2 $\frac{1}{2}$ d.; French, 2 $\frac{3}{4}$ d. to 2 $\frac{1}{2}$ d. per lb. Bombay: 100 drums sold at 2 $\frac{1}{2}$ d.; Madras, 2 $\frac{3}{4}$ d. *Olive* is getting firmer, and some holders have withdrawn in expectation of higher rates; Malaga has sold at £30 per tun. *Linseed* has risen a shade, and

Liverpool makes are quoted at 17s. 6d. to 18s. 6d. per cwt. Cottonseed is unchanged at 15s. 3d. to 15s. 9d. per cwt. for Liverpool refined oils. *Spirits of Turpentine* is exceedingly firm at 31s. 6d. per cwt.

POTASH SALTS.—*Chlorate* 3½d. to 3¾d. per lb. *Cream of Tartar*: Spanish sells at 72s. per cwt., French at 73s. per cwt. *Pearlashes* are nominal at 34s. 6d. to 35s. per cwt. *Potashes* are quiet at 25s. to 25s. 6d. per cwt. *Saltpetre*: Karachi from store has been selling at 17s. per cwt.; refined is scarce at 23s. per cwt.

SODA SALTS.—*Bicarbonate*, £6 15s. per ton. *Caustic*, 76 to 77 per cent., £7 12s. 6d. per ton. *Borax*, £16 to £16 10s. per ton. *Soda Crystals*, £3 per ton. *Nitrate* is in good demand at 7s. 6d. to 7s. 9d. per cwt.

SPERMACETI.—30 cases of *Chilian*, refined, sold at 1s. 1½d. per lb.

Manchester Chemical Report.

DECEMBER 21, 1898.

The market has again been very quiet, and there are few changes to report. Caustic Soda continues quiet, but some makes of Bleaching Powder are scarce, and more business is reported for delivery over next year. Ammonia Alkali, 58 per cent., has also been in fair request, and the figure quoted next year is £3 17s. 6d. per ton, on rails. Coal Tar products are somewhat dull. Carbohc Acid is quiet, but Benzols are somewhat firmer at 8½d. to 9d. for 50's to 90's. Anthracene is dull at 3¾d. for A quality, and 2¾d. to 3d. B. Pitch promises a better business for next year, and exports from the Ship Canal here have been, comparatively speaking, heavy. Holders are firm at about 21s. *f.a.s.* here. Brown Acetate of Lime is unchanged and steady. Arsenic remains dull at £16 to £16 10s. *ex ship*. Aniline Oil and Salt are in good demand at the recent advance. Chlorate of Potash is dull. Yellow Prussiate is firm at 6¾d. to 7½d. Green Copperas continues in demand for export, but quiet locally. The oil trade by the Ship Canal is advancing by leaps and bounds, and promises to become a big source of traffic.

EXTRACTS FROM CONSULAR REPORTS.

THE IMPORT RETURNS for the United Kingdom during the month ending October 31, for chemicals, dye-stuffs, and tanning substances show a decrease when compared with the same period last year of £16,581, while the exports of chemicals and chemical and medicinal preparations decreased £35,016. For the ten months ending with October the value of the imports is £522,518 less than for 1897, there being also a reduction in the value of the exports of £218,338.

THE NUMBER OF PRESCRIPTIONS COMPOUNDED at the dispensary of the St. Andrew's District Hospital, Grenada (Windward Islands), during 1897 was 7484, as against 5686 the preceding year. At the Carriacou Hospital, 4714 prescriptions were made up at the dispensary, as compared with 3081 in 1896.

THE MANUFACTURE OF CITRIC ACID is advocated by Vice-Consul Pignatorre, as a possible paying industry in Sicily. He gives two reasons why it should, at any rate, have a fair trial; one is that Sicily is the greatest orange and lemon producer in Europe, and the other, that it is almost the sole sulphur producer. Those who are opposed to the planting of this new industry do so on the ground that an undertaking of that kind must fail in Sicily or it would have been attempted before. As the Vice-Consul points out, this line of argument was taken by those who were adverse to the production of citrate of lime on the ground that it would not be profitable. He thinks that the numerous manufactories which have of late arisen in many parts of the island are a triumphant refutation of this assumption.

REPORTING ON THE TRADE AND COMMERCE OF ANCONA (Italy) for the year 1897, Vice-Consul A. P. Tomassini remarks that the imports of sulphates, acids and oxides from Great Britain largely increase every year. The quantity imported last year amounted to 1500 tons, while in 1896 it was only 926 tons. The total imports of chemicals amounted to 3622 tons, Austria-Hungary, Germany and Belgium sending 2122 tons, and the remainder from Great Britain.

PRACTICAL PHOTOGRAPHIC NOTES.

IT FREQUENTLY HAPPENS that it is desirable to use for illustration purposes a line drawing when the only available method of printing will not allow of the now common half-tone or screen block being used. A ready means of preparing line drawings from an ordinary silver print may, therefore, be useful, and the results are so pleasing, either as line drawings, that many may like to try their hands at it. Any silver print may be used, but the old albumin or bromide papers give the best results. The print need not be deeply printed or toned, all that is necessary is to obtain a distinct image. The lines of any building or object in the print may now be inked over with a fine drawing pen, using either Higgins' waterproof black ink or Windsor and Newton's process black. The drawing should be allowed to dry and then the silver image bleached out in the following:—

Iodine	10 g.
Potassium Iodide	40 g.
Cyanide	40 g.
Distilled Water to	1000 g.

A short wash after the image has disappeared will leave the line drawing intact.

FOR MAKING DIAGRAMMATIC LANTERN SLIDES, when it is not considered worth while to photograph them, ground glass is frequently used, but a better thing even than this is to coat a lantern glass with the following matt varnish:—

Sandarac	20 g.
Mastic	20 g.
Methylated Ether	1000 C.c.
Benzole	200 C.c.

and to draw the diagram on this with a good black-lead pencil when dry, and then varnish with the following, which makes the glass again quite clear:—

Sandarac	30 g.
Mastic	30 g.
Methylated Ether	1000 C.c.

TO CHEMISTS OF AN EXPERIMENTAL TURN OF MIND there is a field of research open which is likely to lead to considerable repayment—namely, in the manufacture of a celluloid film which is non-inflammable. Several accidents of late with kinematographs have induced the London County Council to impose such restrictions upon their use that the business has seriously suffered. To those who wish to experiment, the best way to set to work is to obtain a positive film, and treat this with something that shall render it non-inflammable or, at least, less inflammable than it is at the present time. Now the heat of the electric arc or limelight condensed on the film for fifteen seconds is sufficient to set the whole thing in a blaze. Whatever is used must not prejudice the transparency of the film, nor cause the gelatin to be sticky, nor cause the film to cockle. It is a subject well worth attention.

Obituary.

BENTLEY.—On December 14, John Thomas Bentley, Chemist and Druggist, Haworth. Aged 27.

HARDY.—On December 19, at Queens' College, Cambridge, Edward Croft Hardy, eldest son of Samuel Croft Hardy, Pharmaceutical Chemist, of Wandsworth Common, S.W., aged 22.

KANTHACK.—On December 21, Professor Alfredo Antunes Kanthack, Professor of Pathology in Cambridge University. He was elected Professor of Pathology on November 6, 1897, after the death of Professor Roy, which took place in the preceding October, and was subsequently elected to a professorial fellowship at King's College, Cambridge. He was a native of Brazil, and was born on March 4, 1863, being the second son of Emilio Kanthack, at one time British Consul at Para.

Receiving Order in Bankruptcy.

(From the London Gazette.)

Edward Whitmarsh (trading as Whitmarsh and Son), Aerated Water Manufacturer, 27, Salisbury Road, Plymouth.

Calendar for the Week.

Sunday, December 25. Christmas Day. Sun rises 8.8; sets 3.53.

Monday, December 26. Sun rises 8.8; sets 3.54.

Tuesday, December 27. 11.39 A. Sun rises 8.8; sets 3.54.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle Street, London, W., at 3 p.m.—First of the series of Christmas lectures, adapted for young people, when Sir Robert Stawell Ball will lecture on "Astronomy."

Wednesday, December 28. Sun rises 8.8; sets 3.55.

Thursday, December 29. Sun rises 8.8; sets 3.56.

ROYAL INSTITUTION, at 3 p.m.—Second lecture on "Astronomy" by Sir R. S. Ball.

Friday, December 30. Sun rises 8.8; sets 3.57.

ABERDEEN JUNIOR CHEMISTS' ASSOCIATION, Bon-Accord Hotel, Aberdeen.—Cinderella Dance.

Saturday, December 31. Sun rises 8.9; sets 3.58.

ROYAL INSTITUTION, at 3 p.m.—Third lecture on Astronomy by Sir R. S. Ball.

Trade Notes.

CHRISTMAS HOLIDAYS, 1898.—The Vinolia Co., Limited, Malden Crescent, London, N.W., intimate that its offices, warehouses, factories, and showrooms will be closed from Friday evening, December 23, until Wednesday morning, December 28.

MESSRS. C. J. HEWLETT & SON, 40, 41 and 42, Charlotte Street, London, E.C., announce that their establishment will be closed on Friday and Saturday, December 30 and 31, for the purpose of stock taking.

Publications Received.

ROUSE'S SYNONYMS FOR THE USE OF CHEMISTS, THEIR ASSISTANTS AND APPRENTICES. Pp. 226. Price 1s. London: Rouse Bros., 61, Charlotte Street, W. From the Publishers.

FORMULAIRE DES MÉDICAMENTS NOUVEAUX, POUR 1899 Pp. lxxv. + 334. Price 3 fr. Paris: J. B. Baillièrre et fils, 19, rue Hautefeuille. 1899. From the Publishers.

ON SO-CALLED SPASMODIC ASTHMA (considered from an entirely new standpoint with regard to its radical cure). By ERNEST KINGSCOTE, M.B., C.M., L.R.C.S. Edin. Pp. 18. Price 1s. net. London: H. J. Glaisher, 57, Wigmore Street, Cavendish Square, W. 1899. From the Publisher.

THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC AND PHOTOGRAPHER'S DAILY COMPANION, 1899. Edited by Thomas Bedding, F.R.P.S. Pp. 1508. Price, Crown 8vo., 1s. Cloth, gilt lettered, 1s. 6d. London: 'The British Journal of Photography,' 24, Wellington Street, Strand, W.C.

VITALITY: AN APPEAL, AN APOLOGY, AND A CHALLENGE, by LIONEL S. BEALE. Pp. 75. Price 6d. Reprinted from the *Lancet*. London: J. and A. Churchill, 7, Great Marlborough Street, W. 1898. From the Publishers.

DIGEST OF CRITICISMS ON THE UNITED STATES PHARMACOPOEIA: Seventh Decennial Revision (1890). Part II. Pp. vii. + 146. New York: The Committee of Revision and Publication of the Pharmacopœia of the United States of America (1890-1900). From the Publishers.

Advertisements.

(Received too late for Classification.)

VACANCY for Minor Student. Residential. Apply, F. E. J CRIDLAND, 192, Palmerston Buildings, E.C.

QUALIFIED ASSISTANT wanted. WOOD, Chemist, Aylesbury.

NOTICES TO CORRESPONDENTS.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ADVERTISEMENTS AND ORDERS for copies of the 'PHARMACEUTICAL JOURNAL' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers."

ARTICLES AND REPORTS sent for the Editor's approval should be accompanied by stamped directed envelopes, otherwise no guarantee can be given that they will be returned if not found suitable.

CORRESPONDENTS should write in ink, on one side of the paper only, and must authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

DRAWINGS FOR ILLUSTRATIONS should be executed twice the desired size; clean sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

NAMES AND FORMULÆ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

QUERIES addressed to the Editor will be replied to in the Journal as early as possible after receipt, though not necessarily in the next issue. Replies cannot be sent by post, even though stamped envelopes accompany the queries.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

OFFERED.

Robert H. Clarke's Specialties.—Lantern, with 4 in. condensers and 3 wicklamps, 17s 6d.; with 4 wick lamps, 18s 6d. Slides, sale or hire, Conquest of Soudan, Spanish American War. Catalogue free.—Robt. H. Clarke, Royston, Herts.

Wholesale and Retail Druggists: Advertiser is overstocked with superfine oil of lemon in 10-lb. coppers, and solicits offers; 1-lb. sample delivered free 2s. 9d.—Moss, 34, Avondale Road, Chorley.

Magic Lanterns, second-hand; triples and binoculars: oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Pharmaceutical Journal from January, 1881, to December, 1896, unbound, clean, and in good condition. What offer?—J. R., Pharm. Journal Office, 5, Serle Street, London, W.C.

Overstocked.—Twelve doz. Tetlow's Swansdown Powder, 6d., 3s. doz.; 3 doz. 1s. Gossamer Powder, 6s. doz.; 3 doz. 1s. Tressolia, 7s. 6d. doz., 2s. 6d. size 20s. doz.—Delves (Ltd.), 310, Stretford Road, Manchester.

Microscope by Joseph Long, monocular, two eye-pieces, 1 in., $\frac{1}{2}$, and $\frac{1}{4}$ objectives, coarse and fine adjustments, polariscope, live box, condenser, etc., in solid mahogany case, 5 guineas; also Mahogany Cabinet to hold 500 slides, 1 guinea.—Jackson, Crediton.

WANTED.

'Health and Disease,' by the late Dr. Benjamin Ridge. State price to—J. Spencer Palmer, Thornbury, Glos.

Microscope, Leitz or Leis, complete, for bacteriological work, with 1/12th oil immersion objective (approval necessary).—Johnson, Chemist, Hetton-le-hole.

Old Electric Lamps and Scrap Platinum for prompt cash.—P. Rowsell 9, Derwent Grove, East Dulwich, London, S.E.

COMMUNICATIONS, LETTERS, NEWSPAPERS, etc. have been received from Messrs. Andrew, Averill, Bailey, Brisley, Brown, Campkin, Cowley, Crosby, Dent, Doveaux, Dunning, Ferrall, Haasenstein, Hewlett, Hill, Holt, Jesson, Jones, Keen, Lawson, Marguarett, May, Park, Potter, Reynolds, Robinson, Rowell, Saver, Snell, Stanford, Stewart, Summers, Toone, Wall, Warren, Woolley, Young.

FRENCH NEWS.

[From our Paris Correspondent.]

THE CHRISTMAS DINNER offered by the English tradesmen of Paris to their English and French employés took place on Saturday night last. Amongst the speeches at dessert was one from Mr. Robertson, ex-President of the British Chamber of Commerce, in which the announcement was made that it could be taken as certain that the Queen would visit the Riviera next March, "a visit which would be a proof of the settlement of all diplomatic differences and the recommencement of the cordial relations which ought never to cease between the two neighbouring nations."

THE COUNCIL OF A CHEMISTS' ASSISTANTS' LITERARY ORGAN, called 'La Prévoyance Pharmaceutique,' having the welfare of chemists' assistants at heart, has just founded an association, the praiseworthy objects of which are to ameliorate and raise the position of pharmaceutical assistants and to create unity and solidity amongst its members; to form a clique of trustworthy and capable workers; to inculcate in its members habits of order, sobriety, economy, and frugality; in short, to bring it about that the title "Member of the Prévoyance Pharmaceutique" shall carry with it a guarantee of morality, and fit the holder of such for the honourable position he is called upon to take up in his profession. And whilst elevating the standard of the assistant, the Association also aims to draw more closely together the bonds of union between employer and employé, and to bridge over that gulf which unfortunately, though for no conceivable reason, appears to divide the two. The Council, moreover, formulates an appeal to the employers, urging them to come to the aid of their none too happy and fortunate assistants, and not remain insensible to any means capable of opening up a way whereby they may enjoy the consideration which they unquestionably merit. This, the Council point out, can only be realised by union and a give-and-take policy. But "union" amongst the assistants is the first essential to the realisation of their common aims, and with a warning "woe to the isolated," admonishes all assistants to become members of the association without delay. The Council makes it clearly understood that "union of members," in this as in other cases, is the magic means to the end, and it would be well for the English readers of this article (who bewail the onslaught of the illicit competition by which they are assailed, through lack of union amongst themselves) to accept this fact and endeavour to recruit new members for the Pharmaceutical Society, for, if all assistants and employers in Great Britain became members of the Pharmaceutical Society, and so consolidate interests and strengthen the hands of the Society, much might be done to obtain the legislation which the craft so sorely needs.

SUPPRESSION OF SPECIALTIES.—Messieurs Denize and Maréchal have obtained the adoption of the following proposition successively by the General Association and by the Congress held at Paris, November 18, "That the pharmacien, being essentially responsible, should not deliver to the public any medicament (serum and mineral waters excepted) other than such as bear his label and are given under his own seal. Moreover, any advertisement or announcement bearing indications as to medical treatment is strictly forbidden."

TREATMENT OF CHLOROSIS BY FERRUGINOUS SUBCUTANEOUS INJECTIONS.—Monsieur Birgelen has recently employed in four test cases of chlorosis and anæmia subcutaneous injections of 40 centigrammes of a 10 per cent. aqueous solution of oxy-citrate and ammonio-citrate of iron. The injections were made, with full aseptic precautions, in the arm, and, to avoid any untoward results, solutions less than a week old were used. The local reaction following the injection was generally fairly marked, a pimply tumefaction often being produced, which resembled a hard nut, and was painfully sensible to pressure. In one instance, after an injection of the oxy-citrate of iron, intense inflammation ensued, which culminated in an abscess. In two other cases exceedingly satisfactory results were obtained, and a rapid amelioration characterised by an augmentation in the number of and the richness in hæmoglobin. A fourth case might be regarded as unsuccessful, inasmuch as the patient was so affected by the irritation which ensued that the treatment had to be discontinued. In conclusion, the results obtained in these cases are not so

favourable as might have been hoped, still the author considers the injections might nevertheless be employed with advantage where the administration of iron by the stomach is contra-indicated. In such cases, the ammonio-citrate of iron (which, however, is not beyond reproach), should for preference be employed.

MUSHROOM JUICE AS A VACCINE AGAINST VIPER VENOM.—We have hitherto been wont to regard the humble mushroom only in the light of a fitting adjunct to beef steaks, etc., but we now learn that tickling the palate is the meanest of the rôles which this succulent agaric is destined to play in the affairs of man, for Monsieur Phisalix informs us that the juice of the mushroom has been employed by him in no less than 200 experiments as vaccine, producing the same symptoms as the venom of viper bites. He prepares the vaccine in the following simple manner:—Having cleaned the mushrooms as well as possible in several washings of water, he cuts them up into small pieces and macerates them in their own weight of chloroform water for twenty-four hours. The liquor is then drawn off and filtered through chemically pure filter paper. It has a neutral reaction, a pleasant and agreeable odour, and an insipid taste. In colour it is at first brown, but quickly deepens, until it finally assumes an inky blackness. It keeps well in stoppered bottles if a drop or two of chloroform be added. Respecting its physiological action, the author assures us that it is not so inoffensive as one might believe, *à priori*. A dose of 10 cubic centimetres inoculated under the skin of a guinea-pig's thigh produces an œdematous swelling, which disappears in five or six days. At the same time the temperature rises from $\frac{1}{2}$ to 1 degree. If a stronger dose (20 to 25 C.c.) be employed, the local action becomes more pronounced, the œdema spreads to the abdomen, and sloughing sometimes supervenes. The temperature falls gradually (1 to 2 degrees) only to rise again rapidly. The general phenomena are more accented when the maceration is injected warm into the peritoneum, the animal being often seized with nausea, and falls on its hind-quarters. The temperature falls four or five degrees, and remains so for twenty-four hours, the stomach is hard and sensitive to the touch. If, however, injected into the veins of a rabbit, the liquid produces, even whilst injecting it, violent shocks, which intensify in proportion as the dose is increased. Generally 15 to 20 C.c. suffice to produce death. The animal falls on its flanks, agitated by convulsions, and asphyxia ensues in a few seconds. If the thorax be at once opened, the heart will be found to be distended with blood, immobile, and all the veins swollen. The blood is black and coagulates rapidly. In the ventricles, small clots are already observed. Allowing a few minutes to elapse before making the autopsy, the coagulation will be completed in the vessels, and one can withdraw from the heart clots which reach into the aorta and pulmonary artery.

THE MAINTENANCE OF A HIGH TEMPERATURE (120° C.) for twenty minutes does not completely destroy the toxic properties of the juice; for if this heated juice be injected whilst still warm into the peritoneum the temperature falls, whereas if injected under the skin it, on the contrary, rises. As to its vaccinating properties, a guinea-pig which has received a 5 to 20 C.c. injection under the skin can, after a lapse of a few days, support a dose of deadly viper venom. This immunity, already great, is capable of being increased, and if after twenty or fifteen days the animal be submitted to two or three inoculations of the juice, the dose of viper venom may be increased one-fifth without any toxic effect whatever being produced. The duration of this immunity is from two to four weeks. Notwithstanding all the antiseptic precautions taken, the juice often produces a mortification of tissue, followed by a suppurating wound. Sometimes graver affections are developed (tetanus, etc.), followed by death. This was thought due to a microbic growth rather than to the juice, which was subsequently proved. However, all fear of microbic infection is got rid of by heating the juice to boiling point, which not only destroys the microbe without diminishing the efficacy of the vaccine, but rather seems to increase it. It would be interesting to separate and know what are the toxic and vaccinating substances contained in the juice of the mushroom, and since one reads in the *Pharmaceutical Journal* so much concerning arrow poisons, perhaps some clever seeker after knowledge may turn his time and brains to the development of this interesting subject, and inform us more fully as to the rôle which mushrooms might play in the question of immunity.

IRISH NEWS.

[From our Belfast Correspondent.]

WHETHER "WATER-FINDING" can be considered a justifiable extension of the physician's prescriptive power of tapping for water is open to question. It appears, however, that the medical superintendent of Armagh Asylum advised the governors to employ a diviner whose fee was £5. The Local Government Board, considering that the services of a so-called "water-finder" could not be legally paid from public funds, surcharged the amount to three governors; but the doctor signalled his devotion to the divining-rod by indemnifying the signatories.

'THE BRITISH MEDICAL JOURNAL' AND 'LANCET' have laboured very assiduously to promote their view of the telluric origin of the epidemic in Belfast. The latter's Commissioner has indeed ransacked the medical literature of Europe to discover the causation of an epidemic which lowered the general death-rate. His first report announced that there was "comparatively little sickness" amongst the ship-building portion of the community, and he explained this by a theory akin to Sadler's 'Law of Population.' He now chronicles that "typhoid fever has been rife" in that very district. A gentleman who says and unsays so dogmatically is certainly worthy of all credence. The former journal objects to the "water-borne" theory because the exemption of some districts from the disease is against it, and the fact that the jail and asylum have escaped the contagion. It was recently stated that six cases have occurred in those institutions, and the "unequal distribution" of the disease might be explained by the fact that it is the Stoneyford — not the Woodburn — water supply against which Professor Lorrain Smith's indictment is directed. The statement of Alderman Dr. Bigger,

who suspected the water from the first, is opposed to endemicity. The examination of the water has indeed caused some divergence of judgment amongst specialists. The presence of the *B. coli communis* is, however, not disputed, the crux being whether it is concerned in the infection of typhoid. But the various high authorities invoked on each side forcibly remind one that medical science is still in some respects conjectural. Dr. Hodges and Mr. Barklie, F.I.C., after a very painstaking examination, conclude respectively that the "water is not polluted with animal matters," and that "it is at present purer than at any previous period." Professor Letts, "on the result of repeated analyses" during the past twenty years, considers the water below the standard of purity. The "albuminoid ammonia" has often risen above 0.02, when it should not exceed 0.01, the "oxygen absorbed" (0.3-0.4) and the organic nitrogen (above 0.02) are excessive.

THE ULSTER MEDICAL HALL (late Messrs. Davidson and Leslie), after being refurbished, has opened as Davidson and Hardy. The

firm is under the management of Mr. Hardy, who hails from Dublin. This is a further proof that in Ireland business men tend northwards as professional men travel south, though some would not be prepared to admit the latter inference whilst the commercial capital boasts a Sinclair and M'Keown.

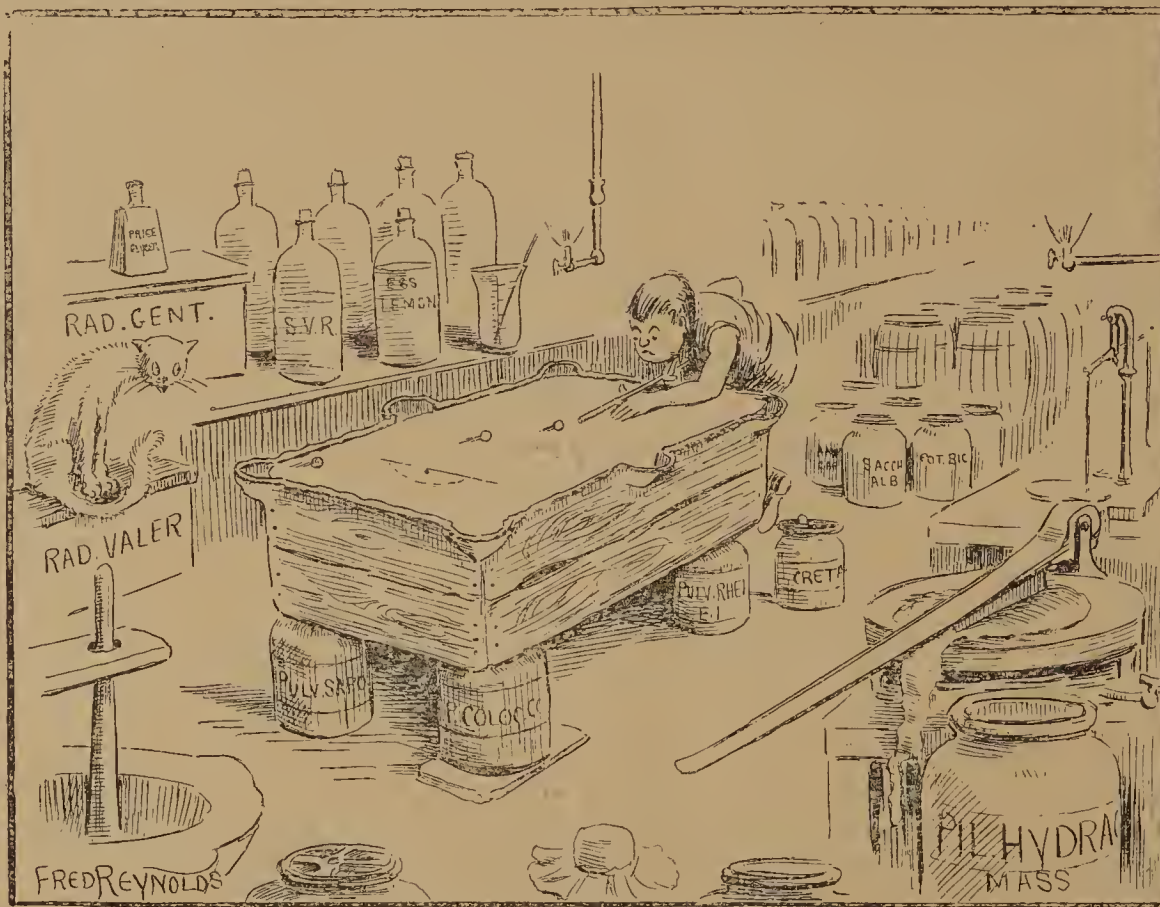
A CASE OF POISONING by drinking a belladonna and ammonia liniment from a whisky bottle occurred in Londonderry (Christmas Day). Happily a fatality was averted, but this again points to the desirability of having a poison bottle in general use.

THE DEATH OF MR. WALTER C. JAGO, Belfast, has just taken place. Deceased was a well-known dentist, and had an extensive practice.

MR. JAMES HOGG, whose establishment antedates the 1875 Act, and his son, Mr. Samuel Hogg, L.P.S.I., Belfast, have amalgamated into a limited company.

MR. J. TOWNSEND FRENCH, the gentleman who possessed the wonderful epileptic "cure" has been compelled to enter the bankruptcy court.

This is a significant sign of the times. It is evident that the public cannot be so easily gulled as heretofore. The nation has bought and is buying its experience dearly, but perhaps in the long run it is better thus than legislating against a crop of hydra-headed villainies, which spring up like mushrooms and spread like weeds. The patent vendor (of the quack variety), by repeating himself so often and in so many infallible forms, has impressed the British public unfavourably. It requires such enormous sums in advertising (the pharmacist indeed can gauge to a nicety when a particular district is being regaled with the wonderful "narratives") and



Seen During Christmas Week.

Errand boy found at a quiet game of billiards in the drug cellar, having constructed the edge and pockets of pil. hyd. mass, the cue being a glass stirring rod, and the balls pearl-coated dog balls.

in meeting the tactics of ambitious and unscrupulous rivals, that it proves the old maxim that "excess is its own cure." To intending vendors of specifics it should be mentioned that a disease should be selected which is fairly common. Epilepsy, being confined to a small part of the population, necessarily yields but a small number of purchasing victims.

THE ULSTER AMATEUR PHOTOGRAPHIC SOCIETY at a recent meeting were treated to a dissertation by Mr. Nahum Lubosch, of Messrs. J. J. Griffin and Sons, Ltd., London, upon the new paper called Velox. Its possessing in gaslight what was usually considered the distinctive feature of the dark-room, and its superiority to ordinary bromide platinotype in preserving the image directly on the surface of the medium were referred to.

THE SALARY OF DR. HODGES, F.I.C., city analyst of Belfast, has, owing to the extended boundary, been increased from £250 to £300.

SCOTTISH NEWS.

GLASGOW SCHOOL OF PHARMACY.—The second annual supper of the above School was held on Friday, December 23, at the North British Station Hotel, Glasgow. Mr. John Lothian, Principal, occupied the chair. Messrs. Gilmour and Macbride acted as croupiers. There was an attendance of nearly one hundred, including Messrs. W. L. Currie (President of the Glasgow Pharmaceutical Association), James Robb, and Kidson Hunter (Principal, Otago College of Pharmacy, Dunedin, N.Z., etc. Mr. Gilmour proposed the toast of "The Pharmaceutical Society," and remarked that students were apt to form an erroneous conception of the Society because it was an examining body. It would be to the best interests of everyone, on receiving the qualification, to avail themselves of the privileges of membership. Mr. Currie replied, and in an eloquent and convincing speech defined the aims of the Society and said that it was worthy of their fullest confidence and support. The toasts of "Mr. Lothian" and "The Glasgow School of Pharmacy" were proposed by Messrs. Robb and Taylor, and received with extraordinary enthusiasm. Mr. Lothian suitably replied. Mr. Kidson Hunter spoke of the condition of pharmacy in New Zealand, and gave the students some words of advice. Other toasts were: "The Students," proposed by Mr. Cockburn and acknowledged by Mr. Boyd; "The Croupiers," proposed by Mr. Riddell and replied to by Mr. Macbride. An excellent musical programme was contributed by the students and their friends.

GLASGOW AND WEST OF SCOTLAND SCHOOL OF PHARMACY.—On Tuesday last the students of this school visited, with their Principal (Mr. Thomas S. Barrie), the Rockville Oil Mills of Messrs. Pearson, Beckett and Co. Mr. Pearson himself very kindly conducted the party over the works and explained in graphic style the various stages from the raw to the finished product. Taking linseed for example, the seed (imported preferably from India) is thrown into a hopper and thence allowed to fall between steel rollers, arranged one above another, where it is crushed, forming *linum contusum* B.P. The meal is then warmed in a steam jacketed "kettle," spread in a thin layer on sack-cloth, and transferred to an hydraulic press. The pressure to which it is submitted is enormous—a ton and a half to the square inch—and under it the oil runs away from the seed like a river, collected and pumped into storage tanks capable of holding 150 tons of oil at one time. The residue is "linseed cake," and is used for feeding cattle. Pure linseed oil, newly expressed, is a clear, light brown coloured liquid, sweet as cream, with the characteristic taste and odour of the seed. It is largely used in the paint trade when boiled with litharge or other dryers. The extraction of cottonseed oil was afterwards shown and found to be similar to that of linseed oil, except that the hard seeds have to be further crushed under heavy revolving stones before being warmed. Cottonseed oil as expressed is a bright red liquid, which is refined to produce the ordinary oil of the shops. It is used to adulterate olive oil, and bulks largely in the composition of such foodstuffs as margarine. The visit was unanimously regarded as a "rare treat," and the students left the mills laden with specimens.

ENGLISH NEWS.

MR. ALFRED WALTER SIKES, B.S., B.Sc., chemist and druggist, was recently successful in passing the M.D. examination of the University of London.

FORMALIN AND MILK.—At the Liverpool Police Court, on Wednesday, December 21, Samuel Wainwright, a milk dealer, was summoned for having sold separated milk which was not of the nature, substance, and quality demanded. The defendant, it was stated, was asked for separated milk, and supplied a mixture of that with formalin. The use of formalin, it was explained, enabled stale milk to be sold as fresh and tended to obviate the necessity of cleanliness in the dairy. It also rendered milk indigestible with an irritant action on the mucous membrane, especially where young and delicate children were concerned. Mr. M. Collingwood Williams, public analyst, and Professor Boyce, Professor of Pathology at the University College, said that

formalin was quite unnecessary and most objectionable when used in milk. Though it was not as yet very common, its use was increasing in Liverpool. On the other side, Mr. Davies, analyst, and Dr. Barrow were called to prove that the proportion of formalin stated to have been used in the milk was not injurious to health. The magistrate declared himself on the side of the cow against the chemist. He thought formalin was injurious to health, and ought not to be put into milk. A fine of £5 and costs was imposed. Notice of appeal was given.

DEFICIENT BELLADONNA PLASTERS.—At Lambeth Police Court, on December 22, Edward Thomas Pritchard, secretary to Day's Metropolitan Drug Company, residing in St. Lawrence Road, Southampton, was summoned at the instance of the Camberwell Vestry for selling, to the prejudice of the purchaser, belladonna plaster which was not of the nature, substance, and quality of the article demanded by the purchaser. Dr. F. Teed, public analyst for Camberwell, had given a certificate showing that the plaster was only 40 per cent. of the strength laid down in the British Pharmacopœia. For the defence it was stated that the company bought the goods with a warranty from the makers that they were up to the standard of the British Pharmacopœia, and the magistrate, after going through the correspondence, said he had come to the conclusion that he ought to dismiss the summons upon the question of the guarantee. He could not help thinking that the defendant company, having bought an article about which they were by no means certain, pressed the American manufacturers and their agents to give them something to protect them on this side of the Atlantic from a prosecution under the Sale of Food and Drugs Act. There came a time when it could not be denied that they got a guarantee that the article was within the terms of the British Pharmacopœia. He dismissed the summons all the more willingly because, after this case and after the evidence which had been given, neither this company nor any other company would be able to say that these American belladonna plasters were of the strength prescribed by the British Pharmacopœia. Perhaps the effect of the publicity which would be given to the case would be to stop the sale in this country of those particular belladonna plasters.

LAUDANUM POISONING.—William Smith (54), a ship's steward, of Canning Town, died on Saturday, December 24, from the effects of an overdose of opium. It appeared at the inquest that he suffered with his heart, also from insomnia, and was in the habit of taking laudanum to procure sleep. The jury returned a verdict of "Death from misadventure."

AMMONIA FOR ANISEED.—A bottle labelled "Children's Cough Syrup" cannot be considered a proper receptacle for poison, yet the wife of a railway goods clerk named Clayton, of Peckham, appears to have used a bottle so labelled for ammonia, and, moreover, kept it on a shelf together with a bottle of aniseed water. As a result a woman who had temporary charge of Clayton's three-months-old child took the wrong bottle and gave the child a dose of ammonia in mistake for aniseed water, death afterwards occurring from suffocation. An inquest was held, and a verdict of "Accidental death" returned.

FATAL NEGLIGENCE TO SHAKE THE BOTTLE.—An inquest was held at the Royal Lancaster Infirmary, on Wednesday, December 21, with respect to the death of a child aged five years, the daughter of a porter at the Infirmary. From the evidence it appeared that the father applied to the dispenser of the establishment for some medicine for whooping cough, and was supplied with a mixture of bromoform, mucilage, and water, the bromoform being in the proportion of three minims to a dose. The medical evidence was to the effect that this was a proper medicine for the complaint, but the directions to "shake the bottle violently before using" had evidently been neglected. A verdict of "death by misadventure" was returned.

OVERDOSE OF PRUSSIC ACID.—At the resumed inquest, held at All Saints' Mission Room, Blackheath, on December 15, on the body of Guy John Edward Castell (32), assistant to Mr. Bloodworth, chemist, until recently of 28, Montpelier Vale, Blackheath, Dr. F. Womack, Toxicological Analyst to the London County Council, said that he had examined the contents of the stomach. He found therein a small quantity of prussic acid, but not sufficient to cause

death. He was of opinion that some of it had evaporated. It was not an uncommon thing for a person who understood the properties of prussic acid to take it in small quantities, or prescribe it for others.—Mr. Batsford, a brother-in-law, said that deceased was of a cheerful disposition. He had told him on several occasions that he was in the habit of taking drugs in small quantities in draughts as a stimulant. He was about giving up chemistry and going to practise dentistry.—Dr. Miller having stated in evidence that deceased's lungs were very consumptive, the jury returned a verdict of "Death by misadventure from having taken an overdose of prussic acid."

OPIUM POISONING.—An inquest was held at the Happy Home Temperance Hall, Bury, on Monday, December 12, on the body of Joseph Brierley (66), an iron dresser, of Bury, who died on Saturday, December 10. Dr. Johnson said he had attended the deceased during his lifetime for rheumatism and sciatica. He had never complained of sleeplessness, but had appeared to be depressed in spirits since his wife died. He had examined the body since death, and found that there were symptoms of opium poisoning. The bottle produced had apparently contained diluted laudanum; but witness could not say to what extent it had been diluted. After a short conversation, during which it was suggested that the deceased had been in the habit of taking laudanum to promote sleep, and that he had taken an overdose, the jury returned a verdict to the effect that death was due to an overdose of opium taken by misadventure.

POISONING BY COCAINE.—Mr. E. L. Corlyon held an inquest at Trefusis, Flushing, on Tuesday, December 20, concerning the death of George Price Pizey, a gentleman of eccentric habits, found dead on Monday by his gardener, a bottle of cocaine, three-parts full, being found by his side. It was stated that deceased was in the habit of taking cocaine to deaden pain. Dr. Knuthsen made a post-mortem examination and found deceased was fairly healthy, there being no organic disease. Death was due to an overdose of cocaine. A verdict in accordance with the medical evidence was returned.

CHLORODYNE POISONING.—On Wednesday, December 14, at the Newington Coroner's Court, Mr. G. P. Wyatt held an inquest on the body of Harry Woodland (29), a tailor's cutter, of Walworth. The mother said that deceased suffered from insomnia and was in the habit of taking sleeping draughts. Shortly before 11 o'clock on the previous Saturday night he told her he had taken a dose of chlorodyne. She picked up the bottle, and, noticing that the greater part of the contents was gone, at once sent for a medical man, but death took place early the following morning. The bottle, a 4-oz. one, was produced, and, seeing how little was left of the contents, the Coroner remarked that he had taken it wholesale, and that the inscription on the bottle said that it was perfectly safe, but poison. He further remarked that the compound ought to be labelled the same as other poisons. A verdict of "Death from misadventure" was returned.

PHARMACEUTICAL SOCIETY.

MAJOR EXAMINATION QUESTIONS.

PHYSICS.

Wednesday, December 28, 1898.—Time allowed, from 10 to 1.

[Six questions only are to be attempted.]

1. What do you understand by the relative weight (specific gravity) of a body? How would you determine the specific gravity of (a) a piece of cork, and (b) a lump of sugar?
2. Describe the construction of three different forms of galvanic batteries and explain in shortly the chemical changes which occur during their action?
3. Explain what is meant by conduction, radiation, and convection of heat. Describe an experiment showing the difference between conduction and convection.
4. The co-efficient of the expansion of air is 0.003665. Explain the meaning of this and find what the volume of 273 cubic feet of air measured at 0° C. would be if heated to 100° C.
5. You are given a voltaic cell in a closed box, but with the terminals exposed. How would you determine which was the positive and which the negative electrode?

6. Describe two forms of hydrometer and explain the methods of their use.
7. Describe an experiment to show that water is a bad conductor of heat.
8. Describe the effects of difference in pressure on the boiling point of a liquid. State how you would show this effect experimentally with (a) water, (b) ether.
9. A current of electricity is passed through three separate solutions of (a) copper sulphate; (b) silver nitrate; (c) potassium chloride; describe accurately what changes will take place in each case.

CHEMISTRY.

Wednesday, December 28, 1898.—Time allowed, from 2 to 5 p.m.

[Six questions only are to be attempted.]

1. The equivalent of magnesium is 12. Explain clearly what is meant by this statement and describe two methods by which the equivalent of this metal could be determined. Sketch the apparatus you would employ.
2. How is hydrogen peroxide prepared and what are its properties? What impurities might be present in the commercial solution of this substance and how would you detect them; how would you estimate the quantity of peroxide in a given sample?
3. 0.75 gram. of crystallised ferrous sulphate reduces 20 C.c. of a solution of potassium permanganate in presence of dilute sulphuric acid. What weight of permanganate is contained in 1 C.c. of the solution, and how much water should be added to 50 C.c. in order to obtain a decinormal solution?
4. Point out the more important differences between "yellow" and "red" phosphorus, and explain the relation between these two substances. What are the principal uses of "red" phosphorus, and why is it often employed in preference to the yellow variety?
5. What is the principal ore of mercury? How is the metal extracted from this ore and how is it purified? Starting with the metal, how would you prepare, and purify, samples of (a) mercurous chloride, (b) mercuric chloride, (c) mercuric oxide, (d) mercuric iodide?
6. Write an account of the process you would use for the preparation of about 10 C.c. of acetaldehyde or of anhydrous formic acid; sketch the apparatus you would use.
7. Give the names and formulæ, and describe the properties of three organic bases, one of which belongs to the fatty series; give equations showing how each of these bases behaves when treated with (a) nitrous acid, (b) acetyl chloride, (c) a mixture of chloroform and alcoholic potash.
8. Write the constitutional or graphic formulæ of malic, tartaric, and succinic acids; describe reactions by which these compounds may be converted into one another, and indicate a process by which succinic acid could be built up from its elements.
9. What are the methods generally employed for the conversion of aromatic hydrocarbons into their halogen derivatives? Compare and contrast the behaviour of ethyl bromide, bromo-benzene, and benzyl bromide.

BOTANY AND MATERIA MEDICA.

Thursday, December 29, 1898.—Time allowed, 10 a.m. to 1 p.m.

BOTANY.

1. Give an account of the structure and mode of development of the sporangium of any Fern. What variations in the structure and development of sporangia are known to you among vascular Cryptogams?
2. Describe fully the structure of the Bark in any plant with which you are familiar.
3. Write an illustrative account of the relationships of form in the higher plants to external stimuli such as light and gravity.

MATERIA MEDICA.

1. What are the geographical sources of Coca Leaves? Name the official varieties and state any differences by which you could distinguish them, either by the aid of a lens or by means of the microscope.
2. By what means would you ascertain whether samples of the following were of the quality and variety official in the B.P.: viz., Oil of almonds, oil eucalyptus, powdered jalap, and Barbados aloes?

PRACTICAL BOTANY AND MATERIA MEDICA.

Thursday December 29, 1898.—Time allowed, from 2 to 5 p.m.

BOTANY.

1. Describe the external morphological characters of the specimens A and B. Refer the plants C and D to their natural orders, giving reasons for your references.
2. Make one transverse section of E. From what group of plants and what part of the plant is it derived? Sketch your preparation and give explanatory references to your drawing.

MATERIA MEDICA.

1. Prepare transverse and longitudinal sections of the Bark provided, and leave one of each for inspection, with a sketch and full description of the same.
2. Is this powdered Cinchona Bark genuine or adulterated? State your reasons for the opinion expressed.

Obituary.

HORN.—On December 20, David Horn, Chemist and Druggist, Rhynie, Aberdeenshire. Aged 86.

LANGMAN.—On December 22, Peter Langman, Pharmaceutical Chemist, Chatteris. Aged 67.

WELLS.—On December 16, at Cardiff Road, Norwich, Frederick George Rising Wells, late Dispenser to Dr. Muriel, of that city. Aged 26.

PRACTICAL PHOTOGRAPHIC NOTES.

WITH REGARD TO AMMONIO-CITRATE OF IRON, Valenta, of Vienna, last year tested the ordinary brown scale, and found its composition to be $4\text{FeC}_6\text{H}_5\text{O}_7 \cdot 3(\text{NH}_4)_3\text{C}_6\text{H}_5\text{O}_7 \cdot 3\text{Fe}(\text{HO})_3$, and he states that it is, therefore, a basic salt. Merck, of Darmstadt, has introduced a green salt, which is a mixture of neutral ammonium ferric citrate, acid ammonium ferric citrate, and ferric citrate, and has the formula $5\text{FeC}_6\text{H}_5\text{O}_7 \cdot 2(\text{NH}_4)_3\text{C}_6\text{H}_5\text{O}_7 \cdot \text{NH}_4\text{C}_7\text{H}_7\text{O}_7 \cdot 2\text{H}_2\text{O}$. The advantage of the green salt is that it gives a paper eight times as sensitive as the brown, it keeps better, and the sensitising solution also keeps better. So far as we know, this form cannot be obtained in England. If this green salt be used the proportion of potassium ferridcyanide must be reduced, the best formula being—

A.	
Green Ammonio-citrate of Iron	12.5 g.
Distilled Water.....	50 C.c.
B.	
Potassium Ferridcyanide	4.5 g.
Distilled Water.....	50 C.c.

Mix in equal quantities.

IT MAY POSSIBLY BE WORTH WHILE to place on the market a solution for sensitising paper and other materials, such as has been lately put out commercially, and this may be readily done by dissolving silver nitrate and citrate, carbonate, tartrate, or phosphate in liq. ammonia fort. The following formulæ will be found to yield satisfactory results:—

Silver Nitrate	170 g.
Citric Acid	21 g.
Ammonium Chloride	25 g.
Distilled Water	500 C.c.

Dissolve the silver in half the water, and the acid and chloride in the remainder, and mix the two solutions, and then add liq. ammonia fort. 0.880, till, on stirring, the whole of the precipitate is dissolved, and then dilute with sufficient water to make 1700 C.c.:—

Silver Nitrate	170 g.
Tartaric Acid	18 g.
Ammonium Chloride	25 g.
Distilled Water	500 C.c.

or

Silver Nitrate	170 g.
Sodium Phosphate	35 g.
Ammonium Chloride	25 g.
Distilled Water	500 C.c.

The procedure of making is precisely the same as in the case of the citrate.

DURING THE WINTER MONTHS the attention of amateurs is more generally attracted towards the making of enlargements and lantern slides and developers for bromide papers, and lantern slides should find ready sale. A formula which has given every satisfaction for enlargements is the following:—

A.	
Mctol	10 g.
Sodium Sulphite	100 g.
Potassium Bromide	1.25 g.
Distilled Water	to 1000 C.c.
B.	
Potassium Carbonate	100 g.
Distilled Water	to 1000 C.c.

For use mix 3 parts of A and 1 part of B. This may be used also for lantern work.

ANOTHER very satisfactory one is—

A.	
Eikonogen	12 g.
Sodium Sulphite	250 g.
Distilled Water	1000 C.c.
B.	
Potassium Carbonate	80 g.
Potassium Bromide	2 g.
Distilled Water	1000 C.c.

For use mix 3 parts of A to 1 part of B.

MARKET REPORT.

The quotations here are given in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

London Report.

DECEMBER 29.

As might have been expected, business has been practically at a total standstill during the past few days, and no revival can be looked for until the commencement of the New Year, after the completion of the annual stock-taking. With the exception of an advance of 1d. per lb. in price of Sweet Oil of Almonds, and an advance in price of one of the less favourably known makers of Cocaine Hydrochlorate, and the continued advance in value of Cascara Sagrada, there are no changes of any importance, or, in fact, any changes at all to report, the situation may be summed up in the short words, "nothing whatever doing." We give some particulars of prices as follows, and wish our readers "A Happy and Prosperous New Year."

ACETANILIDE.—Is quiet, price of the combined makers being 11d per lb. for 5-cwt lots, smaller quantity being quoted at a proportionately higher figure.

ACID CARBOLIC.—This article, in common with so many others at the moment, is exceedingly quiet at 6½d. to 6¾d. per lb., according to quantity and make for 35.36° C. *Ice Crystals* in 2½ cwt. drums and overcasks; 39-40° *Ice Crystals*, 7d. to 7¼d.; 39-40° *Detached Crystals*, 8d. to 8¼d. for bulk packing. *Crude* is rather dearer at 2s. per gallon for the 60° F. and 2s. 4d. for 75° F. *Liquid*, 95 per cent. of pale straw colour, 1s. 1d. to 1s. 3d. per gallon in 40-gallon casks.

ACID CITRIC.—Is quiet at 1s. 1d. per lb. on the spot for English and 12¼d. per lb. for foreign, *c.i.f* terms.

ACID OXALIC.—Is quiet at 3d. to 3½d. per lb., delivered in London.

ACID TARTARIC.—Weak at 1s. 0½d. per lb. for English and 12d. per lb. for foreign.

ALMOND OIL.—Makers of the sweet oil of almonds advanced their price to 1s. 5d. per lb., in consequence of the continued scarcity and dearness of the raw material.

ALUM.—Loose lump is unchanged in value, being quoted £5 10s. per ton, while for ground in bags £6 2s. 6d. per ton is asked.

AMMONIA COMPOUNDS.—*Bromide* steady at late advance to 2s. 2d. per lb. *Carbonate* without change at 3d. to 4d. per lb, according to quantity and packing. *Muriate* is quoted 25s. to 27s. 6d. per cwt. for the white, free from metals quality, and 30s. to 32s. 6d. per cwt. for the chemically pure, small crystals. *Iodide* steady at the late advance of 3d. to 13s. 10d. per lb. *Oxalate*: Price is unchanged at 5½d. per lb. *Sal ammoniac*: Quiet at 33s. to 35s. per cwt. for the sublimed and 35s. to 37s. 6d. for the crushed, for batteries. *Sulphate* steady, grey prompt 24 per cent., London, Hull, and Leith £10 2s. 6d. per ton; Beckton, Jan.-June, £10 5s.; Beckton terms £10 per ton. *Sulphocyanide*: 1s. to 1s. 2d. per lb., according to quantity.

ANTIPYRINE.—*Dr. Knorr's* article is unchanged in price, the cutting, however, in *Phenazone* continues and some very low quotations have been reported; the *Star* brand, however, continues to hold its ground.

ARSENIC.—Is quoted 18s. per cwt. for powder and 34s. per cwt. for lump.

BLEACHING POWDER (CHLORIDE OF LIME)—Steady at £6 per ton for English make.

BORACIC ACID.—Firm at 26s. per cwt. for *crystals* and 28s. per cwt. for *powder*.

BORAX.—Unchanged at 16s. 6d. per cwt. for *crystals*, and 17s.

per cwt. for *powder*, market being firm in consequence of the scarcity of supplies and the firmness of the makers.

BROMIDES—Are firm at late advance to 1s. 10½d. per lb. for *Potassii Bromide*, 2s. 1½d. per lb. for *Sodii Bromid.*, and 2s. 2d. per lb. for *Ammon. Bromid.* *Bromine* unchanged at 2s. 1d. per lb. in 60-lb. cases.

CASCARA SAGRADA.—Market is very firm, the few parcels which were offering at 25s. per cwt. having been bought up, holders now ask 26s. to 27s. for new bark, and 2s. 6d. to 5s. per cwt. more for old bark. As far as can be judged, the article is likely to go dearer, present price being comparatively speaking still quite moderate.

CHLORATE OF POTASH.—*Crystals* are quoted at 3¾d. per lb. spot London, *powder* 4d. per lb.

COAL TAR DISTILLATION PRODUCTS.—*Toluol* is lower at 1s. per gallon for commercial and 1s. 6d. for pure. *Benzole* is slightly dearer at 9½d. per gallon for 50 per cent. and 9d. for 90 per cent. *Crude Naphtha*: 30 per cent. at 120° C., 4d. per gallon. *Solvent Naphtha*, 95 per cent. at 160° C., 1s. 7d. per gallon; 90 per cent. at 160° C., 1s. 3d.; 90 per cent. at 190° C., 1s. 3d. per gallon; *Pitch*: 25s. per ton, *f.o.b.* *Tar*: refined, 12s. per barrel, 1¾d. per gallon; crude, 12s. per barrel, 1¾d. per gallon.

COCAINE—Is very firm, it being reported that one maker has advanced his price to 11s. per oz. for 100-oz. lots in 25-oz. tins, and in view of the position and prospects of the *crude* drug it would appear probable that a further general advance in price is more than possible. Even at 11s. per oz. the article is still cheap as compared with prices which formerly ruled, and people who are generally right in their views have not failed to take advantage of late low price to secure and lay by a good stock.

CODEIA—Unchanged, makers still quoting 12s. 6d. per oz. for the *pure*, and 11s. 6d. per oz. for the *Phosphate* and *Sulphate* salts.

CREAM OF TARTAR.—First white *crystals* on the spot are quoted 73s. 6d. per cwt.; *powder*, 75s. 6d. to 77s. per cwt.

COD-LIVER OIL.—Nothing doing; price nominally 75s. to 80s. per barrel, according to brand, for best non-congealing Norwegian oil of last season's catch.

ESERINE (PHYSOSTIGMINE).—Makers' prices are 2s. per gramme for the *Sulphate* and *Salicylate* salts, and 3s. per gramme for the pure alkaloid.

GENTIAN ROOT—Is still quoted 14s. per cwt. *c.i.f.* for fair quality.

GLYCERIN.—Market is quiet but fairly steady at 50s. to 52s. 6d. per cwt. for *English* and 53s. to 60s. per cwt., according to brand, for *German* best white chemically pure double distilled 1260° quality in 2 cwt. cases (each case 4 × 56 lb. tins).

IODIDES.—Steady at the late advance of 3d. per lb. to 10s. 6d. per lb. for *Potass. Iodid*, 11s. 10d. per lb. for *Sodii. Iodid.*, 13s. 10d. per lb. for *Ammon. Iodid.*, 13s. 10d. per lb. for *Iodoform powder, precip., or cryst.*, and 12s. per lb. for *Iodine* resublimed. *Crude Iodine* remains at the old price of 7¾d. per oz.

LITHIA.—Makers are firm in their price of 10s. 8d. per lb. for the *Carbonate*, 6s. 5¾d. for the *Citrate crystals*, and 6s. 11¾d. for the *powder*, in 2 cwt. lots, while for smaller quantities higher prices are asked.

MENTHOL—Is very firm at 7s. 6d. per lb. for good dry white crystals on the spot, and 7s. 9d. to 7s. 10½d. per lb. to arrive, *c.i.f.* terms.

MERCURIALS.—Makers' prices are 2s. 8d. per lb. for *Calomel*, 2s. 4d. per lb. for *Corrosive Sublimate*, and 3s. per lb. for *Red Precipitate*.

MORPHIA.—Makers' prices remain at 5s. per oz. for the powdered salts, and 2d. per oz. more for the crystal salts.

OILS (FIXED) AND SPIRITS.—*Linseed* unchanged, spot pipes, London, £16 10s., barrels, £16 17s. 6d. to £17. Hull, spot naked, £15 2s. 6d. *Rape* quiet, ordinary brown on the spot is quoted at £20 15s. to £21, January-June £20 15s. Refined, spot, £22 5s. to £22 10s. *Ravison*, naked spot, £16 15s. *Cotton* steady, London, crude spot, £12 15s.; refined spot, £14 10s. to £14 15s., according to make. Hull, naked refined, £12 15s. *Crude*, spot, £11 5s. *Olive*: So far without change. Spanish, £29; Levant and Mogador, £29 to £32. *Cocanut* quiet. Ceylon spot, £26, landed near, £24. January-March, £23 10s., *c.i.f.* *Cochin*: Spot nominally, £31, landed; afloat, £27 15s.; December-January, £26; January-March, £25 17s. 6d., *c.i.f.* *Palm*: Lagos spot, £22. *Lubricating Oil*: In spite of the season of the year the activity in Christmas-boxes has so far been without effect on prices of these

two articles. *Turpentine*: Market is strong and advancing; American spot, 32s. to 32s. 6d.; Jan.-April, 32s. 6d. paid; May-June is quoted 30s. 10½d. to 31s.; July-Dec., 24s. 10½d. to 25s. *Petroleum Oil* steady. Russian spot, 5½d. to 5¾d.; American spot, 6¾d. to 6¾d.; water white, 7¾d. to 7¾d. per gallon. *Petroleum Spirit*: American, 8d.; deodorised, 8¾d. per gallon.

OLIVE OIL.—Reports from Italy state that whilst at first the crops promised well, the warm, damp weather favoured the development of the worm, which attacked the entire crops in the districts of Puglia, Bori, and surrounding neighbourhood, resulting in a yield of oil which is said to barely reach one-fourth of what was previously expected. The damage has extended to Sicily, Central Italy and Tuscany, all of which have also suffered considerably. Towards the middle of November a cyclone played havoc with the olive crop in Tunis, it being reported that more than 15,000 olive trees were uprooted. In Sardinia this cyclone caused extensive floods, which also did considerable damage. Finally, on November 26 and 27 last another cyclone of great violence visited the Riviera, it being estimated that there fully two-thirds of the olives which were ripening on the trees were either blown down by the wind or knocked off by the hail. These windfall olives, not being ripe, will only yield one-third of the oil which a similar quantity of ripe fruit would produce. On the whole it is anticipated that the quality of the new olive oil will be good, but the yield is certain to be very short, and higher prices will no doubt have to be paid.

OPIUM.—There has been nothing doing in the article during the past week, and prices remain nominally unchanged at 11s. 3d. to 11s. 9d. per lb. for fine druggists', 10s. 6d. to 11s. 6d. per lb. for good seconds and manufacturing kinds, 13s. to 14s. per lb. for good to fine soft shipping, 10s. 6d. to 11s. 6d. for seconds ditto, 11s. to 12s. per lb. for Persian.

PHENACETIN—Unchanged at 3s. 9d. to 4s. 3d. per lb., according to quantity, for both crystals and powder.

PILOCARPINE.—The *Nitrate* and *Muriate* salts, which are those chiefly, in fact, almost exclusively, in demand, are quoted 1s. 4d. per gramme.

POTASH COMPOUNDS.—*Bicarbonate* 30s. to 35s. per cwt. for both crystals and powder, according to quantity and brand. *Chlorate*: Crystals 3¾d., powder 4d. per lb. spot, London. *Oxalate*: Neutral 5½d. per lb. *Permanganate* quiet at nominally 50s. per cwt. for small crystals, and 55s. per cwt. for large crystals in 1 cwt. kegs. *Prussiate*: yellow English is quoted 7d. per lb., while the red is also unchanged at 1s. to 1s. 3d. per lb. *Bichromate*: 3¾d. per lb. *Bromide* is unchanged at late advance to 1s. 10½d. per lb.

QUICKSILVER—Remains at £7 15s. per bottle from the importer, and 1s. per bottle less from second hand.

QUININE.—There has been nothing doing in the article this week. Makers' prices remain nominally 10½d. per oz. for best German brands of *Sulphate* for 1000-oz. lots in 100-oz. tins, there being very little offering from second hand at or below this figure. On the resumption of business in the drug and chemical line, after the commencement of the new year, it is fully expected that we shall see a revival of demand for, and very probably an improvement in price of, this article, and those of our friends who have not already done so will, we think, do well to secure a moderate stock at present price, which, it should be remembered, is still very low.

SODA COMPOUNDS.—*Crystals*: barrels, 55s. per ton; bags 52s. 6d. per ton, ex ship "Thames." *Ash* is quoted £5 to £5 10s. per ton, according to strength, packing, and quantity. *Bicarbonate* is quoted £7 10s. to £8 10s. per ton for the 97 per cent., and 18s. 6d. per cwt. for the fully bicarbonated quality. *Bichromate* unchanged at 2½d. per lb. *Bromide* firm at late advance to 2s. 1½d. per lb. *Caustic*: White 70 per cent., £7 10s. per ton; 60 per cent., £6 10s. per ton. *Hyposulphite* is quoted 6s. 6d. to 8s. per cwt., according to make, quantity, and packing. *Iodide* steady at late advance of 3d. per lb. to 11s. 10d. per lb. *Nitrate*: Commercial is still quoted £7 15s. per ton, and refined £8 to £8 2s. 6d. per ton, according to quantity.

SUGAR OF LEAD—Is firm at 31s. per cwt. for English and 27s. to 27s. 6d. per cwt. for foreign.

SULPHATE OF COPPER—Is quoted £18 to £19 10s. per ton on the spot, according to quantity and make.

SULPHONAL.—Makers' price remains at 17s. per lb., to which it was lately advanced, there being, apparently, the full prospect that price will be maintained at this figure. There are, however still sellers at a somewhat lower price from second hands.

SULPHUR—Is very firm; English roll is quoted 7s. 6d. to 8s. per cwt.; flowers, 10s. per cwt.; foreign roll, 6s. 6d.; flowers, 7s. 6d. per cwt.

THYMOL—Is firm at 8s. to 8s. 6d. per lb., according to make, quantity, and packing.

TONQUIN BEANS—Are in better demand, with an improvement all round in values. *Angosturas* after having been sold at 3s. per lb. have since realised 4s. to 5s. per lb., according to quality. *Paras* are somewhat scarce, and 1s. 9d. to 2s. per lb. is asked for good frosted beans of this description.

Newcastle Chemical Report.

DECEMBER 28, 1898.

This market is purely of a holiday nature. The works being closed for stock-taking and repairs, little or nothing is now doing. Prices are unchanged, as follows:—Soda Crystals, basis price, 45s.; Bleaching Powder, according to markets, £5 to £5 10s.; Caustic Soda, 70 per cent., basis price, £7; Soda Ash, 52 per cent., £4 5s.; Alkali, 52 per cent., £5 5s.; Sulphur, £4 15s. to £5 per ton.

Liverpool Market Report.

DECEMBER 28, 1898.

In view of the holidays business has been quiet, and the only alterations in price are higher rates for Spirits of Turpentine and Castor Oil.

AMMONIA SALTS.—The only change is in sulphate, which is now £10 5s. per ton, a rise of 2s. 6d.

BEEWAX.—10 packages of Gambia sold at £6 10s. per cwt.

CANARYSEED.—Turkish is quiet but firm at 28s. to 29s. per 464 lbs.

CARNAUBA WAX.—30 bags of yellow sold at 50s. per cwt.

COPPERAS—Sells steadily at the firm price of 39s. per ton for Lancashire and 37s. for Welsh.

COPPER SULPHATE—Is a turn dearer at £18 12s. 6d. per ton, spot, £18 15s. to £19 per ton forward.

OILS (FIXED) AND SPIRITS.—*Castor Oils* have been selling well, 500 cases of Calcutta for delivery during March and April went for 2½d. per lb.; spot lots, 2½d. store (about 150 cases sold), and 2½d. per lb. *quay*; French, first pressure, 2¾d. to 2½d.; Madras, 2½d. and Bombay, 2½d. to 2½d. per lb. *Olive Oils* continue to sell in small amount, but at full and steady prices. *Linseed Oil* of Liverpool make is steady at 17s. 6d. to 18s. 6d. per cwt. in export casks. *Cottonseed Oil* is quiet at 15s. 3d. to 15s. 9d. per cwt. *Spirits of Turpentine* have again risen considerably, and now are at 32s. 9d. per cwt., at which price a fair trade is doing.

POTASH AND SODA SALTS.—Unchanged from last.

Manchester Chemical Report.

DECEMBER 28, 1898.

There was a marked absence of business men at the market today. Amongst those present there was a fairly hopeful feeling for next year, which will, it is to be hoped, be justified by the course of business. It is evident that prices of heavy chemicals are at a low ebb, and in all probability there will be a considerable diminution in the production of Caustic Soda, of which large stocks remain on hand at the close of the year. There has been a sharp advance in Acetate of Soda, which ranges from £15 to £16 spot, and as the article is scarce it is not unlikely the advance may continue. In other miscellaneous articles Sulphate of Copper again shows an upward tendency, but at present there is no change here. Sulphate of Ammonia is from £9 18s. 9d. to £10 on rails, Lancashire, having gone up a little during the past few days. Green Copperas continues dull locally, but for shipment there is no change.

NOTICES TO CORRESPONDENTS.

All Communications for the 'Pharmaceutical Journal' must be Addressed to the Editor, 17, Bloomsbury Square, London, W.C., and not in any case to individuals supposed to be connected with the Editorial Staff; no responsibility can be accepted unless this rule be observed. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ADVERTISEMENTS AND ORDERS for copies of the 'PHARMACEUTICAL JOURNAL' must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London, W.C. Cheques and money orders should be made payable to "Street Brothers."

ARTICLES AND REPORTS sent for the Editor's approval should be accompanied by stamped directed envelopes, otherwise no guarantee can be given that they will be returned if not found suitable.

CORRESPONDENTS should write in ink, on one side of the paper only, and must authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

DRAWINGS FOR ILLUSTRATIONS should be executed twice the desired size; clean sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

NAMES AND FORMULÆ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

QUERIES addressed to the Editor will be replied to in the Journal as early as possible after receipt, though not necessarily in the next issue. Replies cannot be sent by post, even though stamped envelopes accompany the queries.

Trade Notes.

MR. S. WAND, of Leicester, submits specimens of his new varnished pills. They are perfectly coated, most attractive in appearance, and freely soluble.

MESSRS. EVANS, GADD AND Co., of Exeter and Bristol, send a copy of their useful calendar for 1899, and ask us to intimate that they will be happy to send a copy free to any chemist who may write for one and mention the *Pharmaceutical Journal*.

MESSRS. JOHN WRIGHT AND Co., of Bristol, have produced a new "Case Paper" for the use of medical practitioners. It has been suggested by Drs. Couch and Lancaster, has a number of anatomical diagrams printed at the back, and offers advantages over most case papers now in use. The price of the new papers is 15s. per 100 and 26s. per 1000, or bound in books of 250 copies, indexed and numbered, at 11s. each.

MESSRS. R. ELLIS & SON, of Ruthin, manufacture a new syphon for aerated waters, the head of which considerably differs in appearance from the more familiar shapes. The outlet valve usually found at the top is here turned into a horizontal position and placed upon the outlet spout, with the lever upright. The new arrangement greatly facilitates the emptying of the syphon, as the valve can be controlled to a nicety with the thumb of either hand. The valve having thus been removed from the top of the head, the orifice for refilling is here provided, and is automatically closed with a cone-shaped plug. When filled this opening is protected with a little screw cover, and the general appearance of the new syphon, after the first impression of novelty has passed, is pleasing. The valves may easily be repaired without the expense and loss of time incurred in dismantling the head, which must be done in the case of the ordinary form of syphon. Another advantage which will appeal to the consumer is the fact that not only is the syphon easier to open, and not likely to splutter the contents out of the glass, but, owing to the arrangement of the inner chambers, less friction is caused during the process of drawing the contents, and consequently the gas does not separate itself from the water in the same degree as in the old head, the result being that a fresher, sharper aerated water is obtained for drinking.

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AND 636-642, W. 55 STREET, NEW YORK.

Calendar for the Week.

Sunday, January 1. 1st after Christmas. Sun rises 8.8; sets 4.0.

Monday, January 2. Sun rises 8.8; sets 4.1.
SOCIETY OF CHEMICAL INDUSTRY, Burlington House, Piccadilly, W., at 8 p.m.—A paper by Mr. Oscar Guthmann on "Safety Explosives" will be read and discussed.

Tuesday, January 3. Sun rises 8.8; sets 4.2.
BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION, County Restaurant.—Mr. W. West will deliver a lecture entitled "Plant Gossip."
ROYAL INSTITUTION, Albemarle Street, W., at 3 p.m.—The fourth of the series of Christmas Lectures for Young People on Astronomy, by Sir Robert S. Ball.

Wednesday, January 4. Sun rises 8.8; sets 4.3.
CHEMISTS' ASSISTANTS' ASSOCIATION, Dorset Hall, Portman Rooms, Baker Street, W., at 7.30 p.m.—The third of the series of Cinderella dances.
MIDLAND PHARMACEUTICAL ASSOCIATION, Mason College, Birmingham, at 8 p.m.—Discussion on the new B.P., to be opened by Mr. F. H. Alcock.

Thursday, January 5. (3.22 M. Sun rises 8.8; sets 4.4.
ROYAL INSTITUTION, Albemarle Street, W., at 3 p.m.—Sir Robert S. Ball will deliver the fifth of the series of Lectures on Astronomy.

Friday, January 6. Epiphany. Sun rises 8.8; sets 4.5.

Saturday, January 7. Sun rises 8.7; sets 4.6.
ROYAL INSTITUTION, Albemarle Street, W., at 3 p.m.—The last of the Christmas Lectures on Astronomy, by Sir R. S. Ball.

Publications Received.

THE TREATMENT OF DISEASE BY PHYSICAL METHODS. By THOMAS STRETCH DOWSE, M.D. Abd., F.R.C.P. Ed. Pp. xi. + 412. Price 7s. 6d. net. Bristol: J. Wright & Co., 1898. From the Publishers.

FALLOWFIELD'S PHOTOGRAPHIC ANNUAL, 1898-99. Pp. 852. Price 1s. 6d., post free. London: Jonathan Fallowfield, 146, Charing Cross Road, W. From the Publisher.

Receiving Order in Bankruptcy.

(From the London Gazette.)

Edwin Mann, Chemist and Druggist, 31, West Derby Road, Liverpool.

Advertisements.

(Received too late for Classification).

WANTED, a GENERAL MANAGER for a Chemical Manufactory abroad, employing about fifty workmen, producing Fine Chemicals (organic). Must be experienced in the control of workmen, capable of applying the results of research Laboratory to Industrial Productions, and have good knowledge of French. Apply, fully stating previous experience, nature of testimonials, and salary expected, to A. B. C., care of Street & Co., 30, Cornhill, E.C.

TO CHEMISTS AND DRUGGISTS.—Wanted, in a Wholesale Druggists' Sundries House, a good SALESMAN. One who has a knowledge of French preferred. From 25 to 30 years of age, well educated, of gentlemanly appearance, and good address. Applications, by letter only, stating age, whether married or single, and full particulars of previous engagements, to be addressed MELBOURNE (93/68), office of this paper. Applications from parties not furnishing the particulars requested, and not answering the above requirements, will not be responded to.

EXCHANGE.

Prepaid Notices not exceeding thirty words are inserted at a fee of Sixpence, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, count as one word. The fee for use of Serle Street address is Sixpence. All communications should reach "PHARMACEUTICAL JOURNAL" Office, 5, Serle Street, Lincoln's Inn, W.C., not later than 10 a.m. on Thursdays.

OFFERED.

Overstocked.—16 lbs. Bismuth Subcarb., 4 lb. parcels 5s. per lb., less 5s. 3d. per lb.; 12 1 lb. bottles Ferri Quin. Cit., 8s. 3d. per lb., 4 at 8s., 12 7s. 9d.; 24 Tetlow's Gossamer, 12s.—Eastman, Forest Lane, Stratford.

Magic Lanterns, second-hand; triples and binials: oxyhydrogen microscope; marvellous pamphengos oil; lantern gives 14-ft. picture; 60,000 slides and effects; 4-in. 4-wick lanterns, 18s. 6d. each, bargains; illustrated list post free, 2d. Animated photographs: A splendid machine for £9 9s.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Robert H. Clark's Specialties.—Lantern, with 4-in. condensers and 3 wick lamps, 17s. 6d.; with 4 wick lamps, 18s. 6d. Slides, sale or hire, Conquest of Soudan, Spanish American War. Catalogue free.—Robt. H. Clark, Royston, Herts.

Overstocked.—5½ oz. Cocaine Hydrochlor., B.P., also 2 oz. Otto Rosæ, B.P. 3 oz. Ol. Neroli (Bigarade Petale). Best offers accepted.—"Alembic," Pharmaceutical Journal office, 5, Serle Street, W.C.

Six Dozen Stern's (7d.) Narissa, in clean, beautiful tins. What offers? K., 28, Navigation Street, Birmingham.

WANTED.

Wanted.—Erasmic Soap and Tetlow's Swandown Powder.—Eastman, Forest Lane, Stratford.

Old Electric Lamps and Scrap Platinum for prompt cash.—P. Rowsell 9, Derwent Grove, East Dulwich, London, S.E.

Copper or Iron Still, about 10 gallons. 'Pharmaceutical Journal,' September 5, 1896; December 28, 1895; May 4, 1895; December 15, 1894; December 23, 1893; September 10, 1892; April 2, 1892; August 2, 1891; April 23, 1892; May 14, 1892; April 13, 1891; April 20, 1889; October 27, 1888; August 18, 1888; April 28, 1888; July 3, 1886; August 21, 1886; March 20, 1886; January 2, 1886; September 26, 1885; November 23, 1878; May 4, 1878; January 12, 1878; July 23, 1870; January 31, 1865. Price to—Ockenden, 18, Moorfields, E.C.

COMMUNICATIONS, LETTERS, NEWSPAPERS, etc., have been received from Messrs. Atkins, Austen, Bayard, Bennett, Burns, Coupland, Cowley, Cullen, Dunlop, Evans, Fitch, Gadd, Gardner, Guthell, Keen, Lawrence, Ling, Lothian, Platt, Schaer, Stewart, Walters, Wright, Yewdall.

